



Relationships between vegetarian dietary habits and daily well-being

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ABSTRACT

The goal of the present study was to examine differences in the daily experiences of vegetarians and non-vegetarians. At the end of each day for two weeks, a convenience sample of American undergraduates described how they felt and how they thought about themselves that day, and they described the events that occurred to them that day. Multilevel modeling analyses (days nested within persons) found that vegetarians (individuals who avoided all meat and fish, $n = 24$) reported lower self-esteem, lower psychological adjustment, less meaning in life, and more negative moods than semi-vegetarians (individuals who ate some meat and/or fish, $n = 56$) and omnivores (individuals who did not restrict their intake of meat or fish, $n = 323$). Vegetarians also reported more negative social experiences than omnivores and semi-vegetarians. Although women were more likely than men to identify as vegetarians and semi-vegetarians, controlling for participant gender did not change the results of the analyses. The differences we found are consistent with other research that suggests that vegetarians are less psychologically well-adjusted than non-vegetarians. The implications of the present results for understanding relationships between dietary habits and well-being are discussed.

KEYWORDS

Daily diary; vegetarianism; well-being

Introduction

What people eat is an important part of their daily lives, and one of the more prominent distinctions that is used to classify people's diets is vegetarianism – the extent to which people avoid meat. Although vegetarianism has been studied in numerous contexts, very little is known about how vegetarianism is manifested in people's daily experiences, and the present study was designed to examine such relationships. Participants in the present study described their dietary habits and maintained a daily diary for two weeks. As part of this diary they answered questions about their daily well-being. The study was guided by the general

expectation that the daily well-being of vegetarians would be lower than the daily well-being of non-vegetarians.

Vegetarianism and psychological well-being

An accumulating body of research suggests that vegetarianism is associated with poor mental health. In one of the first studies on this topic, Lindeman (2002) found that vegetarian and semi-vegetarian women had lower self-esteem, more depressive symptoms, and a more negative world view than omnivorous women. More recently, several studies (e.g., Baines, Powers, and Brown 2007; Burkert et al. 2014; Michalak, Zhang, and Jacobi 2012) have found that vegetarians were more likely to be depressed and anxious than semi-vegetarians, who were more likely to be depressed and anxious than non-vegetarians (omnivores). Consistent with this, Forestell and Nezlek (2018) found that vegetarians and semi-vegetarians (people who eat fish or white meat or red meat occasionally) were more neurotic and depressed than omnivores. Moreover, differences in the well-being of vegetarians and non-vegetarians have been found to hold after controlling for individual differences such as age and education (Michalak, Zhang, and Jacobi 2012).

Levels of analysis in studies of vegetarianism and psychological well-being

To our knowledge, the existing research on relationships between vegetarianism and psychological well-being has used data that have been collected using single assessment designs. In such studies, participants describe their dietary habits and answer a series of questions about their well-being, and relationships between these two sets of responses are examined. Although the items may concern thoughts, feelings, and behaviors that have occurred over an extended time, the questions are asked only once. Such designs have a long history in psychological research and have provided valuable insights into numerous phenomena.

Nevertheless, we believe that such studies should be complemented by studies that measure daily experience because studies of daily experience may provide new insights into the lives of vegetarians, and by extension, their well-being. As discussed by Nezlek (2012; pp. 4–5), single assessment measures that ask people to recollect over lengthy or unspecified periods of time can lack precision and are prone to being influenced by recent or salient events or circumstances. For example, the day before an individual completes a questionnaire may have been particularly difficult, and this experience may color responses that refer to how the individual usually or normally feels. Although one can assume that such influences are randomly distributed (or are unrelated to dietary habits), if we are to understand the daily lives of vegetarians, we should use measures that “Capture life as it is lived” (Bolger, Davis, and Rafaeli 2003). Thus, the goal of the present study was to examine the relationship between vegetarianism and people’s daily experiences by

asking participants to describe their dietary habits and maintain a daily diary that asked questions about their daily well-being over the course of two weeks.

The present study: expectations and hypotheses

Taken together, the existing research suggests that the daily well-being of vegetarians should be lower than the daily well-being of non-vegetarians. When considering such relationships it is important to take into account the level of analysis of the hypothesized relationships. The present hypotheses concern what are referred to as between-person relationships: Differences in the average daily well-being of vegetarians and non-vegetarians.

This level of analysis is different from the within-person relationships between well-being and consumption of fruits and vegetables that have been examined in studies of daily food consumption and daily well-being (e.g., White, Horwath, and Conner 2013; Conner, Brookie, Richardson, and Polak 2015). These studies have found that well-being was higher on days when people consumed more fruits and vegetables than on days when they consumed fewer fruits and vegetables. Although this might seem to suggest that vegetarians, who presumably consume more fruits and vegetables as a percent of their daily food intake than non-vegetarians, should have higher well-being than non-vegetarians, this is not necessarily the case.

These studies examined within-person relationships between well-being and consumption of fruits and vegetables in samples of which the majority were probably non-vegetarians (the dietary habits of participants was not reported). Whether increased consumption of fruits and vegetables increases well-being among non-vegetarians is a separate question from whether vegetarians have higher or lower well-being than non-vegetarians.

In the present study, we collected data from a convenience sample of U.S. undergraduates. Participants described their dietary habits and they maintained a daily diary with which they described their well-being each day. We defined well-being broadly to include self-esteem, satisfaction with life, ruminative thinking, depressogenic adjustment (a construct representing Beck's triad, Beck, 1967), and affect. Based on previous research that has used single assessment designs, our primary hypothesis was that the daily well-being of vegetarians would be lower than the daily well-being of non-vegetarians.

Method

Participants and procedure

Participants were undergraduate students who received course credit for their participation. We analyzed data collected in three studies conducted

across three semesters. Participants attended information sessions in small groups to learn about the study and how to use the website with which their data were collected. They were told that their study was about daily experience. Participants replied to an email with a link to a questionnaire to answer a series of questions at the end of the day for 14 days. Before providing these daily reports participants indicated their gender and age and they described their dietary habits using the General Eating Habits Scale (Forestell, Spaeth, and Kane, 2012). Participants provided informed consent, and the study protocol was approved by the university Institutional Review Board. The study protocol was the same for all three studies, and although most daily measures were administered in all three studies, some were not. The number of participants and days for which data were collected for each measure is described in the results section.

Measure of eating habits (GEH)

In all three studies participants indicated which of the following seven categories best characterized their eating behavior:

Vegan: a person who eats fruits, vegetables, and grains but no animal or seafood products;

Lacto-vegetarian: a person who eats fruits, vegetables, grains, and dairy products, but no other animal or seafood products;

Lacto-ovo-vegetarian: a person who eats fruits, vegetables, grains, dairy products, and eggs, but no other animal or seafood products;

Pesco-vegetarian: a person who eats fruits, vegetables, grains, dairy products, eggs, and seafood, but no other animal products;

Semi-vegetarian: a person who eats fruits, vegetables, grains, dairy products, eggs, seafood, and chicken but no red meat;

Occasional omnivore: a person who occasionally eats red meat, white meat, seafood, eggs, dairy products, fruits, vegetables, and grains;

Omnivore: a person who regularly eats most meats, seafood, eggs, dairy products, fruits, vegetables, and grains.

Daily measures

In all three studies we measured self-esteem using four items that were adapted for daily use from a widely used trait measure of self-esteem (Rosenberg 1965). Using a 7-point scale (1 = *Very uncharacteristic of me today*, 7 = *Very characteristic of me today*), participants indicated how characteristic each of the following statements were of them that day: “Today, I felt like a failure,” “Today, I felt that I had many good qualities,” “Today, I thought I was no good at all,” and “Today, on the whole, I was satisfied with myself.”

In the third study only, we measured daily depressogenic thinking (referred to as the triad measure) with three items based on Beck's Cognitive Triad (Beck, 1967). These were negative view of self, "Overall, how positively did you feel about yourself today," negative view of life in general, "Thinking of your life in general, how well did things go today," and negative view of the future, "How optimistic are you about how your life (in general) will be tomorrow?" Participants responded using 7-point scales on which higher scores represented greater well-being.

In all three studies daily life satisfaction was measured with two items based on those used by Oishi et al. (2007). The first item was "How was today?" Responses were recorded on a 7-point scale (1 = *terrible*, 7 = *excellent*). The second item was "How satisfied were you with your life today? (1 = *very dissatisfied*, 7 = *very satisfied*).

In the second and third studies we measured daily self-focused attention in terms of reflection and rumination using items based on the Rumination-Reflection Questionnaire (Trapnell and Campbell 1999). Each question began with the stem "How much today, did you..." Rumination was measured with three items, "...ruminate or dwell on things that happened to you?"; "...play back in my mind how you acted in a past situation?"; and "...spend times rethinking things that are over and done with?" Reflection was also measured with three items, "...think about your attitudes and feelings?"; "...think about the nature and meaning of things?"; and "...think introspectively or self-reflectively, i.e., about yourself and what you are like?" Participants indicated how often they had such thoughts using a 7-point scale (1 = *not at all*, 4 = *a moderate amount*, 7 = *very much*).

In all three studies we measured presence of meaning in life using two items that had been used in previous diary studies (e.g., Kashdan and Nezlek, 2012): "How meaningful did you feel your life was today?" and "How much did you feel your life had purpose today?" Each item used a 7-point scale (1 = *not at all*, 7 = *very much*).

In all three studies we measure daily affect based on circumplex model of emotions (e.g., Feldman Barrett and Russell, 1998). For each of 20 emotions participants indicated how strongly they felt each day using a 7-point scale, (1 = *Did not feel this way at all*, 4 = *Felt this way moderately*, 7 = *Felt this way very strongly*). Positive activated emotions (PA) were measured with the items enthusiastic, alert, happy, proud, and excited. Positive deactivated emotions (PD) were measured with the items calm, peaceful, relaxed, contented, and satisfied. Negative activated emotions (NA) were measured with the items stressed, embarrassed, upset, tense, and nervous. Negative deactivated emotions (ND) were measured with the items depressed, disappointed, sluggish, bored, and sad.

In all three studies participants indicated which of 36 events had occurred each day. They used 5-point scale (0 = *did not occur*,

1 = *occurred and not important...*, 4 = *occurred and extremely important*). The events were based on a list proposed by Butler, Hokanson, and Flynn (1994). The events represented four categories, a combination of positive and negative events and social and achievement focused events. This included nine social positive events (e.g., “Spent pleasant or relaxing time with friends/date/family”), eight achievement positive events (e.g., “Made progress toward assignment/task that had a deadline”), nine social negative events (e.g., “Had a disagreement or conflict with a friend, boyfriend/girlfriend, or family member”), and ten achievement negative events (e.g., “Wanted to make progress on an assignment/task which had a deadline, but did not”). Daily event scores were defined as the mean impact score (i.e., the mean rating on the 0–5 scale) for each category of events. See Nezlek and Plesko (2001, p. 210) for a discussion of this issue.

Data screening

The data collection platform we used collected the data and time participants provided their responses. This allowed us to delete responses that were not consistent with the data collection protocol. Daily surveys were included in the final analyses if they were completed between 8 p.m. and noon the following day. We included reports provided the next morning based on research reported by Kahneman, Krueger, Schkade, Schwarz, and Stone (2004) who found that concurrent reports of daily events and emotions were very similar to reports completed on the following day. Entries completed in less than two minutes were dropped from final analyses.

In the first study, two research assistants/authors reviewed the data and removed entries that contained the same answers across multiple reverse coded items. In the second and third studies, as recommended by Meade and Craig (2012), an instructed response item (e.g., “Please select the choice ‘Disagree’ for this question”) was included to identify careless responding. Entries with an incorrect answer to this question were dropped from the analyses.

After eliminating inappropriate daily entries, participants who completed less than 5 days were dropped from the analyses. In sum, 426 of the original 5,968 entries were eliminated (7.1%). A total of 16 individuals participated in 2 studies, and we deleted their entries from the second study. In addition, 13 participants did not complete the GEH. The final sample consisted of 403 participants ($M_{\text{age}} = 18.8$, $SD = 11.4$, 62% women) who completed 5,182 valid diary entries. The average number of valid daily entries was 12.86 ($SD = 1.80$).

Note: The data that were analyzed in this paper are available via the Open Science Framework, <https://osf.io/wa9ej>

Results

Participant characteristics

The 403 participants who completed the GEH were divided into three groups based on their responses to the GEH questions. The first group, labeled vegetarians ($n = 24$), included people who indicated that they excluded all meat and fish from their diets (vegans, $n = 2$; lacto-vegetarians, $n = 4$; and lacto-ovo vegetarians, $n = 18$). The second group, labeled semi-vegetarians ($n = 56$), included people who ate fish or white meat or red meat occasionally (pesco-vegetarians, $n = 14$; semi-vegetarians, $n = 11$; occasional omnivores, $n = 31$). The third group consisted of omnivores ($n = 323$). Although significantly more women than men described themselves as semi-vegetarian (48 of 251 vs 8 of 152) and significantly fewer women than men described themselves as omnivores (186 of 251 vs 137 of 152), the subgroups did not differ in terms of age.

Reliability

The data were conceptualized as a multilevel data structure (days nested within persons), and we analyzed the data using HLM 7.0 (Raudenbush, Bryk, and Congdon 2011). Before conducting the primary analyses, we examined the reliability of each of the daily measures. As recommended by Nezlek (2017), reliabilities were estimated using three level models (items nested within days, days nested within persons).

Analyses of the reliabilities of the original scales measuring reflection, PA, NA, and ND provided estimates that were not as high as desired (.51, .55, .44, and .46, respectively). To improve these reliabilities we deleted items from these scales. For reflection, we deleted the item, “How much today did you think about the nature and meaning of things?” For PA and ND, we deleted two items, and the final measures consisted of enthusiastic, happy, and excited (PA), adjectives sad, depressed, and disappointed (ND). For NA, we deleted one item, embarrassed, leaving nervous, upset, stressed, and tense. The final reliability estimates are presented in table 1. Scores for each measure were calculated as the mean score for the items on each scale. The two negatively valent items on the self-esteem scale were reversed before the mean score was calculated.

Next, we conducted two-level unconditional models (days nested within persons) of each daily measure, i.e., no predictors were entered at either level

Table 1. Descriptive Statistics of Daily Measures.

| Daily measure | Mean | Within-person | Between-person | Reliability |
|-------------------------------------|------|---------------|----------------|-------------|
| Self-esteem | 5.28 | .83 | .84 | .53 |
| Beck's triad ^a | 5.11 | .86 | .75 | .72 |
| Satisfaction with life ^b | 4.82 | 1.22 | .63 | .81 |
| Meaning in life | 4.20 | 1.09 | 1.65 | .86 |
| Rumination ^c | 3.33 | 1.25 | 1.57 | .78 |
| Reflection ^c | 3.59 | 1.15 | 1.59 | .59 |
| Affect PA | 4.18 | 1.20 | .94 | .70 |
| Affect PD | 3.89 | .83 | .89 | .76 |
| Affect NA | 3.19 | 1.09 | .86 | .56 |
| Affect ND | 2.30 | 1.07 | .80 | .64 |
| Social positive events | 1.34 | .34 | .31 | |
| Social negative events | .39 | .14 | .12 | |
| Achievement positive events | .85 | .25 | .18 | |
| Achievement negative events | .64 | .18 | .19 | |

Note: ^a collected only in study 3; samples sizes: 1,599 days, 121 participants. ^b collected only in studies 2 and 3; samples sizes: 3,216 days, 248 participants. ^c collected only in studies 1 and 2; samples sizes: 3,583 days, 282 participants.

of analysis. The model is presented below. In these analyses the outcome measure is y , there were i days nested within j persons, and the variance of r_{ij} is the within- person (level 1) variance, and the variance of u_{0j} is the between-person (level 2) variance.

$$\text{Day level: } y_{ij} = \beta_{0j} + r_{ij}.$$

$$\text{Person level: } \beta_{0j} = \gamma_{00} + u_{0j}.$$

These models estimated the mean and the variance at each level of analysis. The results of these analyses are summarized in [table 1](#). The distribution of variances suggested that there was sufficient between-person variance to examine between-person relationships (i.e., differences in means as a function of dietary habit). Moreover, the means of each of these measures were sufficiently far away from the minimum and maximum so that floor and ceiling effects were not issues.

Differences in daily experience as a function of dietary habit

Differences in daily means as a function of dietary habit were examined using a series of multilevel models in which three dummy-codes, one representing each of the dietary habits (vegetarian, semi-vegetarian, and omnivore), were added to level 2 of the unconditional model presented previously (only the daily mean was estimated). The level 2 intercept was deleted from these analyses which meant that each coefficient represented the mean daily measure for each of the three categories. The means for each dietary category were then compared by examining how constraints on this model equal changed the model fit (Nezlek, 2012; pp. 77–79). The model is presented below.

Day level: $y_{ij} = \beta_{0j} + r_{ij}$.

Person level: $\beta_{0j} = \gamma_{01}^*(\text{vegetarian}) + \gamma_{02}^*(\text{semi-vegetarian}) + \gamma_{03}^*(\text{omni-vore}) + u_{0j}$.

Our primary hypothesis was that the daily experience of vegetarians would be less positive than the daily experience of semi-vegetarians and omnivores. This hypothesis was tested using a constraint on the model of $-2, 1,$ and 1 for vegetarians, semi-vegetarians, and omnivores, respectively (i.e., how does constraining the difference between the mean of semi-vegetarians and omnivores and the score for the vegetarians to 0 change the model fit). The results of these analyses are summarized in table 2.

As can be seen from the data in this table, in terms of 7 of the 13 measures that were collected, the daily experience of vegetarians was less positive (or more negative) than the daily experience of semi-vegetarians and omnivores, and one difference (satisfaction with life) was marginally significant at $p < .10$. Vegetarians had lower self-esteem, lower psychological adjustment, they thought more about themselves, they had stronger negative moods, and they had more negative social events than semi-vegetarians and omnivores (taken together). Follow-up analyses found no significant differences between semi-vegetarians and omnivores on any of these measures.

As series of analyses examined the possibility that the poorer self-esteem, adjustment, and mood of vegetarians was due to differences among the groups in negative social experiences. These analyses found no support for such a possibility. Finally, although women were more likely than men to be semi-vegetarians and were less likely than men to

TABLE 2. Means of Daily Measures as a Function of Dietary Habit.

| Daily measure | Dietary habit | | | V vs. SO | <i>p</i> |
|-------------------------------------|---------------|-----------------|----------|----------|----------|
| | Vegetarian | Semi-vegetarian | Omnivore | | |
| Self-esteem | 4.62 | 5.27 | 5.33 | 14.23 | <.001 |
| Beck's triad ^a | 4.55 | 5.32 | 5.08 | 4.64 | .029 |
| Satisfaction with life ^b | 4.52 | 4.92 | 4.82 | 2.70 | .096 |
| Meaning in life | 3.66 | 4.16 | 4.25 | 4.21 | .037 |
| Rumination ^c | 4.11 | 3.09 | 3.30 | 11.99 | <.001 |
| Reflection ^c | 4.22 | 3.48 | 3.42 | 7.67 | .005 |
| Affect PA | 4.26 | 4.12 | 4.18 | <1 | |
| Affect PD | 3.68 | 3.73 | 3.94 | <1 | |
| Affect NA | 3.79 | 3.13 | 3.15 | 10.30 | .001 |
| Affect ND | 2.90 | 2.07 | 2.30 | 11.36 | .001 |
| Social positive events | 1.35 | 1.39 | 1.33 | <1 | |
| Social negative events | .50 | .32 | .40 | 3.87 | .046 |
| Achievement positive events | .94 | .90 | .84 | <1 | |
| Achievement negative events | .73 | .63 | .64 | <1 | |

Note: Column labeled "V vs. SO" contains the results of the χ^2 test comparing vegetarians to semi-vegetarians and omnivores. Column labeled "*p*" contains the *p* value associated with the χ^2 test. For sample sizes see note in table 1.

be omnivores, the results of analyses that controlled for such sex differences were indistinguishable from the results presented in [table 2](#).

Discussion

This study examined how people's daily experiences varied as a function their dietary habits. As expected, the daily lives of vegetarians were less positive in terms of self-esteem and psychological adjustment and more negative in terms of mood than the daily experiences of semi-vegetarians and omnivores. Moreover, such differences were similar for men and women.

The present results are consistent with a growing body of research that suggests that the psychological and emotional well-being of vegetarians may be lower than that of non-vegetarians (Baines, Powers, and Brown 2007; Burkert et al. 2014; Forestell and Nezelek 2018; Lindeman 2002; Michalak, Zhang, and Jacobi, 2012). Although it may be tempting to assume that following a vegetarian diet leads to decreased well-being, the reverse causal sequence is also possible. For example, Michalak and colleagues have shown that psychological disorders typically precede the adoption of vegetarianism. Thus, it is possible that individuals who are less well-adjusted may try to improve their well-being by adopting vegetarian dietary habits.

Why might vegetarians have lower daily well-being than non-vegetarians?

As noted previously, prior research on the consumption of fruits and vegetables in daily life has found positive relationships between well-being and the consumption of fruits and vegetables. Moreover, the results of the intervention study described by Conner et al. (2017) supports the existence of a causal relationship between the two: Increasing consumption of fruits and vegetables led to increases in well-being in their study, a randomized control design. If this is the case, how can vegetarians, who probably consume larger quantities of fruits and vegetables than non-vegetarians, have lower well-being than non-vegetarians (Agarwal, Mishra, Xu, Levin, Gonzales, and Barnard, 2015)? We believe there are two possible explanations for this, one nutritionally/biologically based and the other social based.

Although we do not know if our vegetarian participants were life-long vegetarians (we did not ask them how long they had followed a meatless diet), it is likely that many adopted a vegetarian diet later in life. Assuming this, it is possible that their lower levels of well-being may have reflected the fact that they had not figured out how to get all the nutrients they needed. Such a possibility is consistent with the conclusion reached by Begdache, Char, Sabounchi, and Kianmehr (2017) in a survey-based study of relationships among food intake, exercise, and well-being. They found

young adults who ate meat three times a week or less were more likely to experience mental distress. According Begdache et al. this is likely because frequent consumption of meat affects the availability of precursors for important neurotransmitters (i.e., serotonin, norepinephrine, and dopamine) that impact mood and mental health. Consistent with this possibility Menzies and Sheeshka (2012) reported that all the former vegetarians in their study believed that following a vegetarian diet impaired their health and well-being. As in the present study, Begdache et al. did not measure participants' dietary history, so it is not possible to know how long the vegetarians in their study had been following a meatless diet.

In parallel, following a vegetarian diet shapes one's personal and social identity (Fox and Ward 2008; Romo and Donovan-Kicken 2012; Rosenfeld and Burrow 2017). Therefore, it is possible that the lower daily well-being of vegetarians (compared to that of non-vegetarians) reflected the fact that vegetarians are members of a social minority, at least in the cultural milieu in which the study was conducted. As a social minority, vegetarians report experiencing teasing and mocking, stereotyping, and everyday acts of discrimination (MacInnis and Hodson 2017; Romo and Donovan-Kicken 2012). Such ostracism can have strong negative effects on daily well-being (e.g., Nezlek et al. 2012). Consistent with this, numerous studies have found that members of social minorities have lower levels of well-being than members of social majorities (e.g., Jetten et al. 2017).

The results of the present study provide some support for such an explanation. Vegetarians reported more negative social events than non-vegetarians. Such negativity could have reflected feelings of exclusion or ostracism. To confirm this explanation, future research should measure how included or excluded people feel each day. The differences in well-being we found are consistent with evidence that vegetarians perceive themselves and are perceived by non-vegetarians as members of a social minority group and because of this their well-being suffers somewhat.

Eating is often a social activity, and vegetarians' status as members of an outgroup could be very salient at meal times. For example, vegetarians may not want to join others at certain types of restaurants (e.g., a steakhouse), a sort of self-exclusion that may carry over into other activities such as what to do after dinner. Given that many celebrities advocate some type of vegetarian diet, non-vegetarians may feel that vegetarians are "putting on airs," and that they are "too good" for non-vegetarians (Romo and Donovan-Kicken 2012). Consistent with this possibility, vegetarians may appear to be unnecessarily demanding when ordering food, perhaps making dining with them less pleasant than it might be if there were not vegetarians. Note that this explanation does not assume that vegetarians believe they are morally superior nor does it assume that vegetarians are more demanding; rather, it assumes that they may be seen as such by non-vegetarians.

Limitations, future directions, and conclusions

Although we believe that our results accurately represent the daily experiences of our present sample, the present sample is too small to be described as representative of the population at large. They were American collegians, and there were relatively few vegetarians. Nevertheless, we think that the present results provide a potentially valuable insight into why vegetarians have been found to have poorer mental health than non-vegetarians despite the fact that a vegetarian diet may be a healthier diet.

It appears that vegetarians' daily lives are less psychological rewarding than the daily lives of non-vegetarians. As suggested above, whether this precedes or is a product of their vegetarian habits is unknown. We have suggested that this could be because they are excluded (or not included as fully) in the social lives of the majority, non-vegetarian society. To our knowledge, the possibility that vegetarianism is associated with a social identity that leads to categorical thinking in terms of in-groups and out-groups has not received much attention in research on dietary habit. For example, Begeny and Huo (2017) found that the mental health of members of minority groups was negatively related to the strength of their in-group identification, presumably because they perceived more discrimination than members whose identification was weaker. The more negative daily experience of vegetarians may reflect such perceptions.

What is not clear is the extent to which vegetarians' more negative daily experience, and by extension their poorer mental health, reflect the behaviors of others toward them or their perceptions of others' behaviors or both. We believe that future research needs to address such issues. The overall poorer mental health of vegetarians found in previous studies combined with the present results indicating that vegetarians have less rewarding daily lives suggest that despite the possible health benefits of a vegetarian diet, following a vegetarian diet has negative psychological consequences. Understanding why this is the case is an important task.

Disclosure statement

No potential conflict of interest was reported by the authors.

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