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Promoting Meat Reduction Among Men

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of
Philosophy in Psychology

by

Daniel Lawrence Rosenfeld

2024

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ABSTRACT OF THE DISSERTATION

Promoting Meat Reduction Among Men

by

Daniel Lawrence Rosenfeld

Doctor of Philosophy in Psychology

University of California, Los Angeles, 2024

Professor Ayako Janet Tomiyama, Chair

Meat consumption is stereotypically associated with masculinity, and this stereotype presents a barrier to meat reduction among men. Compared to women, men tend to eat more meat and to be more resistant to vegetarianism. When men do decide to give up meat, they are more likely to become the targets of social devaluation than are women. Eschewing meat may undermine feelings of and portrayals of manhood, whereas eating meat may provide men with a sense and image of traditional masculinity. Through two experimental studies conducted via online surveys, this dissertation investigated two strategies for promoting meat reduction among men by framing meat reduction as a masculine act. In Study 1, I examined whether exposure to endorsements of vegetarianism by men would increase men's openness to reducing their meat intake. In Study 2, I tested whether informing men about the link between meat consumption and erectile dysfunction would increase their openness. Null findings from these two studies suggest that neither strategy is effective at shifting men's openness to meat reduction, highlighting a need for future research to test other ways of making meat reduction more appealing to men.

The dissertation of Daniel Lawrence Rosenfeld is approved.

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Rosenfeld, D. L., Brannon, T. N., & Tomiyama, A. J. (2023). Racialized perceptions of vegetarianism: Stereotypical associations that undermine inclusion in eating behaviors. *Personality and Social Psychology Bulletin*, 49, 1601-1614.

- Rosenfeld, D. L.** (2023). Masculinity and men's resistance to meat reduction. *Psychology of Human-Animal Intergroup Relations*, 2, e9645.
- Rosenfeld, D. L.**, et al. (2022). Psychological science in the wake of COVID-19: Social, methodological, and metascientific considerations. *Perspectives on Psychological Science*, 17, 311-333.
- Rothgerber, H., & **Rosenfeld, D. L.** (2021). Meat-related cognitive dissonance: The social psychology of eating animals. *Social and Personality Psychology Compass*, 15, e12592.
- Rosenfeld, D. L.**, Rothgerber, H., & Tomiyama, A. J. (2020). Mostly vegetarian, but flexible about it: Investigating how meat-reducers express social identity around their diets. *Social Psychological and Personality Science*, 11, 406-415.
- Tomiyama, A. J., Kawecki, N. S., **Rosenfeld, D. L.**, et al. (2020). Bridging the gap between the science of cultured meat and public perceptions. *Trends in Food Science and Technology*, 104, 144-152.
- Rosenfeld, D. L.** (2018). The psychology of vegetarianism: Recent advances and future directions. *Appetite*, 131, 125-138.
- Rosenfeld, D. L.**, & Burrow, A. L. (2018). Development and validation of the Dietarian Identity Questionnaire: Assessing self-perceptions of animal-product consumption. *Appetite*, 127, 182-194.
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Chapter 1: Introduction

Reducing current rates of meat consumption offers one of the most promising strategies for improving environmental sustainability and an effective way of benefitting human health (Willett et al., 2019; Wynes & Nicholas, 2017). Widespread transitions toward vegetarian diets would lower greenhouse gas emissions; curtail uses of land, water, and energy; and reduce incidences of chronic diseases like heart disease and type 2 diabetes (Tilman & Clark, 2014; Willett et al., 2019). Yet the overwhelming majority of people around the world still eat meat. In the United States, for example, vegetarians represent only 4% of the population (Gallup, 2023), with resistance to vegetarianism being higher among men than women (Rosenfeld, 2018). Understanding this gender gap more concretely and identifying novel ways of encouraging men to eat less meat may support behavior change efforts with maximal efficacy.

Meat Consumption as a Traditionally Masculine Behavior

The thought of giving up meat poses a threat to many men's familiar senses of manhood and masculinity (Bogueva et al., 2022). In a survey of men who eat meat, participants condemned men who practice vegetarianism, describing vegetarian men as “lacking testosterone and braveness” and as a “huge disappointment for the rest of the real masculine men,” even so far as saying that vegetarian men “should be prosecuted for their unmanly behaviors” (Bogueva et al., 2020, p. 36-39).

An abundance of evidence suggests that meat is strongly associated with masculinity and vegetarianism with femininity (Adams, 1990; Mycek, 2018; Rogers, 2008; Rothgerber, 2013; Rozin et al., 2012; Sobal, 2005)—but why is it the case that meat is so strongly gendered? One reason why people may associate meat with masculinity and vegetarianism with femininity stems from the inherent dominance humans gain over other animals from meat consumption.

Masculinity in Western cultures is characterized by strength and dominance (Adams, 1990; Schrock & Schwalbe, 2009), and the hunting, killing, and butchering of animals for meat may signify these connotations of virility (Sobal, 2005; Roos et al., 2001). According to Adam's (1990) feminist-vegetarian critique, male dominance over animals is intertwined with patriarchal dominance over women. Eating meat can make men feel like "real men" (Bogueva et al., 2017; Rothgerber, 2013; Sobal, 2005), symbolically subjugating women and bolstering men's social standings (Adams, 1990). Compared to women, men tend to exhibit greater social dominance orientation (Pratto et al., 1997; Whitley, 1999), and this stronger preference for power-based social hierarchy has been linked to humans' biases against non-human animals (Dhont et al., 2014). Hunting has historically been a masculine tradition characterized by dominance over nature, aggression, and the ability to successfully provide for one's family (Fiddes, 1991; Loo, 2001; Sobal, 2005). In modern times, in the armed forces where health is of the highest importance, 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 within that community (Kildal & Syse, 2017). Essentially, meat may equate to masculinity because it satiates the need for social dominance, enabling feelings of superiority to animals and to other people while affirming core values of traditional masculinity (e.g., strength, power) and its corresponding social roles (e.g., provider for one's family).

Differences in moral attitudes toward animals between men and women, thus not surprisingly, may also play a role in the gendered nature of meat consumption and avoidance. Compared to men, women express greater support for animal rights and welfare (Broida et al., 1993; Eldridge & Gluck, 1996; Graça et al., 2018; Knight et al., 2004; Kruse, 1999) and are less

likely to endorse speciesism: the notion that some species of animals are less worthy of moral consideration than others are (Caviola et al., 2019). As such, it is sensible to observe that gender differences exist in how people respond to feelings of meat-related cognitive dissonance, in feeling tension between one's moral concerns for animals and one's behaviors of eating animals as meat (Loughnan et al., 2010). One strategy for alleviating meat-related dissonance is to dissociate meat from its animal origins (Rothgerber & Rosenfeld, 2021). Upon being exposed to the life of an animal raised for meat—and thus, upon exposure, entering a state of heightened dissonance—men report increases in meat attachment whereas women report decreases in meat attachment (Dowsett et al., 2018). This divergence aligns with other findings suggesting that men are more likely than women are to justify eating meat directly and unapologetically (Rothgerber, 2013). Women, meanwhile, are more inclined to justify eating meat indirectly by dissociating meat from its animal origins and refraining from thinking about farm animals' experiences. The use of more direct justification strategies among men may serve to maintain feelings of masculinity by explicitly endorsing human dominance over animals and embracing these traits central to traditional masculinity (Kildal & Syse, 2017; Rothgerber, 2013).

Aside from social dominance and moral implications, another reason why people may associate meat with masculinity and vegetarianism with femininity is that meat is a calorie-dense, rich, protein-heavy food, whereas vegetarianism tends to be a lighter, more healthful eating pattern. Vegetarians are generally viewed as health-conscious individuals (Hartmann et al., 2018), and eating healthful foods is seen as feminine whereas eating unhealthful foods is seen as masculine (Vartanian et al., 2007). In Western cultures, women are generally expected to eat light and healthful food whereas men are more expected to eat heavy and hearty food, which may explain why vegetables—as a healthful, low-calorie, low-fat food—are more commonly

consumed among women (Bradbury & Nicolaou, 2012; Roos et al., 2001). This stems from social pressures for women to be thin and to follow calorie-restrained diets (Botta, 1999). Furthermore, women may be socialized to see themselves as more fragile than men are (Boskind-White & White, 1986), which may explain why perceptions exist that meat may be too heavy for women to consume and that vegetables are “wimpy” foods (Sobal, 2005). Social expectations of gender and eating manifest themselves perhaps particularly strongly in individuals’ behaviors in romantic contexts: When on a date, men are less concerned about eating lightly than are women (Laner & Ventrone, 2000). Men are also less likely to view vegetables as an acceptable dating food compared to women (Amiraiian & Sobal, 2009). Simply put, men may feel as if consuming a vegetarian diet—one that is light and healthful—is incongruent with maintaining a masculine identity, making vegetarianism a socially discouraged behavior for them.

Social identity theory, which posits that individuals form collective identities around the groups to which they belong (Tajfel & Turner, 1985), offers a useful perspective for conceptualizing why gendered stereotypes about meat could influence how someone thinks about their own and others’ meat-eating behaviors. Gender is a form of social identity grounded in roles related to masculinity and femininity, and violating the roles of one’s gender—such that men ought to be masculine, and women to be feminine—may make one susceptible to social rejection and identity threat (Goffman, 1976; West & Zimmerman, 1987). Maintaining a socially permissible gender display may thus call for individuals to engage in impression management (Goffman, 1959), deliberately acting in line with gender norms in order to appease others’ expectations of them. To this point, role theory proposes that people do not possess a stable trait-like sense of gender; rather, people exhibit and construct gender through social interaction (West

& Zimmerman, 1987). Gender operating as a highly visible social identity also may also instigate common group processes, motivating individuals further to behave in ways typical of their gender in order to satisfy needs for in-group distinctiveness (Leonardelli et al., 2010; Tajfel & Turner, 1985). That is, from a social identity lens, to act feminine as a man or masculine as a woman may threaten the perceived legitimacy of one's identification with one's gender group, thus undermining one's self-esteem (Oakes et al., 1998; Wood et al., 1997). Threats to one's gender identity may be particularly strong for masculinity among men, given that manhood—more so than womanhood—is perceived to be a precarious state (Vandello & Bosson, 2013; Vandello et al., 2008). Through performing acts like eating meat and resisting vegetarianism, men may seek to prove the legitimacy of their masculine identity.

Gender Differences in 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; Schösler et al., 2015), are less likely to be vegetarian (Forestell & Nezelek, 2018; Gallup, 2023; Pfeiler & Egloff, 2018; Ruby, 2012), and are less willing to reduce their meat intake (Cramer et al., 2017; Pohjolainen et al., 2015; Hayley et al., 2015). Moreover, relative to women, men have stronger implicit associations of meat and healthfulness (Love & Sulikowski, 2018), express greater emotional attachments to meat (Graça et al., 2015), and are less likely to report that meat consumption is unhealthy or environmentally harmful (Mullee et al., 2017). Even controlling for a wide range of factors such as meat consumption frequency and dietary motivation, gender persists as a unique predictor of how open individuals are to embracing vegetarianism: Being a man robustly predicts less openness (Rosenfeld et al., 2020). These gender differences are so pronounced that among people who self-identify as vegetarian, men are more likely than are women to report that

they in fact still might eat meat on occasion (Rosenfeld, 2020). For men, the belief that eating meat equates to being masculine may pose a barrier to meat reduction (Kildal & Syse, 2017).

Greater conformity to traditional gender roles predicts lower openness to vegetarianism among men, but not among women (Rosenfeld & Tomiyama, 2021), suggesting that between-gender differences in resistance to vegetarianism may be due to gender role norms among men rather than norms among women. That is, men for whom traditional masculinity matters most report the most resistance to vegetarianism. This finding aligns with other research reporting that experiencing threats to their masculinity leads men to report stronger attachments to eating meat, whereas gender identity threats have no effect on attachment to meat consumption among women (Nakagawa & Hart, 2019).

Gender differences exist not only in how people think about their *own* decisions to eschew meat but also in how they think about *other* people's decisions to eschew meat. As meat is associated with masculinity and vegetarianism with femininity, it is unsurprising that men are judged more negatively for being a vegetarian than women are (MacInnis & Hodson, 2017). Evidence exists to suggest that negative judgments of vegetarian men stem directly from the perception that being a vegetarian prevents a man from fulfilling a masculine gender role (Timeo & Suitner, 2018). For example, men who eat plant-based diets are judged to be less masculine and more feminine than are men who eat meat-based diets (Bradbury & Nicolaou, 2012; Ruby & Heine, 2011). Men report facing greater hostility from their families, and greater teasing in general, about becoming vegetarian than do women (Sedupane, 2017; Torti, 2017). To practice vegetarianism as a man carries a different meaning than it does to do so as a woman: It constitutes a traditional gender role violation.

Motivations for Meat Reduction

Considerations of gender roles may help to clarify not only how men and women differ in their rates of openness to vegetarianism but also in their reasons for choosing vs. not choosing vegetarian diets. Of all major barriers people report for resisting vegetarian diets, the perception that vegetarian food tastes bad is the most powerful predictor of a person's openness to becoming a vegetarian (Rosenfeld & Tomiyama, 2020). Some evidence suggests that beliefs about the precariousness of manhood (as noted above) may be associated with a man's perceptions of vegetarianism's taste. Men vary in the extent to which they view manhood as being precarious, and a man's perception of manhood as precarious may be associated with the extent to which he values traditionally masculine qualities such as strength and toughness (DiMuccio & Knowles, 2021; Vandello & Bosson, 2013). Perceptions of vegetarianism as lacking masculinity may thus make meat reduction especially threatening to men high in precarious manhood. Indeed, one study found that the more strongly that men feel that their manhood is precarious, the more likely they are to believe that meat alternatives taste bad (Rosenfeld et al., in press). By eating meat alternatives or by becoming vegetarian, men risk feeling and being seen as less masculine, as they give up a behavior (meat consumption) through which they can habitually display gender and satisfy masculinity norms. Believing that vegetarian food tastes bad may be one way for men to socially distance themselves from vegetarianism in order to avoid masculinity threat. In research examining the motivations people have for eating meat, men (vs. women) have been found reliably to endorse more strongly the ideas that meat consumption tastes good, is a natural human behavior, and is a socially normal behavior to practice (Hopwood et al., 2021).

In contrast to the barriers that deter people from vegetarianism—among which taste concerns reign supreme—the motivations people have for embracing vegetarianism tend to center on concerns about animal rights, personal health, and/or environmental sustainability

(Hopwood et al., 2020; Rosenfeld, 2018). Some evidence suggests that men and women may construe these motivations differently.

Among people who are currently vegetarian, women are more likely than are men to report that they feel prosocially motivated to eschew meat (Rosenfeld, 2020). The most prototypical prosocial vegetarian motivations surrounding animal and environmental concerns thus may be more influential among women's decisions to avoid meat than they are for men's decisions. Some convergent evidence for this finding stems from other research documenting higher willingness among women (vs. men) to consider embracing vegetarianism out of concerns for animals, whereas men may be more likely to consider health benefits as a compelling reason for vegetarianism (Rosenfeld & Tomiyama, 2021). Other convergent evidence comes from observations that highly conforming to traditional gender roles among men is associated with more resistance to embracing vegetarianism for environmental reasons specifically, suggesting that feelings of traditional masculinity may seem incongruent with the decision to reduce one's meat intake out of environmental concern (Rosenfeld & Tomiyama, 2021). At the same time, though, this same study found that highly conforming to traditional gender roles among women was associated with more openness to embracing vegetarianism for health reasons in particular, thus cautioning against assumptions that health motivations align purely with masculine roles whereas animal or environmental motivations align purely with feminine roles.

Gaps in the Literature

The current dissertation investigated a new motivation for embracing vegetarianism among men: the desire to feel masculine. Whereas masculinity threat poses a barrier to meat reduction among men presently, I propose that strategically reframing vegetarianism as a

masculine eating behavior could overcome this barrier and turn it into a motivating factor—one that could incentivize men to eat less meat.

Evidently, men face distinct social psychological barriers to reducing their meat intake. Nevertheless, there is a lack of research testing meat-reduction interventions among men specifically (cf. Amiot et al., 2018), and a recent review on meat reduction by Kwasny et al. (2022) identified that little is known about how gender may moderate the effects of interventions on behavior change. Existing studies reporting gender moderation have found that interventions tend to reduce meat consumption more effectively among women than men (Jalil et al., 2020; Sorensen et al., 2005); humanizing animals promotes more negative feelings toward meat more strongly for women than it does for men (Dowsett et al., 2018); and depicting meat as having come from a baby (vs. adult) animal decreases appetite for meat more strongly for women than for men (Piazza et al., 2018).

Existing evidence suggests that it is challenging to persuade people, especially men, to eat less meat. Indeed, people face many barriers to reducing their meat intake, with the strongest barriers being concerns about the tastiness and healthfulness of vegetarian consumption (Rosenfeld & Tomiyama, 2020). For men, anxieties about feeling less masculine upon giving up meat seem to pose a unique barrier on top of other common concerns.

In this dissertation, as an alternative either to focusing on common barriers like taste or health or to emphasizing ethical or environmental benefits of meat reduction, I suggest that a targeted approach that frames vegetarianism as a masculine eating behavior may be effective at encouraging men to eat less meat. Across two studies, I tested two strategies for aligning vegetarianism with masculinity.

Chapter 2: Study 1

A first potential strategy for aligning vegetarianism with masculinity is to disseminate endorsements of vegetarianism made by men, rather than women. Consumer behavior is an identity-driven process (Oyserman, 2009; Reed et al., 2012), and people may feel more favorable toward vegetarian eating behaviors when they perceive vegetarian consumption as representative of their social identity (Rosenfeld et al., 2023). Social identity theory posits that people derive a part of their self-concept from perceived group affiliations (Turner & Oakes, 1986), and people tend to make consumption decisions that are consistent with their in-group while avoiding decisions that align with undesired out-groups (Berger & Heath, 2007; Escalas & Bettman, 2005; White & Dahl, 2006). These identity-based motivations at times may present barriers to positive behavior change. The perception that a consumption behavior is indicative of femininity undermines consumption interest among men (White & Dahl, 2006), likely because a man's manhood is easily threatened and called into question when he engages in gender-inconsistent behaviors (Bosson & Michniewicz, 2013; Vandello & Bosson, 2013; Vandello et al., 2008).

Reframing behaviors that are traditionally associated with an out-group so that they seem aligned with a person's in-group, however, may be promising for counteracting barriers and using identity as a motivator for change. Research in environmental psychology, for example, has found that men are more resistant to sustainable consumption than are women but that using masculine branding can lessen men's resistance (Brough et al., 2016). Similar effects may occur for meat reduction. Endorsements of vegetarianism from men (vs. women) may signal that men can maintain a sense and image of masculinity without consuming meat. Exposure to these men's endorsements of vegetarianism may thus reduce perceptions of masculinity threat tied to meat reduction and in turn reduce men's resistance to eating less meat.

Accordingly, in Study 1, I randomly assigned a sample of men to view an infographic in which vegetarianism was endorsed by people who were either (a) men or (b) women; in a neutral control condition, for comparative purposes, a third group of men did not view any slideshow. Outcome variables included openness to reducing meat intake and interest in learning more about vegetarian recipes. I tested the hypothesis that, compared to endorsements of vegetarianism by women, endorsements by men would cause participants to report higher openness to reducing their meat intake and higher interest in learning more about vegetarian recipes. I also conducted an exploratory test of the interaction effect between traditional masculinity and endorsement on each outcome. While I preregistered this exploratory hypothesis without formally specifying a direction for it, I expected that effects would be amplified among men who score higher in traditional masculinity.

Method

This study was preregistered at https://osf.io/846fy/?view_only=092c4bd208ec423880b0ffef0d2c2d02.

Participants

I obtained 80% power to detect small-medium differences between each of the study conditions. A power analysis using G*Power 3.1 revealed that a total sample of 528 participants would provide 80% power to detect small-medium effects of $d = 0.30$ at $\alpha = .05$, two-tailed. Accordingly, accounting *a priori* for any data exclusions due to participants' failed attention checks, I recruited a total of 600 participants to ensure adequate power. All participants were meat-consuming men living in the U.S., recruited via Prolific. Participants were prescreened automatically through Prolific (without participants' awareness) to ensure that they (a) self-identify as men and (b) do not self-identify as vegetarian or vegan. Participants reported their

gender and vegetarian/vegan status in the survey to ensure accurate prescreening and participant retention. I continued data collection until the sample included 600 participants who self-identified as men and did not self-identify as vegetarian/vegan. Three participants failed an attention check in the survey, leaving the remaining 597 participants ($M_{\text{age}} = 39.43$, $SD = 12.81$) in the final sample for analyses.

Materials

Endorsement of Vegetarianism. Through two versions of an infographic, I manipulated whether a message endorsing vegetarianism depicts (a) men or (b) women. Each infographic presented three photos of people celebrating vegetarian foods as well as the following text: “In recent years, vegetarianism has become more and more popular. Studies show that eating a vegetarian diet is good for your health. Eating a vegetarian diet is also better for the environment.” The two infographics are shown in Figures 1 and 2.

Figure 1. Endorsement of Vegetarianism by Men in Study 1.



Figure 2. Endorsement of Vegetarianism by Women in Study 1.



Openness to Meat Reduction. Openness to reducing one’s meat intake was assessed by the following 4-item scale ($\alpha = .95$), adapted from Rosenfeld et al. (2023): “I am open to eating less meat,” “I can imagine myself reducing my meat intake someday,” “I would like to try eating more vegetarian meals,” and “I want to start eating less meat in the near future.” Responses ranged from 1 (strongly disagree) to 7 (strongly agree).

Interest in Vegetarianism. Participants chose between receiving a free online cookbook on either vegetarian meals or classic American meals. This decision-making task assessed participants’ level of interest in learning more about vegetarianism, such that choosing the vegetarian cookbook indicated higher interest and the American cookbook indicated lower interest.

Traditional Masculinity. Traditional masculinity was assessed by an adaptation of Kachel et al.’s (2016) traditional masculinity/femininity scale, which was comprised of the

following 6 items ($\alpha = .91$): “I consider myself as...” “Ideally, I would like to be...” “Traditionally, my interests would be considered as...” “Traditionally, my attitudes and beliefs would be considered as...” “Traditionally, my behavior would be considered as...” and “Traditionally, my outer appearance would be considered as...” Responses ranged from 1 (not at all masculine) to 7 (very masculine).

Procedure

After consenting to take part in this study, participants completed the measure of traditional masculinity and then were randomly assigned to one of three study conditions: (1) a men condition, in which participants viewed the slideshow of men endorsing vegetarianism before completing the two outcome measures (openness to reducing meat intake and interest in learning more about vegetarian recipes); (2) a women condition, in which participants viewed the slideshow of women endorsing vegetarianism before completing outcome measures; and (3) a control condition, in which participants completed outcome measures at the start of the study, not having viewed any slideshow. At the end of the survey, participants completed demographic questions.

Results and Discussion

Data and analysis scripts are available at

https://osf.io/3bnyp/?view_only=a9f8f7422b364f3586db0d699063d901.

Traditional masculinity scores ranged from 1 to 7, with $M = 5.22$ and $SD = 1.00$.

First, I conducted a one-way ANOVA testing the effect of condition on openness to meat reduction, focusing on the pairwise comparisons planned *a priori* in my preregistration plan. The first planned pairwise comparison revealed that openness to reducing meat intake was lower for participants in the men condition ($M = 2.94$, $SD = 1.70$) than for participants in the women

condition ($M = 3.29$, $SD = 1.81$), $t(594) = 2.03$, $p = .043$, 95% CI [-0.70, -0.01], $d = 0.20$, which was an effect in the opposite direction as hypothesized. The second planned pairwise comparison revealed that there was no significant difference in openness to reducing meat intake between participants in the men ($M = 2.94$, $SD = 1.70$) and control conditions ($M = 3.07$, $SD = 1.71$), $t(594) = 0.74$, $p = .458$, 95% CI [-0.48, 0.21], $d = 0.08$, providing no support for my hypothesis that endorsements of vegetarianism by men would increase openness. The third planned pairwise comparison, which was set as an exploratory test, revealed that there was no significant difference in openness to reducing meat intake between participants in the women condition ($M = 3.29$, $SD = 1.81$) and control conditions ($M = 3.07$, $SD = 1.71$), $t(594) = 1.29$, $p = .197$, 95% CI [-0.12, 0.57], $d = 0.12$.

Second, I analyzed the data for the other outcome variable in this study: interest in vegetarianism (i.e., likelihood of selecting the vegetarian cookbook). I conducted a chi-square test testing the effect of condition on interest, focusing on the pairwise comparisons planned *a priori* in my preregistration plan. The first pairwise comparison revealed there was no significant difference in interest in vegetarianism among participants in the men condition (27% interest) compared to participants in the women condition (35% interest), $\chi^2(1) = 2.49$, $p = .115$. The second pairwise comparison revealed there was no significant difference in the interest in vegetarianism among participants in the men condition (27% interest) compared to participants in the control condition (27% interest), $\chi^2(1) = 0.00$, $p = .968$. The third planned pairwise comparison, which was set as an exploratory test, revealed that there was no significant difference in interest in vegetarianism between participants in the women condition (35% interest) and control conditions (27% interest), $\chi^2(1) = 2.40$, $p = .121$. These results provided no

support for my hypothesis that endorsements of vegetarianism by men would increase interest in vegetarianism.

Third, I conducted an OLS regression to test for the interaction effect between condition and traditional masculinity on openness to meat reduction as well as a logistic regression to test for the interaction effect between condition and traditional masculinity on interest in vegetarianism. In the OLS regression, the interaction effect was not significant, $b = -0.05$, $SE = 0.09$, 95% CI [-0.22, 0.11], $\beta = -0.03$, $t(593) = 0.64$, $p = .524$, indicating that differences in openness to meat reduction between conditions did not differ depending on participants' levels of traditional masculinity. Likewise, in the logistic regression, the interaction effect was not significant, $b = -0.01$, $SE = 0.11$, 95% CI [-0.23, 0.21], $OR = 0.99$, $z(595) = 0.09$, $p = .931$, indicating that differences in interest in vegetarianism between conditions did not differ depending on participants' levels of traditional masculinity.

Overall, the results of Study 1 provided null and even contradictory evidence for my hypotheses that men would be more receptive to meat reduction if they are exposed to endorsements of vegetarianism made by men. Only one test I conducted was statistically significant, and this test found that that exposure to women endorsing vegetarianism caused participants to be more open to meat reduction compared to exposure to men endorsing vegetarianism. While significant, this effect was notably small in size. All other tests in this study yielded null results, suggesting that when men are exposed to messages endorsing vegetarianism, the gender of the individuals in those messages might not have any reliable or meaningful influence on how inclined men are toward reducing their meat intake.

More thorough discussion of this Study 1's results will follow in the Conclusion section of this dissertation. Now, I turn to Study 2, where I investigated a novel angle from which pro-vegetarian messages could come: the benefits of vegetarianism for male sexual performance.

Chapter 3: Study 2

In Study 1, I focused on the message that vegetarianism is beneficial for general health and the environment, aiming to frame vegetarianism as more in line with masculine roles by depicting men endorsing vegetarianism. Given that this approach was unsuccessful, perhaps images of men alone are not sufficient to increase receptivity to vegetarianism, and addressing masculinity more directly is necessary. An alternative strategy for aligning vegetarianism with masculinity is to shift focus away from general health or environmental concerns, and instead to provide information on the benefits of vegetarianism for male sexual performance.

Having erectile dysfunction can threaten a man's sense of masculinity (Potts, 2000); accordingly, having the ability to reduce erectile dysfunction risk through diet may be compelling for many men. High levels of meat consumption—particularly for processed and red meats—are associated with atherosclerosis and cardiovascular disease (Riccardi et al., 2022; Richi et al., 2015), and the arterial system that provides blood to the heart is the same system that provides blood flow for erections. Indeed, erectile dysfunction is regarded as an early warning sign of cardiovascular disease, as both conditions reflect manifestations of the same systemic disorder (Gandaglia et al., 2014). Compared to non-vegetarian diets, vegetarian diets are associated with improved blood flow, lower atherosclerosis, reduced incidence of cardiovascular disease, and—thus not surprisingly—reduced incidence of erectile dysfunction (Appleby & Key, 2016; Carto et al., 2022; Lin et al., 2001; Lu et al., 2021; Riccardi et al., 2022; Tusso et al., 2015). Animal advocacy organizations have even touted improved sexual performance for men as a tool for promoting vegetarianism in advertisements (PETA, 2010). As the desire to avoid erectile dysfunction may be a strong motivator for behavior change among men, educating men on the potential risks of excessive meat consumption for developing erectile dysfunction and the

potential benefits of meat reduction for improved erectile function offers a promising strategy for encouraging behavior change.

It remains unknown how men respond to messages discussing connections between meat consumption and erectile function. It is also unclear whether the erectile function messaging may have maximal persuasiveness when presented as an alternative to vs. in tandem with messages touting broader health and environmental benefits of meat reduction. Accordingly, in Study 2, I conducted a 2 x 2 experiment to examine the effects of erectile function and health/environmental messages independently and concurrently. I randomly assigned a sample of men to read a message about the benefits of vegetarianism for either erectile function, health and the environment, or both erectile function and health/environment; in a final condition of the factorial design, participants did not read any message. As in Study 1, outcome variables included openness to reducing meat intake and interest in learning more about vegetarian recipes.

I hypothesized that each type of message—erectile function and health/environmental messages—would have a significant main effect on each outcome, causing participants to report higher openness to reducing their meat intake and higher interest in learning more about vegetarian recipes. I conducted an exploratory test of the interaction effect between the two messages on each outcome, setting no directional hypothesis. Given that age is positively associated with erectile dysfunction (Selvin et al., 2007), I also conducted exploratory tests of the interaction effect between age and messages on each outcome. As in Study 1, I conducted exploratory tests of the interaction effect between traditional masculinity and messages on each outcome as well. While I preregistered these exploratory hypotheses without formally specifying directionality, I expected that effects would be amplified among men who are of older age and who score higher in traditional masculinity.

Method

This study was preregistered at

https://osf.io/gmxjz?view_only=c2284c972b8d41859cb76fe938388d28.

Participants

I recruited a total of 800 participants to provide 80% power to detect small main effects of $d = 0.20$ at $\alpha = .05$, two-tailed. Protocols for participant recruitment resembled those of Study 1: All participants were meat-consuming men living in the U.S., recruited via Prolific.

Participants were prescreened automatically through Prolific (without participants' awareness) to ensure that they (a) self-identify as men and (b) do not self-identify as vegetarian or vegan.

Participants reported their gender and vegetarian/vegan status in the survey to ensure accurate prescreening and participant retention. I continued data collection until the sample included 800 participants who self-identified as men and did not self-identify as vegetarian/vegan. Three participants failed an attention check in the survey, leaving the remaining 797 participants in the final sample for analyses. Participant age ranged from 18 to 80 ($M_{\text{age}} = 39.47$, $SD = 12.80$).

Materials

Erectile Function Message. The following text provided information on meat consumption and erectile function: "Several studies have found that eating less meat may improve erectile function. In fact, research shows that vegetarians are less likely to experience erectile dysfunction. Eating a high amount of meat can lead to clogged arteries and restricted blood flow, which makes it more difficult to get and maintain a full erection. Eating less meat, meanwhile, can increase blood flow and improve sexual performance."

Health/Environment Message. The following text provided information on meat consumption and health/environmental implications: "Several studies have found that eating less

meat may improve physical health and help the environment. Research shows that vegetarian diets can lower the risk for heart disease and reduce greenhouse gas emissions. When people eat a lot of meat, they are more likely to develop high cholesterol levels and leave a higher environmental footprint. Eating less meat, meanwhile, can make people healthier and be more environmentally sustainable.”

Measures. Openness to meat reduction ($\alpha = .96$), interest in vegetarianism (single item), and traditional masculinity ($\alpha = .92$) were assessed as in Study 1.

Procedure

After consenting to take part in this study, participants completed the measure of traditional masculinity and then were randomly assigned to complete one of the four study conditions: erectile function message, health/environment message, both messages, or control (no message). In the erectile function condition, participants read the erectile function message before completing outcome measures (openness to reducing meat intake and interest in learning more about vegetarian recipes). In the health/environment condition, participants read the health/environment message before completing outcome measures. In the both messages condition, participants read both the erectile function message and the health/environment message before completing outcome measures. In this both messages condition, participants first read the health/environment message, followed by the erectile function message, so as to present a more familiar message first before extending it with a more novel appeal. To transition smoothly from the health/environment message to the erectile function message, the first sentence of the erectile function message in this condition was modified to read, “In addition to these benefits, other studies have found that eating less meat may also improve erectile function.” Lastly, in the control condition, participants completed outcome measures at the start

of the survey, in the absence of having read any message. At the end of the survey, participants completed demographic questions.

Results and Discussion

Data and analysis scripts are available at

https://osf.io/v2dah/?view_only=dcaeb9d743244b13995925a6527fc6e1.

Traditional masculinity scores ranged from 1 to 7, with $M = 5.23$ and $SD = 1.00$.

First, a two-way ANOVA revealed no significant interaction effect between the erectile function message and the health/environment message on openness to meat reduction, $F(1, 793) = 0.60$, $p = .438$, $\eta_p^2 = 0.00$. Therefore, as planned in preregistration, I proceeded to examine main effects. The main effect of the erectile function message was not significant, $F(1, 793) = 1.64$, $p = .201$, $\eta_p^2 = 0.00$, nor was the main effect of the health/environment message, $F(1, 793) = 0.05$, $p = .816$, $\eta_p^2 = 0.00$. Examining cell means, there were very small differences in openness to meat reduction between conditions: control condition $M = 3.13$, $SD = 1.76$; ED condition $M = 3.39$, $SD = 1.78$; health/environment $M = 3.20$, $SD = 1.78$; both-messages condition $M = 3.26$, $SD = 1.67$. The largest difference between conditions was between the ED and control conditions, and even this (nonsignificant) difference was at a very small at $d = 0.15$.

Second, turning to the other outcome variable—interest in vegetarianism (i.e., likelihood of selecting the vegetarian cookbook)—a logistic regression revealed no significant interaction effect between the erectile function message and the health/environment message on interest, $b = -0.07$, $SE = 0.30$, 95% CI [-0.66, 0.53], $OR = 0.94$, $z(792) = 0.22$, $p = .825$. Therefore, as planned in preregistration, I proceeded to examine main effects. The main effect of the erectile function message was not significant, $b = 0.00$, $SE = 0.22$, 95% CI [-0.43, 0.43], $OR = 1.00$, $z(792) = 0.01$, $p = .995$, nor was the main effect of the health/environment message, $b = 0.21$, $SE = 0.21$,

95% CI [-0.21, 0.63], $OR = 1.24$, $z(792) = 0.99$, $p = .320$. Examining cell proportions, there were very small differences between conditions: the control condition showed 31% interest in vegetarianism; ED condition 31% interest; health/environment 36% interest; and both-messages condition 34% interest.

Third, I tested for moderation by traditional masculinity. An OLS regression revealed that the three-way interaction effect between traditional masculinity x erectile function message x health/environmental message on openness to meat reduction was not significant, $b = 0.15$, $SE = 0.24$, 95% CI [-0.33, 0.62], $\beta = 0.04$, $t(789) = 0.60$, $p = .548$, nor were the two-way interaction effects between traditional masculinity and erectile function message, $b = 0.01$, $SE = 0.16$, 95% CI [-0.31, 0.33], $\beta = 0.00$, $t(789) = 0.03$, $p = .974$, or between traditional masculinity and health/environmental message, $b = -0.13$, $SE = 0.17$, 95% CI [-0.46, 0.20], $\beta = -0.08$, $t(789) = 0.78$, $p = .435$. Turning to the other outcome variable—interest in vegetarianism—a logistic regression revealed that the three-way interaction effect between traditional masculinity x erectile function message x health/environmental message on interest in vegetarianism was not significant, $b = -0.35$, $SE = 0.31$, 95% CI [-0.96, 0.25], $OR = 0.70$, $z(792) = 1.15$, $p = .250$, nor were the two-way interaction effects between traditional masculinity and erectile function message, $b = 0.11$, $SE = 0.21$, 95% CI [-0.31, 0.52], $OR = 1.11$, $z(792) = 0.50$, $p = .615$, or between traditional masculinity and health/environmental message, $b = 0.20$, $SE = 0.21$, 95% CI [-0.21, 0.61], $OR = 1.22$, $z(792) = 0.94$, $p = .345$. These null effects suggest that the effects of erectile function and health/environmental messages on openness to meat reduction and interest in vegetarianism did not differ depending on participants' levels of traditional masculinity.

Fourth, I tested for moderation by age. An OLS regression revealed that the three-way interaction effect between age x erectile function message x health/environmental message on

openness to meat reduction was not significant, $b = 0.00$, $SE = 0.02$, 95% CI [-0.04, 0.03], $\beta = 0.00$, $t(789) = 0.25$, $p = .801$, nor were the two-way interaction effects between age and erectile function message, $b = -0.01$, $SE = 0.01$, 95% CI [-0.03, 0.02], $\beta = 0.00$, $t(789) = 0.53$, $p = .595$, or between age and health/environmental message, $b = 0.00$, $SE = 0.01$, 95% CI [-0.03, 0.02], $\beta = -0.03$, $t(789) = 0.31$, $p = .757$. Turning to the other outcome variable—interest in vegetarianism—a logistic regression revealed that the three-way interaction effect between age x erectile function message x health/environmental message on interest in vegetarianism was not significant, $b = 0.00$, $SE = 0.02$, 95% CI [-0.05, 0.04], $OR = 1.00$, $z(792) = 0.19$, $p = .849$, nor were the two-way interaction effects between age and erectile function message, $b = 0.00$, $SE = 0.02$, 95% CI [-0.04, 0.03], $OR = 1.00$, $z(792) = 0.17$, $p = .866$, or between age and health/environmental message, $b = 0.00$, $SE = 0.02$, 95% CI [-0.03, 0.03], $OR = 1.00$, $z(792) = 0.10$, $p = .924$. These null effects suggest that the effects of erectile function and health/environmental messages on openness to meat reduction and interest in vegetarianism did not differ depending on participant age.

Overall, the results of Study 2 provided no evidence for my hypothesis that messages about the benefits of vegetarianism for erectile function would cause men to be more receptive to meat reduction. Messages about erectile function did not make men more open to meat reduction compared to a control condition, nor did they make men more interested in learning about vegetarianism. Interestingly, there were no main effects of the health/environmental message, which indicates that a message about the health and environmental benefits of vegetarianism did not shift how receptive participants were to meat reduction or vegetarianism. This null effect is surprising, as there is previous evidence to suggest that exposing people to messages about health or environmental reasons for vegetarianism is effective at increasing intentions to eat less

meat (Krpan & Houtsma, 2020; Lim et al., 2021; Rosenfeld et al., 2023). The null effects in the current study may suggest that my study materials were not strong enough to evoke a response in participants' attitudes.

Accordingly, I can cautiously infer from this study that messages about erectile function are no more effective—nor are they any more ineffective—at making men more receptive to vegetarianism than are health/environmental messages, though it would be worth examining this matter further in follow-up research using other study materials. Perhaps study materials that are more visually engaging, rather than text-based, could have a stronger effect, especially given that concerns about sexual performance can cause anxiety (McCabe, 2005) and visual stimuli would likely be more emotionally evocative than purely text-based stimuli.

Chapter 4: Conclusion

In this dissertation, I investigated two strategies for promoting meat reduction among men who eat meat. Each of these strategies sought to frame meat reduction as a masculine act. In Study 1, I hypothesized that men would be more receptive to meat reduction upon viewing other men endorse vegetarianism. However, I found no support for this hypothesis, and in fact even found one piece of evidence suggesting that, surprisingly, endorsements of vegetarianism by women (vs. men) may be more effective at promoting meat reduction among men. In Study 2, I hypothesized that informing men about the risks of meat consumption for erectile dysfunction and the potential benefits of meat reduction for erectile function would make them more receptive to meat reduction. However, I found no support for this hypothesis. Moreover, all effects were invariant across participant age and participants' strength of identification with traditional masculinity. Overall, the findings of these two studies provide no evidence to suggest that these two methods of framing meat reduction as a masculine act cause men to be any more inclined to eat less meat.

There are many implications of these findings as well as potential directions for future research to clarify these effects and to identify more promising ways to reduce meat intake among men. First, there is a need to understand these findings in light of the stereotypes people hold about meat and masculinity. There is a compelling body of existing evidence highlighting that meat is widely associated with masculinity (Adams, 1990; Rothgerber, 2013; Rozin et al., 2012; Sobal, 2005) and that men eat more meat, are less likely to be vegetarian, and are less open to cutting back on meat than women are (Rosenfeld, 2018). Scholars have suggested that men's beliefs that meat consumption is a masculine act may directly limit their willingness to reduce their meat intake (Kildal & Syse, 2017). Indeed, masculinity threats have been shown to increase

the extent to which men feel emotionally attached to eating meat (Nakagawa & Hart, 2019), highlighting the direct relevance of meat-masculinity beliefs for men's dietary intentions. The logic is sound from previous research to expect that changing the way men think about meat—specifically, by enabling men to view meat reduction as a behavior consistent with satisfying masculine gender roles—could reduce their resistance to meat reduction and even make them favorable to vegetarianism. However, the findings of my studies did not substantiate this line of reasoning. There are a few reasons for why this may be as well as important inferences I might make from these findings.

A first inference from the current findings would be to question the underlying theoretical argument that men's beliefs about meat and masculinity influence their willingness to reduce their meat intake. While invalidating this argument could explain my studies' null results, I do not believe my studies provide the needed evidence to deny the legitimacy of this argument, especially in light of previous research aforementioned, which creates a fairly strong prior supporting this argument. Rather, I suspect that my studies may have had limitations with internal validity that could explain their null results and make sense of the gap.

In Study 1, I reasoned that the gender of the person endorsing vegetarianism in a message could influence how men feel about meat reduction. This is a basic idea derived from views on identity-based motivation (Oyserman, 2009): People tend to make consumption decisions that are consistent with the norms and ideals of their in-group (Berger & Heath, 2007; Escalas & Bettman, 2005; White & Dahl, 2006). The logic was that if men could see vegetarianism as something that other men support, then they may be more receptive to meat reduction themselves. However, the results of Study 1 did not support my hypothesis. Men in that study who viewed other men endorsing vegetarianism were no more willing to cut back on meat, nor

were they any more interested in learning more about vegetarianism, than were men who viewed women endorsing vegetarianism or a control condition. What was further notable is that this null effect was invariant across participant traditional masculinity: Whether the men in Study 1 reported identifying strongly or weakly with traditional masculinity, the gender of the people in the pro-vegetarian message had no reliable effect on men's attitudes toward meat reduction.

One implication of Study 1 is that when men view pro-vegetarian messages, the gender of the individuals in those messages might not influence men's responses to a significant degree. That highly masculine-identifying men did not feel more favorable toward meat reduction upon seeing men endorse vegetarianism yields compelling evidence to suggest that varying the gender of a pro-vegetarian messenger may be irrelevant to men's sentiments toward vegetarianism, as highly masculine-identifying men should in theory be most sensitive to masculinity threats imposed by eating in a way they may view as unmanly. The thought of giving up meat can pose a masculinity threat (Bogueva et al., 2022), and seeing women endorse vegetarianism should theoretically have heightened that threat. In my other work, I have found that traditional masculinity is negatively associated openness to vegetarianism among men (Rosenfeld & Tomiyama, 2021). Yet seeing women endorse vegetarianism made men in the current study *more* open to meat reduction, albeit at a fairly small effect size. Taken together, these points of data raise questions about when and how men may—or may not—resist vegetarianism because they see it as a masculinity threat.

The finding that showing men images of women endorsing vegetarianism made men more open to reducing their meat intake, compared to showing men images of other men endorsing vegetarianism, is provocative. This finding—which was the only significant finding observed in Study 1—was surprising to me, as it was in the opposite direction as hypothesized. A

potential explanation for this result is that the men in Study 1 may have found themselves more attentive to the message depicting women than the message depicting men, and perhaps this heightened attentiveness drove the effect. While I did not assess participant sexual identity in this study, I can assume that most of the participants were heterosexual, as it was a fairly standard sample of U.S. adult men from Prolific. The people—both the men and the women—depicted in Study 1’s materials would likely be considered by most raters to be fairly attractive on the whole, and it could be that, on average, the men in the women endorsement condition in Study 1 found themselves more visually drawn to the displayed message compared to the men in the men endorsement condition. Indeed, evidence from marketing research has found that advertisements depicting attractive women can yield more engagement due to sexual appeal (Stewart et al., 2023). While I do not have any empirical basis for this line of theorizing in my work—as I did not assess how much time participants spent on each page in my surveys—this could be a potential avenue for future research to examine. However, a concern with this approach is that sexualizing and objectifying women may simply validate toxic notions of patriarchy, masculinity, and social hierarchy. Thus, even if this approach were to be effective at shifting men’s dietary attitudes or behaviors, it may come with serious social and moral downsides and therefore be unadvisable.

In Study 2, I reasoned that men’s concerns about erectile function could be a unique and compelling focus for encouraging men to eat less meat. Having erectile dysfunction is known to be a potential masculinity threat for men (Potts, 2000), and there is evidence to suggest that vegetarianism could confer benefits for erectile function by improving blood flow and preventing atherosclerosis (Appleby & Key, 2016; Carto et al., 2022; Lin et al., 2001; Lu et al., 2021; Riccardi et al., 2022; Tuso et al., 2015). One particular motivator of this study for me was that

the animal advocacy organization PETA had run an ad campaign touting vegetarianism as a way for men to improve their sexual performance (PETA, 2010). This study, therefore, was useful in bridging gaps between academic research and real-world advocacy efforts, while testing a creative approach to behavior change.

The results of Study 2 did not support my hypothesis that messages explaining the benefits of vegetarianism for erectile function would cause men to be more receptive to meat reduction. In Study 2, men were no more receptive to meat reduction, nor were they any more interested in learning about vegetarianism, upon reading about the benefits of vegetarianism for erectile function compared to reading about health/environmental benefits or even compared to a neutral control condition that provided no information to participants. As discussed previously in this dissertation, the fact that even the health/environmental benefits message in Study 2 on its own did not influence men's attitudes toward meat reduction suggests to me that neither manipulation was strong enough to stimulate any observable effect. It would be valuable for future research to test whether more multisensory messages about erectile function and meat reduction, such as videos or infographics, could influence men's attitudes to any significant degree, as such media may be more engaging and emotionally evocative than the purely text-based stimuli I used in my study. Until such further study is conducted, I can tentatively infer from my findings that messages about erectile function do not seem to have any more or less effect on men's attitudes toward vegetarianism than do messages focused on health and environmental concerns.

Limitations

There are a few methodological limitations to note in considering these two studies' findings. One limitation is that these two studies assessed self-reported dietary intentions at a

single point in time, not actual behavior over time. Assessing men's actual eating behaviors over time in response to gender-based messages about vegetarianism could be valuable in future research. A second limitation is that I tested only two individual difference variables as moderators: age and traditional masculinity. Other individual differences among men—such as how much they endorse manhood as being precarious (Vandello & Bosson, 2013; Vandello et al., 2008), what type of meat-eating subgroup they fall into (Apostolidis & McLeay, 2019; Camilleri et al., 2023; Lacroix & Gifford, 2019), and which types of rationalizations or motivations they primarily rely on in eating meat (Hopwood et al., 2021; Rothgerber, 2013; Piazza et al., 2015)—could potentially moderate the effect of gender-based messages about vegetarianism on men's intentions to eat less meat.

Constraints on Generality

Other limitations pose constraints on the generality of this research. First, all participants in both studies were from the U.S., which limits inferences about generalizability of these effects to other cultures. Second, in having participants identify their gender as a man as a criterion for inclusion in these studies, I did not distinguish between participants who were assigned male at birth and transgender or gender-fluid participants. This limits the ability to say to which individuals who identify as men these effects pertain. Considering this distinction in future work could help clarify how people think about what exactly it means to be a man and eat meat vs. be a vegetarian. A third limitation is that I did not assess participant sexuality, which could have overlooked influential ways in which men think about meat consumption as conforming to social expectations about gender roles. Considering sexuality may have also helped to make sense of the surprising effect in Study 1 whereby exposure to women endorsing vegetarianism made men more open to reducing their meat intake, as there may have been attraction effects at play.

Concluding Remarks

Ultimately, there is a need for future research to continue efforts to reduce meat consumption in the population at large on health, ethical, and environmental grounds (Tilman & Clark, 2014; Willett et al., 2019; Wynes & Nicholas, 2017). Given that rates of meat consumption are higher among men than women and that men are less receptive to meat reduction than are women (Rosenfeld, 2018), efforts to reduce meat consumption may be most needed among populations of individuals who identify as men or who value masculinity. Ways to reduce men's meat intake by framing meat consumption as masculine or by targeting sexual performance concerns may warrant further research, though at present these strategies have weak evidence substantiating their efficacy. By gaining a better understanding of the role of masculinity beliefs in men's eating behaviors, researchers can not only help to explain gender differences in meat consumption but also support health, animal, and environmental advocates in promoting meat reduction most efficiently and effectively.

References

- Adams, C. (1990). *The sexual politics of meat: A feminist vegetarian critical theory*. New York, NY: Continuum.
- Adams, C. J., & Donovan, J. (2007). *The feminist care tradition in animal ethics*. Cambridge University Press.
- Amiot, C. E., El Hajj Boutros, G., Sukhanova, K., & Karelis, A. D. (2018). Testing a novel multicomponent intervention to reduce meat consumption in young men. *PloS One*, *13*, e0204590.
- Amiraian, D. E., & Sobal, J. (2009). Dating and eating. Beliefs about dating foods among university students. *Appetite*, *53*, 226-232.
- Apostolidis, C., & McLeay, F. (2019). To meat or not to meat? Comparing empowered meat consumers' and anti-consumers' preferences for sustainability labels. *Food Quality and Preference*, *77*, 109-122.
- Appleby, P. N., & Key, T. J. (2016). The long-term health of vegetarians and vegans. *Proceedings of the Nutrition Society*, *75*, 287-293.
- Berger, J., & Heath, C. (2007). Where consumers diverge from others: Identity signaling and product domains. *Journal of Consumer Research*, *34*, 121-134.
- Bogueva, D., Marinova, D., & Bryant, C. (2022). Meat me halfway: Sydney meat-loving men's restaurant experience with alternative plant-based proteins. *Sustainability*, *14*, 1290.
- Bogueva, D., Marinova, D., & Gordon, R. (2020). Who needs to solve the vegetarian men dilemma? *Journal of Human Behavior in the Social Environment*, *30*, 28-53.
- Bogueva, D., Marinova, D., & Raphaely, T. (2017). Reducing meat consumption: The case for

- social marketing. *Asia Pacific Journal of Marketing and Logistics*, 29, 477-500.
- Boskind-White, M., & White, W. C. (1986). Bulimarexia: A historical-sociocultural perspective. In K. D. Brownell & J. P. Foreyst (Eds.), *Handbook of eating disorders: Physiology, psychology, and treatment of obesity, anorexia, and bulimia* (pp. 353–366). New York: Basic Books.
- Bosson, J. K., & Michniewicz, K. S. (2013). Gender dichotomization at the level of ingroup identity: What it is, and why men use it more than women. *Journal of Personality and Social Psychology*, 105, 425-442.
- Botta, R. A. (1999). Television images and adolescent girls' body image disturbance. *Journal of Communication*, 49, 22-41.
- Bradbury, J., & Nicolaou, M. (2012). Men eating female/healthy foods are judged as more feminine than men eating male/unhealthy foods. *Proceedings of the Nutrition Society*, 71, E148.
- Broida, J., Tingley, L., Kimball, R., & Miele, J. (1993). Personality differences between pro-and antivivisectionists. *Society & Animals*, 1, 129-144.
- Brough, A. R., Wilkie, J. E., Ma, J., Isaac, M. S., & Gal, D. (2016). Is eco-friendly unmanly? The green-feminine stereotype and its effect on sustainable consumption. *Journal of Consumer Research*, 43, 567-582.
- Camilleri, L., Gill, P. R., Scarfo, J., & Jago, A. (2023). Resolving the masculinity dilemma: Identifying subtypes of male meat consumers with latent profile analysis. *Food Quality and Preference*, 108, 104890.
- Carto, C., Pagalavan, M., Nackeeran, S., Blachman-Braun, R., Kresch, E., Kuchakulla, M., & Ramasamy, R. (2022). Consumption of a healthy plant-based diet is associated with a

- decreased risk of erectile dysfunction: A cross-sectional study of the National Health and Nutrition Examination Survey. *Urology*, *161*, 76-82.
- Caviola, L., Everett, J. A., & Faber, N. S. (2019). The moral standing of animals: Towards a psychology of speciesism. *Journal of Personality and Social Psychology*, *116*, 1011-1029.
- Cramer, H., Kessler, C. S., Sundberg, T., Leach, M. J., Schumann, D., Adams, J., & Lauche, R. (2017). Characteristics of Americans choosing vegetarian and vegan diets for health reasons. *Journal of Nutrition Education and Behavior*, *49*, 561-567.
- de Boer, J., Schösler, H., & Aiking, H. (2017). Towards a reduced meat diet: Mindset and motivation of young vegetarians, low, medium and high meat-eaters. *Appetite*, *113*, 387-397.
- DeLessio-Parson, A. (2017). Doing vegetarianism to destabilize the meat-masculinity nexus in La Plata, Argentina. *Gender, Place & Culture*, *24*, 1729-1748.
- Dhont, K., Hodson, G., Costello, K., & MacInnis, C. C. (2014). Social dominance orientation connects prejudicial human-human and human-animal relations. *Personality and Individual Differences*, *61*, 105-108.
- Dhont, K., Hodson, G., & Leite, A.C. (2016). Common ideological roots of speciesism and generalized ethnic prejudice: The social dominance human-animal relations model (SD-HARM). *European Journal of Personality*, *30*, 507-522.
- DiMuccio, S. H., & Knowles, E. D. (2021). Precarious manhood predicts support for aggressive policies and politicians. *Personality and Social Psychology Bulletin*, *47*, 1169-1187.
- Dowsett, E., Semmler, C., Bray, H., Ankeny, R. A., & Chur-Hansen, A. (2018). Neutralising the meat paradox: Cognitive dissonance, gender, and eating animals. *Appetite*, *123*, 280-288.

- Eldridge, J. J., & Gluck, J. P. (1996). Gender differences in attitudes toward animal research. *Ethics & Behavior*, 6, 239-256.
- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of Consumer Research*, 32, 378-389.
- Fiddes, N. (1991). *Meat: A natural symbol*. New York: Routledge.
- Forestell, C. A., & Nezelek, J. B. (2018). Vegetarianism, depression, and the five factor model of personality. *Ecology of Food and Nutrition*, 57, 246-259.
- Gallup. (2023, August 24). In U.S., 4% identify as vegetarian, 1% as vegan. *Gallup*. Retrieved from <https://news.gallup.com/poll/510038/identify-vegetarian-vegan.aspx>
- Gandaglia, G., Briganti, A., Jackson, G., Kloner, R. A., Montorsi, F., Montorsi, P., & Vlachopoulos, C. (2014). A systematic review of the association between erectile dysfunction and cardiovascular disease. *European Urology*, 65, 968-978.
- Goffman, E. (1959). *The presentation of self in everyday life*. New York, NY: Doubleday Anchor.
- Goffman, E. (1976). Gender display. *Studies in the Anthropology of Visual Communication*, 3, 69-77.
- Graça, J., Calheiros, M. M., & Oliveira, A. (2015). Attached to meat? (Un)Willingness and intentions to adopt a more plant-based diet. *Appetite*, 95, 113-125.
- Graça, J., Calheiros, M. M., Oliveira, A., & Milfont, T. L. (2018). Why are women less likely to support animal exploitation than men? The mediating roles of social dominance orientation and empathy. *Personality and Individual Differences*, 129, 66-69.
- Greenebaum, J., & Dexter, B. (2017). Vegan men and hybrid masculinity. *Journal of Gender Studies*, 27, 637-648.

- Hartmann, C., Ruby, M. B., Schmidt, P., & Siegrist, M. (2018). Brave, health-conscious, and environmentally friendly: Positive impressions of insect food product consumers. *Food Quality and Preference*, *68*, 64-71.
- Hayley, A., Zinkiewicz, L., & Hardiman, K. (2015). Values, attitudes, and frequency of meat consumption. Predicting meat-reduced diet in Australians. *Appetite*, *84*, 98-106.
- Hopwood, C. J., Bleidorn, W., Schwaba, T., & Chen, S. (2020). Health, environmental, and animal rights motives for vegetarian eating. *PloS One*, *15*, e0230609.
- Hopwood, C. J., Piazza, J., Chen, S., & Bleidorn, W. (2021). Development and validation of the motivations to Eat Meat Inventory. *Appetite*, *163*, 105210.
- Jalil, A. J., Tasoff, J., & Bustamante, A. V. (2020). Eating to save the planet: Evidence from a randomized controlled trial using individual-level food purchase data. *Food Policy*, *95*, 101950.
- Kachel, S., Steffens, M. C., & Niedlich, C. (2016). Traditional masculinity and femininity: Validation of a new scale assessing gender roles. *Frontiers in Psychology*, *7*, 956.
- Keller, C., & Siegrist, M. (2015). Does personality influence eating styles and food choices? Direct and indirect effects. *Appetite*, *84*, 128-138.
- Kildal, C. L., & Syse, K. L. (2017). Meat and masculinity in the Norwegian Armed Forces. *Appetite*, *112*, 69-77.
- Knight, S., Vrij, A., Cherryman, J., & Nunkoosing, K. (2004). Attitudes towards animal use and belief in animal mind. *Anthrozoös*, *17*, 43-62.
- Krpan, D., & Houtsma, N. (2020). To veg or not to veg? The impact of framing on vegetarian food choice. *Journal of Environmental Psychology*, *67*, 101391.
- Kruse, C. R. (1999). Gender, views of nature, and support for animal rights. *Society &*

- Animals*, 7, 179-198.
- Kwasny, T., Dobernig, K., & Riefler, P. (2022). Towards reduced meat consumption: A systematic literature review of intervention effectiveness, 2001–2019. *Appetite*, 168, 105739.
- Lacroix, K., & Gifford, R. (2019). Reducing meat consumption: Identifying group-specific inhibitors using latent profile analysis. *Appetite*, 138, 233-241.
- Laner, M. R., & Ventrone, N. A. (2000). Dating scripts revisited. *Journal of Family Issues*, 21, 488–500.
- Leonardelli, G. J., Pickett, C. L., & Brewer, M. B. (2010). Optimal distinctiveness theory: A framework for social identity, social cognition, and intergroup relations. *Advances in Experimental Social Psychology*, 43, 63-113.
- Lim, T. J., Okine, R. N., & Kershaw, J. C. (2021). Health-or environment-focused text messages as a potential strategy to increase plant-based eating among young adults: an exploratory study. *Foods*, 10, 3147.
- Lin, C. L., Fang, T. C., & Gueng, M. K. (2001). Vascular dilatory functions of ovo-lacto vegetarians compared with omnivores. *Atherosclerosis*, 158, 247-251.
- Loo, T. (2001). Of moose and men: Hunting for masculinities in British Columbia, 1880–1939. *Western Historical Quarterly*, 32, 296-319.
- Loughnan, S., Haslam, N., & Bastian, B. (2010). The role of meat consumption in the denial of moral status and mind to meat animals. *Appetite*, 55, 156-159.
- Love, H. J., & Sulikowski, D. (2018). Of meat and men: Sex differences in implicit and explicit attitudes toward meat. *Frontiers in Psychology*, 9, 559.
- Lu, Y., Kang, J., Li, Z., Wang, X., Liu, K., Zhou, K., ... & Shen, C. (2021). The association

- between plant-based diet and erectile dysfunction in Chinese men. *Basic and Clinical Andrology*, 31, 1-10.
- MacInnis, C. C., & Hodson, G. (2017). It ain't easy eating greens: Evidence of bias toward vegetarians and vegans from both source and target. *Group Processes & Intergroup Relations*, 20, 721-744.
- McCabe, M. P. (2005). The role of performance anxiety in the development and maintenance of sexual dysfunction in men and women. *International Journal of Stress Management*, 12, 379-388.
- Mullee, A., Vermeire, L., Vanaelst, B., Mullie, P., Deriemaeker, P., Leenaert, T., ... & Huybrechts, I. (2017). Vegetarianism and meat consumption: A comparison of attitudes and beliefs between vegetarian, semi-vegetarian, and omnivorous subjects in Belgium. *Appetite*, 114, 299-305.
- Mycek, M. K. (2018). Meatless meals and masculinity: How veg* men explain their plant-based diets. *Food and Foodways*, 26, 223-245.
- Nakagawa, S., & Hart, C. (2019). Where's the beef? How masculinity exacerbates gender disparities in health behaviors. *Socius*, 5, <https://doi.org/10.1177/2378023119831801>.
- Nath, J. (2011). Gendered fare? A qualitative investigation of alternative food and masculinities. *Journal of Sociology*, 47, 261-278.
- Oakes, P., Haslam, S. A., & Turner, J. C. (1998). The role of prototypicality in group influence and cohesion: Contextual variation in the graded structure of social categories. In S. Worchel, J. F. Morales, D. Paez, & J. Deschamps (Eds.), *Social identity: International Perspectives* (pp. 75-92). London: Sage.
- Oliver, C. (2021). Mock meat, masculinity, and redemption narratives: Vegan men's negotiations

- and performances of gender and eating. *Social Movement Studies*, 1-18.
- Oyserman, D. (2009). Identity-based motivation: Implications for action-readiness, procedural-readiness, and consumer behavior. *Journal of Consumer Psychology*, 19, 250-260.
- PETA (2010, June 24). A vegan diet can help with impotence. *PETA*. Retrieved from <https://www.peta.org/living/food/impotence/>
- Pfeiler, T. M., & Egloff, B. (2018). Examining the “Veggie” personality: Results from a representative German sample. *Appetite*, 120, 246-255.
- Piazza, J., McLatchie, N., & Olesen, C. (2018). Are baby animals less appetizing? Tenderness toward baby animals and appetite for meat. *Anthrozoös*, 31, 319-335.
- Piazza, J., Ruby, M. B., Loughnan, S., Luong, M., Kulik, J., Watkins, H. M., & Seigerman, M. (2015). Rationalizing meat consumption. The 4Ns. *Appetite*, 91, 114-128.
- Pohjolainen, P., Vinnari, M., & Jokinen, P. (2015). Consumers’ perceived barriers to following a plant-based diet. *British Food Journal*, 117, 1150-1167.
- Potts, A. (2000). “The essence of the hard on” hegemonic masculinity and the cultural construction of “erectile dysfunction.” *Men and Masculinities*, 3, 85-103.
- Pratto, F., Stallworth, L. M., & Sidanius, J. (1997). The gender gap: Differences in political attitudes and social dominance orientation. *British Journal of Social Psychology*, 36, 49-68.
- Reed II, A., Forehand, M. R., Puntoni, S., & Warlop, L. (2012). Identity-based consumer behavior. *International Journal of Research in Marketing*, 29, 310-321.
- Riccardi, G., Giosuè, A., Calabrese, I., & Vaccaro, O. (2022). Dietary recommendations for prevention of atherosclerosis. *Cardiovascular Research*, 118, 1188-1204.
- Richi, E. B., Baumer, B., Conrad, B., Darioli, R., Schmid, A., & Keller, U. (2015). Health risks

- associated with meat consumption: A review of epidemiological studies. *International Journal for Vitamin and Nutrition Research*, 85, 70-78.
- Roos, G., Prättälä, R., & Koski, K. (2001). Men, masculinity and food: Interviews with Finnish carpenters and engineers. *Appetite*, 37, 47-56.
- Rosenfeld, D. L. (2018). The psychology of vegetarianism: Recent advances and future directions. *Appetite*, 131, 125-138.
- Rosenfeld, D. L. (2020). Gender differences in vegetarian identity: How men and women construe meatless dieting. *Food Quality and Preference*, 81, 103859.
- Rosenfeld, D. L., Brannon, T. N., & Tomiyama, A. J. (2023). Racialized perceptions of vegetarianism: Stereotypical associations that undermine inclusion in eating behaviors. *Personality and Social Psychology Bulletin*, 49, 1601-1614.
- Rosenfeld, D. L., & Burrow, A. L. (2017). The unified model of vegetarian identity: A conceptual framework for understanding plant-based food choices. *Appetite*, 112, 78-95.
- Rosenfeld, D. L., & Burrow, A. L. (2018). Development and validation of the Dietarian Identity Questionnaire: Assessing self-perceptions of animal-product consumption. *Appetite*, 127, 182-194.
- Rosenfeld, D. L., Rothgerber, H., & Tomiyama, A. J. (2020). From mostly vegetarian to fully vegetarian: Meat avoidance and the expression of social identity. *Food Quality and Preference*, 85, 103963.
- Rosenfeld, D. L., Rothgerber, H., & Tomiyama, A. J. (in press). When meat-eaters expect vegan food to taste bad: Veganism as a symbolic threat. *Group Processes & Intergroup Relations*.
- Rosenfeld, D. L., & Tomiyama, A. J. (2020). Taste and health concerns trump anticipated stigma as barriers to vegetarianism. *Appetite*, 144, 104469.
- Rosenfeld, D. L., & Tomiyama, A. J. (2021). Gender differences in meat consumption and

- openness to vegetarianism. *Appetite*, 166, 105475.
- Rothgerber, H. (2013). Real men don't eat (vegetable) quiche: Masculinity and the justification of meat consumption. *Psychology of Men & Masculinity*, 14, 363-375.
- Rothgerber, H., & Rosenfeld, D. L. (2021). Meat-related cognitive dissonance: The social psychology of eating animals. *Social and Personality Psychology Compass*, 15, e12592.
- Rogers, R. A. (2008). Beasts, burgers, and hummers: Meat and the crisis of masculinity in contemporary television advertisements. *Environmental Communication*, 2, 281-301.
- Rozin, P., Hormes, J. M., Faith, M. S., & Wansink, B. (2012). Is meat male? A quantitative multimethod framework to establish metaphoric relationships. *Journal of Consumer Research*, 39, 629-643.
- Ruby, M. B. (2012). Vegetarianism. A blossoming field of study. *Appetite*, 58, 141-150.
- Ruby, M. B., & Heine, S. J. (2011). Meat, morals, and masculinity. *Appetite*, 56, 447-450.
- Schösler, H., de Boer, J., Boersema, J. J., & Aiking, H. (2015). Meat and masculinity among young Chinese, Turkish and Dutch adults in the Netherlands. *Appetite*, 89, 152-159.
- Schrock, D., & Schwalbe, M. (2009). Men, masculinity, and manhood acts. *Annual Review of Sociology*, 35, 277-295.
- Sedupane, G. (2017). *A qualitative study exploring the experiences of Black South African vegetarians residing in the urban settings of Cape Town* (Master's thesis, University of Western Cape).
- Selvin, E., Burnett, A. L., & Platz, E. A. (2007). Prevalence and risk factors for erectile dysfunction in the US. *The American Journal of Medicine*, 120, 151-157.
- Sobal, J. (2005). Men, meat, and marriage: Models of masculinity. *Food and Foodways*, 13, 135-158.

- Sorensen, G., Barbeau, E., Stoddard, A. M., Hunt, M. K., Kaphingst, K., & Wallace, L. (2005). Promoting behavior change among working-class, multiethnic workers: Results of the healthy directions—small business study. *American Journal of Public Health, 95*(8), 1389-1395.
- Stewart, K., Dalakas, V., & Eells, D. (2023). Does sex sell? Examining the effect of sex appeals in social media ads on engagement with the ad and actual purchase. *Journal of Marketing Communications, 29*, 701-714.
- Tajfel, H., & Turner, J. C. (1985). The social identity theory of intergroup behavior. In Worchel, S., & Austin, W. G. Eds. *Psychology of Intergroup Relations*. Vol. 2 (pp.7–24). Chicago: Nelson-Hall.
- Tilman, D., & Clark, M. (2014). Global diets link environmental sustainability and human health. *Nature, 515*, 518-522.
- Timeo, S., & Suitner, C. (2018). Eating meat makes you sexy: Conformity to dietary gender norms and attractiveness. *Psychology of Men & Masculinity, 19*, 418-429.
- Torti, J. M. (2017). *The social and psychological well-being of vegetarians: A focused ethnography* (Doctoral dissertation, University of Alberta).
- Turner, J. C., & Oakes, P. J. (1986). The significance of the social identity concept for social psychology with reference to individualism, interactionism and social influence. *British Journal of Social Psychology, 25*, 237-252.
- Tuso, P., Stoll, S. R., & Li, W. W. (2015). A plant-based diet, atherogenesis, and coronary artery disease prevention. *The Permanente Journal, 19*, 62-67.
- Vandello, J. A., & Bosson, J. K. (2013). Hard won and easily lost: A review and synthesis of theory and research on precarious manhood. *Psychology of Men & Masculinity, 14*, 101-

- Vandello, J. A., Bosson, J. K., Cohen, D., Burnaford, R. M., & Weaver, J. R. (2008). Precarious manhood. *Journal of Personality and Social Psychology, 95*, 1325-1339.
- Vartanian, L. R., Herman, C. P., & Polivy, J. (2007). Consumption stereotypes and impression management: How you are what you eat. *Appetite, 48*, 265-277.
- West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & Society, 1*, 125-151.
- White, K., & Dahl, D. W. (2006). To be or not be? The influence of dissociative reference groups on consumer preferences. *Journal of Consumer Psychology, 16*, 404-414.
- Whitley Jr, B. E. (1999). Right-wing authoritarianism, social dominance orientation, and prejudice. *Journal of Personality and Social Psychology, 77*, 126-134.
- Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., ... & Jonell, M. (2019). Food in the Anthropocene: The EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet, 393*, 447-492. [https://doi.org/10.1016/S0140-6736\(18\)31788-4](https://doi.org/10.1016/S0140-6736(18)31788-4)
- Wood, W., Christensen, P. N., Hebl, M. R., & Rothgerber, H. (1997). Conformity to sex-typed norms, affect, and the self-concept. *Journal of Personality and Social Psychology, 73*, 523-535.
- Wynes, S., & Nicholas, K. A. (2017). The climate mitigation gap: Education and government recommendations miss the most effective individual actions. *Environmental Research Letters, 12*, 074024.