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Taste and health concerns trump anticipated stigma as barriers to vegetarianism

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ABSTRACT

Meat-eaters report that a number of barriers inhibit them from going vegetarian—for example, perceiving vegetarian diets to be inadequately nutritious, too expensive, unfamiliar, inconvenient, inadequately tasty, and socially stigmatizing. However, research identifying which barriers uniquely predict meat-eaters' openness to going vegetarian is lacking from the current literature. In the present research, accordingly, we conducted a highly powered, preregistered study ($N = 579$) to identify which barriers uniquely predict openness to going vegetarian. We focused specifically on anticipated vegetarian stigma, given recent qualitative evidence highlighting this attitude as an influential barrier. That is, do meat-eaters resist going vegetarian because they fear that following a vegetarian diet would make them feel stigmatized? Being of younger age, more politically conservative, White, and residing in a rural community predicted greater anticipated vegetarian stigma among meat-eaters. Frequentist and Bayesian analyses converged, however, to suggest that anticipated vegetarian stigma was not a significant predictor of openness to going vegetarian. The strongest predictors of openness were perceived tastiness and perceived healthfulness of vegetarian dieting. These factors—but not anticipated stigma—furthermore explained why men (compared to women) and political conservatives (compared to liberals) were particularly resistant to going vegetarian.

1. Introduction

Whether pertaining to the well-being of animals, reduction of chronic disease risk, or environmental sustainability of food systems, there are many compelling reasons that motivate people to go vegetarian (Hoffman, Stallings, Bessinger, & Brooks, 2013; Janssen, Busch, Rödiger, & Hamm, 2016; Rosenfeld, 2018; (Rosenfeld and Burrow, 2017b); Ruby, 2012; Timko, Hormes, & Chubski, 2012). At the same time, dedicated meat-eaters endorse a number of reasons for continuing to eat meat (de Boer, Schösler, & Aiking, 2017; Lea & Worsley, 2003), and former vegetarians cite overlapping motivations for abandoning their plant-based ways and welcoming meat back into their diets (Barr & Chapman, 2002; Menzies & Sheeshka, 2012). Animal, health, and environmental advocacy campaigns are underway to encourage consumers to reduce the amount of meat in their diets, yet resistance to meat reduction continues to be a challenge (Graça, Calheiros, & Oliveira, 2015). The prevalence of vegetarianism remains low: only 5% in the United States (Gallup, 2018), and similarly sparse in most other nations worldwide (European Vegetarian and Animals News Alliance, 2013). Social identity perspectives highlight the importance of considering the transition to vegetarianism as one that alters an individual's sense of self, beyond simply his or her diet (Rosenfeld & Burrow, 2017a), which led us to test a recently raised proposition (Markowski & Roxburgh, 2019) in the current research: Do people resist going vegetarian because they fear that doing so would make them feel stigmatized?

Markowski and Roxburgh's (2019) proposition that meat-eaters view anticipated stigma as a barrier to going vegan, or vegetarian, offers a thought-provoking new perspective. In this sense, it may be that individuals resist going vegetarian because giving up meat—and, consequently, adopting the vegetarian identity that accompanies such a dietary change—would make them feel stigmatized. This perspective is theoretically sound and in alignment with public perceptions of vegetarianism. Vegetarianism is highly stigmatized—that is, socially devalued—in the U.S. (Kellman, 2000; Minson & Monin, 2012), to the degree that stigmatization of vegetarianism has even garnered its own label: "vegaphobia" (Cole & Morgan, 2011). Vegetarian stigma can be influential, as vegetarians often report that following their diets has impacted their social relationships and experiences unfavorably (Rosenfeld, 2018). Many vegetarians, for example, face denigrating remarks aimed at their lifestyle (LeRette, 2014); navigate strained relationships with family, friends, and colleagues (Beardsworth & Keil,

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1992; Chuter, 2018; Hirschler, 2011; Larsson, Rönnlund, Johansson, & Dahlgren, 2003; McDonald, 2000; Twine, 2014); and experience anxiety about disclosing their vegetarian identity to others (MacInnis & Hodson, 2017). Not surprisingly, then, the mere act of publicly proclaiming one's identity as a vegetarian can make one susceptible to stigmatization (LeRette, 2014).

Markowski and Roxburgh's (2019) investigation provides compelling qualitative evidence demonstrating that meat-eaters actively avoid identifying with veganism, specifically, because they fear that doing so would make them feel stigmatized and socially rejected. This finding is in accordance with an emerging line of empirical studies suggesting that the psychological motivation to maintain a positive sense of dietary identity may be an influential determinant of vegetarian eating behaviors (Plante, Rosenfeld, Plante, & Reysen, 2019; Rosenfeld, Rothgerber, & Tomiyama, 2019). Needed for a more comprehensive account of anticipated stigma as a barrier to giving up meat is quantitative research that estimates the unique predictive value of this construct. Combining insights gained from qualitative and quantitative data in tandem can reduce limitations of each method and maximize confidence in the conclusions at which both methods arrive.

The purposes of the current study, accordingly, were to investigate (1) what factors predict anticipated vegetarian stigma among meat-eaters and (2) whether anticipated vegetarian stigma predicts the extent to which meat-eaters are open to going vegetarian. Critical to advancing this second aim beyond existing knowledge was to use a multivariate approach that considered other common barriers that inhibit meat-eaters from going vegetarian. Accordingly, we drew upon influential conceptual models of food choice (Furst, Connors, Sobal, Bisogni, & Falk, 2000; Sobal & Bisogni, 2009; Steptoe, Pollard, & Wardle, 1995), along with empirical research on what barriers people report preventing them from going vegetarian (Corrin & Papadopoulos, 2017; de Boer, Schösler, & Aiking, 2017; Ensaff et al., 2015; Kildal & Syse, 2017; Lea, Crawford, & Worsley, 2006; Lea & Worsley, 2003; Mullee et al., 2017; Pohjolainen, Vinnari, & Jokinen, 2015) and on what reasons former vegetarians report for returning to eating meat (Barr & Chapman, 2002; Menzies & Sheeshka, 2012), in order to identify five core barriers which we investigated in tandem with anticipated stigma. These barriers included perceptions that following a vegetarian diet would be (1) inadequately nutritious, (2) too financially expensive, (3) unfamiliar, (4) inconvenient, and (5) inadequately tasty. As this is the first quantitative investigation of anticipated vegetarian stigma, to our knowledge, it is important to understand the role of stigma in the context of other probable barriers that inhibit meat-eaters from going vegetarian. That is, we sought to test whether stigma was a unique predictor over and above perceptions of a vegetarian diet's healthfulness, financial cost, familiarity, convenience, and tastiness.

Identifying anticipated stigma as a unique predictor of openness to going vegetarian would not only inform conceptual models of food choice but also offer insights into why some groups of people are particularly averse to going vegetarian. Several studies, for example, have found effects of gender and political orientation: Men are more resistant to vegetarianism than women are (Forestell & Nezlek, 2018; Pfeiler & Egloff, 2018; Pohjolainen et al., 2015; Rosenfeld, 2018; Ruby, 2012) and conservatives are more resistant than liberals are (Hodson & Earle, 2018; Pfeiler & Egloff, 2018; White, Seymour, & Frank, 1999; Wrenn, 2017; Črnič, 2013). An unexplored explanation for these links is that men and conservatives anticipate feeling more stigmatized from the prospect of being a vegetarian, as going vegetarian may be met with less social approval within their social networks. Vegetarianism is perceived to be a feminine behavior practiced by politically correct, liberal, environmentalist hippies (Minson & Monin, 2012), thus making it susceptible to social devaluation among men and conservatives. The greater stigmatization that men and conservatives anticipate that going vegetarian will impose upon them may in turn reduce their openness to going vegetarian.

In a highly powered, preregistered study, we tested whether anticipated vegetarian stigma predicts openness to going vegetarian over and above perceptions of a vegetarian diet's healthfulness, financial cost, familiarity, convenience, and tastiness. We hypothesized that anticipated vegetarian stigma would negatively predict openness to going vegetarian. Through *post hoc* analyses, we tested two additional research questions. First, what factors explain why some meat-eaters anticipate more vegetarian stigma than other meat-eaters do? And second, which theorized barriers to vegetarianism explain why men and political conservatives, respectively, are more resistant to going vegetarian than women and liberals?

2. Method

This study's sample size, materials, hypotheses, and analyses were preregistered via the Open Science Framework (OSF) (see https://osf.io/pgjq6/?view_only=e6c867af7ff44cc8a6b65d451f751e22 for preregistration).

2.1. Participants

We determined *a priori* to recruit 600 meat-eating participants for this study. Power analyses indicated that 600 participants would provide 90% power to detect small effect sizes of $r = .13$ for bivariate correlations and $f^2 = 0.03$ for multiple regression in a model with 6 predictors at a significance threshold of $p = .05$.

A total of 736 participants from the United States were recruited to take part in this study via Amazon Mechanical Turk (MTurk). First, after excluding 136 participants who reported that they were vegetarian/vegan, we retained 600 meat-eaters. Second, after excluding 21 participants who failed an attention check in the survey, 579 participants (55% female) between the ages of 19 and 81 ($M_{age} = 42.36$, $SD = 13.43$) were retained for analyses.

2.2. Materials

We developed the multi-item scales used in this study—scales for anticipated stigma, perceived tastiness, perceived cost, perceived convenience, familiarity, perceived healthfulness, and openness to going vegetarian—using several existing measures of attitudes toward food choice, including (Steptoe et al., 1995) Food Choice Questionnaire; (Arbit, Ruby, and Rozin's, 2017) Meaning of Food in Life Questionnaire; (Rosenfeld and Burrow's, 2018) Dietarian Identity Questionnaire; and scales used in Piazza et al., 2015, along with findings detailed in Markowski and Roxburgh's (2019) qualitative study on anticipated vegan stigma. First, we consulted two colleagues with expertise in vegetarianism, social identity, stigma, and eating behavior to assess the face validity of our initial items. Upon revising our items based on their feedback, we preregistered the full initial versions of our scales, along with psychometric validation criteria to be implemented in the current study. Namely, as specified in our preregistration form, we evaluated each scale's items' factor loadings and dropped any poorly performing items (i.e., items with loadings less than 0.6) and retained the remaining well-performing items (i.e., items with loadings greater than or equal to 0.6) to comprise the final scale for each variable. We determined 0.6 as our threshold based on guidelines outlined by influential reviews on factor analysis (e.g., Ferguson & Cox, 1993; Matsunaga, 2010). For each variable's scale, we conducted an exploratory factor analysis using maximum likelihood factoring and varimax rotation to extract one factor from all initial items for that scale. Factor analyses indicated that all items for all of our scales—except for our scale of familiarity—loaded at values of 0.6 or higher and thus were retained. One item for familiarity loaded at 0.53 and was dropped prior to computing this variable.

Responses to all items across all multi-item scales listed below—i.e., all measures except for political orientation—ranged from 1 (Strongly Disagree) to 7 (Strongly Agree).

Anticipated vegetarian stigma. Anticipated stigma (α = .95) was assessed by the following 10 items: "If I were to become a vegetarian, people would judge me negatively," "If I were to become a vegetarian, people would think I am weird," "If I were to become a vegetarian, my friends and/or family would make fun of me," "I would feel ashamed or embarrassed to tell someone that I am a vegetarian," "If I were to become a vegetarian, people would think less of me," "If I were to become a vegetarian, people I know would think I am not normal," "If I were to become a vegetarian, people would treat me differently in a bad way," "If I were to become a vegetarian, people I am close to would not be okay with it," "If I were to become a vegetarian, my friends and/or family would reject me," and "It would be socially unacceptable for me to eat a vegetarian diet."

Perceived tastiness of vegetarian dieting. Perceived tastiness (α = .90) was assessed by the following 7 items: "If I were to become a vegetarian, my diet wouldn't have enough variety" (reverse-scored), "Meat is the most delicious part of a meal" (reverse-scored), "Vegetarian meals are bland and boring" (reverse-scored), "Meat tastes too good to ever give up" (reverse-scored), "If I were to become a vegetarian, I would miss the taste of meat" (reverse-scored), "Vegetarian meals are delicious," and "Vegetarian meals can easily taste better than meat-containing meals."

Perceived financial cost of vegetarian dieting. Perceived cost (α = .95) was assessed by the following 5 items: "Eating a vegetarian diet is too expensive," "If I were to become a vegetarian, my budget would suffer," "Eating a vegetarian diet would cost more money than a non-vegetarian diet," "Vegetarian meals are cheap" (reverse-scored), and "Vegetarian meals are easily affordable" (reverse-scored).

Perceived convenience of vegetarian dieting. Perceived convenience (α = .86) was assessed by the following 6 items: "Following a vegetarian diet takes extra time and effort" (reverse-scored), "Following a vegetarian diet is inconvenient" (reverse-scored), "If I were to become a vegetarian, it would be hard to prepare meals" (reverse-scored), "It is hard to find vegetarian options easily when eating out" (reverse-scored), "Vegetarian meals can be cooked very easily," and "It would be easy to buy vegetarian meals in the grocery stores I usually go to."

Familiarity with vegetarian dieting. Familiarity (α = .89) was assessed by the following 4 items: "I can't imagine what vegetarian meals would look like" (reverse-scored), "I am unfamiliar with what a proper vegetarian diet would look like" (reverse-scored), "Vegetarian meals are familiar to me," and "I wouldn't have any idea how to prepare a proper vegetarian meal" (reverse-scored).

Perceived healthfulness of vegetarian dieting. Perceived healthfulness (α = .93) was assessed by the following 8 items: "If I were to become a vegetarian, I wouldn't get all the nutrients I need" (reverse-scored), "Meat is an important part of a healthy diet" (reverse-scored), "A diet that contains meat is healthier than a diet without meat" (reverse-scored), "Vegetarian diets do not provide enough protein" (reverse-scored), "Switching to a vegetarian diet would make me healthier," "Vegetarian diets are very nutritious," "It is necessary to eat meat in order to be healthy" (reverse-scored), and "A healthy diet requires at least some meat" (reverse-scored).

Openness to going vegetarian. Openness to going vegetarian (α = .94) was assessed by the following 7 items: "I am open to eating a vegetarian diet," "I can imagine myself giving up meat, "I want to eat a vegetarian diet," "I am committed to eating meat" (reverse-scored), "I would never give up eating meat" (reverse-scored), "I can't imagine eating a diet without meat" (reverse-scored), and "I am open to going vegetarian."

Political orientation. Political orientation was assessed by the question, "On the following scale from 1 (very liberal) to 7 (very conservative), how would you rate your political views?" This variable was reverse-scored, such that 1 corresponded to very conservative and 7 to very liberal.

2.3. Procedure

First, participants consented to take part in this research. Then, participants completed measures of anticipated stigma, perceived tastiness, perceived cost, perceived convenience, familiarity, and perceived healthfulness in a randomized order. Next, participants completed the measure of openness to going vegetarian. Lastly, participants completed demographic questions, in which the measure of political orientation was embedded. Participants received $0.50 in compensation. This study protocol (IRB#19–000791) was approved by the Institutional Review Board at the University of California, Los Angeles, and informed consent was obtained from all study participants.

3. Results

Data and analysis scripts are available at https://osf.io/fk2eh/?view_only=b41d39488cca4b3a8fb2df0d4fbef429.

3.1. Predictors of anticipated vegetarian stigma (exploratory)

Given that the current study is the first to assess anticipated vegetarian stigma, we reasoned it would be beneficial to provide a test of which factors predict anticipated stigma—that is, why might some meat-eaters expect following a vegetarian diet to be more stigmatizing than other meat-eaters expect it to be?

Accordingly, we conducted a hierarchical ordinary least squares (OLS) multiple regression to test which variables uniquely predicted anticipated stigma. In the first step, we regressed anticipated stigma on demographics variables, which included political orientation, gender, race, income, age, and community of residence (i.e., urban, suburban, rural). In the second step, we regressed anticipated stigma on these demographics along with vegetarian barriers, which included perceived tastiness, perceived healthfulness, perceived cost, familiarity, and perceived convenience of vegetarian dieting. Factors predicting greater anticipated stigma, in order of largest to smallest effect size, were younger age, lower perceived convenience of vegetarian dieting, more conservative political orientation, White racial status, and residence in a rural community (see Table 1).

Table 1
Multiple regression predicting anticipated vegetarian stigma. For race, White was coded as 1 and all other races as 2. For community, urban and suburban residences were coded as 1 and rural residence as 2. Significant predictors are displayed in bold font.

Predictor	*b*	SE *b*	*β*	R^2	*p*
Step 1				.11	
Age	**−0.02*****	**0.00**	**−0.21**		**< .001**
Gender	0.02	0.10	0.01		.832
Race	**−0.35****	**0.12**	**−0.12**		**.006**
Income	−0.06	0.04	−0.06		.169
Community	**0.35****	**0.13**	**0.12**		**.006**
Political Orientation	**−0.14*****	**0.03**	**−0.20**		**< .001**
Step 2				.17	
Age	**−0.01*****	**0.00**	**−0.16**		**< .001**
Gender	0.04	0.10	0.02		.648
Race	**−0.32****	**0.12**	**−0.11**		**.009**
Income	−0.04	0.04	−0.04		.340
Community	**0.27***	**0.12**	**0.09**		**.031**
Political Orientation	**−0.09****	**0.03**	**−0.13**		**.001**
Perceived Tastiness	−0.05	0.06	−0.05		.426
Perceived Financial Cost	0.02	0.04	0.03		.567
Familiarity	−0.01	0.04	−0.01		.778
Perceived Convenience	**−0.15****	**0.05**	**−0.15**		**.006**
Perceived Healthfulness	−0.07	0.05	−0.07		.219

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 2
Bivariate correlations between predictor variables and openness to going vegetarian.

Predictor	Mean (SD)	Correlation (*r*) with Openness	*p*
Anticipated Stigma	2.44 (1.21)	-.26	< .001
Perceived Tastiness	3.57 (1,31)	.81	< .001
Perceived Financial Cost	4.08 (1.55)	-.26	< .001
Familiarity	4.62 (1.43)	.38	< .001
Perceived Convenience	3.47 (1.21)	.38	< .001
Perceived Healthfulness	4.00 (1.34)	.71	< .001

3.2. Predictors of openness to going vegetarian

Frequentist analyses (preregistered). Bivariate correlations indicated that lower anticipated stigma, higher perceived tastiness, lower perceived cost, higher familiarity, higher perceived convenience, and higher perceived healthfulness were associated with greater openness to going vegetarian, all of which were consistent with our hypotheses (see Table 2).

For the main test of our hypothesis, we conducted an OLS multiple regression to test which variables uniquely predicted openness to going vegetarian—that is, which barriers uniquely explain why some meat-eaters are more resistant to giving up meat than other meat-eaters are? Most importantly for the current study, is anticipated stigma a unique barrier? Assumptions of OLS regression were met, and variance inflation factors (VIFs) for all predictors were less than 3, thus indicating that multicollinearity was not problematic (Akinwande, Dikko, & Samson, 2015). Results indicated that anticipated stigma was not a significant predictor of openness (see Table 3). Factors predicting greater openness to going vegetarian, in order of largest to smallest effect size, were higher perceived tastiness, higher perceived healthfulness, and higher perceived financial cost.

Bayesian analyses (*post hoc*). Our preregistered analysis plan specified only the above frequentist analyses. In order to complement preregistered frequentist analyses and to provide greater insights into which barriers predict openness to going vegetarian—particularly given our unanticipated null frequentist finding for anticipated stigma—we conducted Bayesian analyses *post hoc*. Two advantages of Bayesian analyses are that evidence can support either an alternative *or* null hypothesis and that results can be interpreted along a continuum of strength of evidence. Frequentist analyses, in contrast, entail a dichotomous decision to either reject or fail to reject a null hypothesis. Thus, for the current study, Bayesian analyses are particularly useful for testing whether our data support the null conclusion that anticipated vegetarian stigma is not a predictor of openness to going vegetarian.

First, we conducted a series of model comparison tests using the lmBF function within the BayesFactor package in R in order to compute Bayes Factors (BFs) for each of our six predictors. Results indicated substantial evidence for no predictive value of anticipated stigma (BF = 0.23), extremely strong evidence for positive predictive values of perceived tastiness (BF = 7.43 x 10^{49}) and perceived healthfulness (BF = 1.89 x 10^{8}), weak evidence for no predictive value of perceived cost (BF = 0.52), substantial evidence for no predictive value of perceived convenience (BF = 0.11), and strong evidence for no predictive value of familiarity (BF = 0.09).

Second, we conducted a Bayesian multiple regression analysis using the launch_shinystan function within the rstanarm package in R in order to compute 95% credible intervals for the coefficients of each of our six predictors. Results indicated that we can conclude with 95% certainty that true population coefficients for predicting openness to going vegetarian are between −0.11 and 0.01 for anticipated stigma, 0.69 and 0.87 for perceived tastiness, 0.21 and 0.37 for perceived healthfulness, 0.00 and 0.12 for perceived cost, −0.12 and 0.04 for perceived convenience, and −0.09 and 0.04 for familiarity.

Table 3
Multiple regression predicting openness to going vegetarian. Significant predictors are displayed in bold font.

Predictor	*b*	SE *b*	*β*	R^2	*p*
				.68	
Anticipated Stigma	−0.05	0.03	−0.04		.110
Perceived Tastiness	**0.78*****	**0.05**	**0.66**		**< .001**
Perceived Financial Cost	**0.06***	**0.03**	**0.06**		**.042**
Familiarity	−0.02	0.03	−0.02		.427
Perceived Convenience	−0.04	0.04	−0.03		.301
Perceived Healthfulness	**0.29*****	**0.04**	**0.25**		**< .001**

**p* < .05; ***p* < .01; ****p* < .001.

Mediation analyses (*post hoc*). In devising the current study, we were principally interested in identifying whether anticipated vegetarian stigma is a unique barrier that predicts openness to going vegetarian. We had hypothesized that anticipated stigma would inversely predict openness and, accordingly, we were reasoning that this effect could potentially explain why some groups of people are particularly averse to going vegetarian. Specifically, we were interested in testing this notion among two groups that prior research has identified as being resistant to vegetarianism: (1) men and (2) political conservatives. Although anticipated stigma did not emerge as a unique predictor of openness, our study included five other barrier variables that could still provide insights into this topic. Each of these six total barriers exhibited significant bivariate associations with openness, but only perceived tastiness, healthfulness, and cost were significant unique predictors of openness in multivariate analyses. Considering each of these six variables in isolation, thus, may misrepresent their unique value for explaining links between demographics (e.g., gender and political orientation) and openness. Accordingly, we tested two research questions: First, which barriers uniquely explain why men are more resistant to going vegetarian than women are? And second, which barriers explain why conservatives are more resistant than liberals are? We tested these questions through multiple-mediation models using path analysis via structural equation modeling with the lavaan package in R.

For our first model, we tested anticipated stigma, perceived tastiness, perceived healthfulness, perceived cost, familiarity, and perceived convenience as potential mediators of the link between gender and openness to going vegetarian. The total indirect effect was significant, $b = 0.28$, $SE = 0.09$, $p = .002$, 95% CI [0.10, 0.47], indicating that accounting for all six of these mediating factors together significantly reduced the effect of gender on openness (i.e., openness being higher for women than for men). The only factor that significantly uniquely mediated the link between gender and openness—that is, the factor that uniquely explained why women were more open to going vegetarian than men were—was perceived tastiness, $b = 0.28$, $SE = 0.09$, $p = .001$, 95% CI [0.11, 0.45]. Neither anticipated stigma ($b = 0.00$, $SE = 0.01$, $p = .606$, 95% CI [-0.01, 0.01]), nor perceived healthfulness ($b = 0.00$, $SE = 0.03$, $p = .906$, 95% CI [-0.07, 0.06]), nor perceived cost ($b = 0.01$, $SE = 0.01$, $p = .168$, 95% CI [-0.01, 0.03]), nor familiarity ($b = 0.00$, $SE = 0.00$, $p = .803$, 95% CI [0.00, 0.00]), nor perceived convenience ($b = 0.00$, $SE = 0.00$, $p = .959$, 95% CI [-0.01, 0.01]) were significant unique mediators.

For our second model, we tested anticipated stigma, perceived tastiness, perceived healthfulness, perceived cost, familiarity, and perceived convenience as potential mediators of the link between political orientation and openness to going vegetarian. The total indirect effect was significant, $b = 0.20$, $SE = 0.03$, $p < .001$, 95% CI [0.14, 0.25], indicating that accounting for all six of these mediating factors together significantly reduced the effect of political orientation on openness (i.e., openness being higher for liberals than for conservatives). The two factors that significantly uniquely mediated the link between political orientation and openness—that is, the two factors that uniquely explained why liberals were more open to going vegetarian than conservatives were—included perceived tastiness, $b = 0.14$, $SE = 0.02$,

$p < .001$, 95% CI [0.10, 0.19], and perceived healthfulness, $b = 0.06$, $SE = 0.01$, $p < .001$, 95% CI [0.04, 0.09]. Neither anticipated stigma ($b = 0.01$, $SE = 0.00$, $p = .152$, 95% CI [0.00, 0.02]), nor perceived cost ($b = -0.01$, $SE = 0.00$, $p = .056$, 95% CI [-0.01, 0.00]), nor familiarity ($b = -0.01$, $SE = 0.01$, $p = .268$, 95% CI [-0.02, 0.01]), nor perceived convenience ($b = 0.00$, $SE = 0.00$, $p = .213$, 95% CI [-0.01, 0.00]) were significant unique mediators.

4. Discussion

The current findings provide a number of important insights into what barriers predict how open meat-eaters are to going vegetarian. First, as indicated by bivariate tests, meat-eaters who were more resistant (i.e., less open) to going vegetarian tended to anticipate more vegetarian stigma and to perceive vegetarian diets as less tasty, more expensive, less familiar, less convenient, and less healthful. The correlation between anticipated stigma and openness to going vegetarian ($r = -.26$) was of slightly smaller than medium effect size (Cohen, 1988). Multivariate analyses indicated that perceiving vegetarian diets as less tasty, less healthful, and less expensive uniquely predicted that meat-eaters would be more resistant to going vegetarian. However, anticipated stigma was not a unique predictor, nor were familiarity or perceived convenience.

Frequentist and Bayesian analyses converged to suggest that anticipated vegetarian stigma is not a significant predictor of openness to going vegetarian. Preregistered frequentist results failed to find support for anticipated stigma as a significant predictor, and *post hoc* Bayesian results provided further evidence to support the null hypothesis that, over and above all other barriers tested, anticipated stigma is unrelated to openness. Comparing standardized regression coefficients, we observed that perceived tastiness predicted openness 17 times more strongly and perceived healthfulness 6 times more strongly than anticipated stigma did. Thus, when it comes to understanding why some meat-eaters are more resistant to vegetarianism than other meat-eaters, perceptions of a vegetarian diet's tastiness and healthfulness are far more informative than anticipated stigma. This notion supports (Corrin and Papadopoulos', 2017) review, which highlighted the enjoyment of eating meat and health concerns about giving up meat as two of the leading barriers to adopting a vegetarian diet.

Our null finding on the unique link between anticipated stigma and openness to going vegetarian calls for further research to unravel what phenomena Markowski and Roxburgh's (2019) qualitative findings reflect. Markowski and Roxburgh's (2019) findings, we believe, provide a compelling account that meat-eaters do indeed distance themselves from the prospect of going vegetarian due to vegetarianism's stigmatizing nature. A possibility to explain Markowski and Roxburgh's (2019) findings in tandem with those of the current study is that meat-eaters' proclamations that going vegetarian would be stigmatizing may reflect *post hoc* justifications for their eating meat, rather than genuine barriers they have to giving up meat which presumably *precede* food choice. In this sense, it may be that committing to eating meat causes people to report that going vegetarian would be stigmatizing—as opposed to the reverse effect whereby viewing vegetarianism as stigmatizing would make meat-eaters more committed to eating meat.

This view aligns with the New Look model of cognitive dissonance theory (Cooper & Fazio, 1984). Many meat-eaters experience cognitive dissonance due to the morally troublesome nature of eating meat yet simultaneously caring about animals, and a means of alleviating this dissonance is to reject vegetarianism as a feasible dietary pattern (Loughnan, Bastian, & Haslam, 2014; Rothgerber, 2014a). Dissonance may also stem from grappling with the health and/or environmental effects of eating meat. In endorsing the notion that going vegetarian would be stigmatizing, meat-eaters may be making an attempt to reduce dissonance by convincing themselves that they simply cannot go vegetarian if they wish to avoid facing social rejection and impaired interpersonal relationships. By this, we theorize that meat-eaters might report that vegetarianism is stigmatizing as an *effect*, rather than a *cause*, of their commitment to eating meat (i.e., their resistance to going vegetarian). Additional research is needed to test this perspective.

A *post hoc*, secondary aim of this study was to explain gender and political orientation differences in openness to going vegetarian. We had theorized that greater anticipated stigma among men and conservatives would explain why they are more resistant to going vegetarian than women and liberals. Just as in our main regression predicting openness, mediation analyses revealed no support for the explanatory power of anticipated stigma. These analyses did, however, provide two important insights. First, we found that perceived tastiness of vegetarian dieting uniquely mediated the link between gender and openness. Second, both perceived tastiness and perceived healthfulness uniquely mediated the link between political orientation and openness. Thus, a potential reason why men are more resistant to vegetarianism than women are may be that men believe that they would not enjoy the taste of a diet devoid of meat. This concern about taste may also be a reason as to why conservatives are more resistant to vegetarianism than liberals are, as may the concern that a vegetarian diet is nutritionally insufficient. Our data suggest that targeting these barriers, over other barriers, offers the most promise for making vegetarianism more appealing to members of these groups. Attempts to destigmatize vegetarianism, to the contrary, likely do not carry as much potential for this aim.

Nevertheless, our data leave open the possibility that if anticipated stigma were in fact to influence meat-eaters' willingness to go vegetarian, it may do so at a more implicit level of cognition, rather than an explicit one with which individuals consciously engage and directly report. Feelings of stigma, that is, may affect one's affective experience in subtle ways that can still influence behavior. Further research employing behavioral paradigms would be useful to test this question in ways that overcome inherent limitations of survey research.

Although perceiving vegetarianism to be more expensive was associated with lower openness to going vegetarian in a bivariate test, this perception was associated with *greater* openness in a multivariate analysis accounting for other common barriers to vegetarianism. It may be that viewing vegetarianism as expensive makes the diet more appealing to some individuals, as following a financially taxing diet may signal social status (Kraus, Piff, & Keltner, 2011). However, given the very small β value (0.06) and the close-to-null p-value (0.042), we refrain from fully interpreting this finding.

Strengths of the current research methodology include its high statistical power, use of preregistration, and use of Bayesian analyses to complement inferences drawn from frequentist results for our main hypothesis. Furthermore, to our knowledge, this study provides not only the first quantitative assessment of anticipated vegetarian stigma but also the first multivariate test of what barriers predict meat-eaters' resistance to going vegetarian. A limitation of this research is that our variable reflecting openness to going vegetarian was a self-reported intention, rather than a behavioral outcome. Future research would benefit from implementing longitudinal studies that track changes in individuals' eating behaviors over time as well as experimental studies that test causal effects of priming certain demographic traits and barriers on individuals' attitudes toward vegetarianism.

Although anticipated vegetarian stigma does not seem to have direct relevance for openness to going vegetarian, it did exhibit significant ties to demographic variables: Specifically, exploratory analyses suggest that meat-eaters who are younger, more politically conservative, White, and residing in a rural community are particularly likely to expect that adopting a vegetarian diet would lead them to feel stigmatized. Investigating the construct of anticipated vegetarian stigma may offer useful insights into understanding vegetarianism within the context of these characteristics. Such investigations can illuminate how core attributes that comprise one's sense of self influence how one construes one's food choices. Nevertheless, when considering individual differences in openness to going vegetarian, taste and health concerns trump anticipated stigma.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appet.2019.104469.

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