Men and Meat:
the Interaction between Gender Identity, Masculinity Type, and Attachment to Meat

June 2016

Emma Jansen (s1049690)
Research Master Thesis: Social and Organisational Psychology
Leiden University

Supervisor: Dr. Emma ter Mors
Second reader: Prof. dr. Wilco van Dijk

Abstract

Meat consumption and production, at its current level, presents a threat not only to individual health but also the environment. It is therefore important to know what affects attachment to meat and willingness to reduce its consumption in order to decrease meat consumption in the future. Men consume more meat, and the association between meat and masculinity has been repeatedly demonstrated and discussed in previous research. In recent times, however, it has been shown that interpretations of masculinity have grown less rigid and more variable. This experimental study investigated whether activating different kinds of masculinity (traditional vs. nontraditional vs. no activation control) would have any impact on men's attitudes towards meat consumption and reducing their consumption of meat. While this was not found to be the case, we did discover that the more men in our study considered their gender to be an important part of their identity, the more attached to meat they were. Also, men who identified more strongly with their gender and who were in the condition that activated a more traditional masculinity were the least willing to reduce their meat consumption. The implications of these findings are discussed, as well as avenues for future research.

-

Introduction

The United States, Europe and other developed countries are consuming an ever-increasing amount of meat (Daniel, Cross, Koebnick & Sinha, 2011). As meat consumption rises, the ethical and practical wisdom behind this consumption is being increasingly called into question. The consumption of red and processed meats has been proven to be associated with higher rates of cancer, cardiovascular disease and overall mortality in individuals (Sinha, Cross, Graubard, Leitzmann, & Schatzkin, 2009; Walker, Rhubart-Berg, McKenzie, Kelling, & Lawrence, 2005). The impact of the meat industry is even more damaging for the environment. Beef production, in particular, requires the use of many more times land and water than other livestock types and produces much more greenhouse gas (GHG) emissions. All livestock production, however, use vastly more land and water, and produce more GHG than plant-based crops (Eshel, Shepon, Makov & Milo, 2014). Livestock production emits more greenhouse gases than the entire transportation sector combined, uses (and degrades) about 70% of all worldwide agricultural land, and as a sector is one of the largest contributors to water pollution (Food and Agriculture Organization of the UN, 2006). One study goes so far as to claim that the livestock sector and its byproducts are responsible for 51 percent of annual worldwide GHG emissions, a number far worse than previously calculated (Goodland & Anhang, 2009). The evidence is abundant and compelling; it is clear that both livestock production and consumption need to be reduced for the sake of public and planetary health.

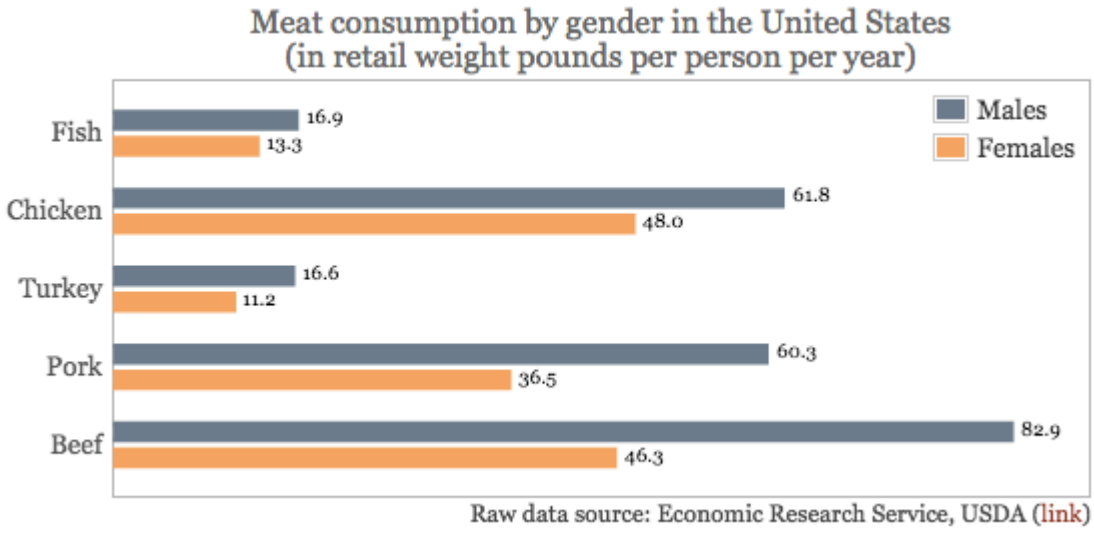
While the reduction of livestock production is currently beyond our scope of influence, social science can potentially contribute to the reduction of livestock consumption by examining what aspects of human behavior contribute most to meat consumption, and what factors could potentially contribute to reducing that consumption. For this reason, it is important to develop a better understanding of what motivates and influences people in their consumption of meat.

Masculinity and Meat Consumption

Who consumes the most meat, and why? Research has shown that men eat more meat than women (Dagevos, Voordouw, Van Hoeven, Van der Weele, & De Bakker, 2012; Daniel et al., 2011; Harish, 2012; Prättälä et al., 2007). A study of meat intake in the United States showed that men consume on average one and a half times more grams of meat per day than women (M_{men} = 153.8, M_{women} = 103.2; Daniel et al., 2011). Data from the US Department of Agriculture revealed that men eat on average 239 pounds of meat per year, while women eat 156 pounds of meat in a year, a disparity that is too large to be solely explained by the

difference in daily caloric needs between sexes (Harish, 2012). See Figure 1 for a breakdown of meat consumption per meat type by gender in the United States (Harish, 2012). A study of eating habits in Finland, Estonia, Latvia and Lithuania showed that men eat meat more frequently that women, and that women ate fruits and vegetables more frequently than men. These gender differences were similar in all countries, regardless of age, education level, or whether participants lived in a rural or urban area (Prättälä et al., 2007). A survey taken in the Netherlands showed that men were less likely to report reducing their meat consumption in the last year or intending to do so in the coming year (Dagevos et al., 2012). In sum, men seem to eat meat more frequently and in greater quantities than women, and are not planning on giving it up anytime soon. If the aim is to eventually reduce meat consumption, it is important to find out why men consume more meat than women, and what influences this consumption.

Figure 1. *Meat consumption in the US by gender, using data collected by the US Department of Agriculture (retrieved from: http://www.countinganimals.com/meat-consumption-patterns-by-race-and-gender/).*



So why do men eat more meat? Not only do men consume more meat than women, men are also more attached to meat and identify more with eating it (Dagevos et al, 2012). This may stem from the fact that food is often gendered (i.e. associated more with one gender and its stereotypes), and consuming certain kinds of food can help men in both construction and confirmation of masculinity (Newcombe, McCarthy, Cronin, & McCarthy, 2012). Socio-cultural analysis has shown that there is a relationship between masculinity and meat (Gelfer, 2013; Leroy & Praet, 2015; Newcombe et al., 2012; Sobal, 2005; Veri & Liberti, 2013). There exists a cultural assumption that eating meat (which literally consists of muscle)

leads to the building of power and muscle (Buerkle, 2009). Meat, with its high protein content and association with blood and violence, serves as a symbol of strength and virility, qualities that are traditionally important to the concept of masculinity (Adams, 1990; Newcombe et al., 2012). Even in modern times the consumption of meat is often seen or portrayed as act or affirmation of (heteronormative) masculinity. In short, when men are "doing gender" (i.e. expressing themselves in ways that demonstrate their masculinity) in relation to eating food, men tend to do so by preparing and consuming meat (Sobal, 2005).

This positive association between meat and masculinity is often reflected in the way that meat and meat-related products are advertised. One hamburger franchise created a "manthem," or man-anthem, which suggested that eating a large burger was a way of renouncing anything feminine or domesticated and returning to a more primitive, carnivorous masculinity (Buerkle, 2009). In this and other commercials, the act of consuming meat is not only associated with masculinity but is promoted "as a means of restoring hegemonic masculinity in the face of threats to its continued dominance" (Rogers, 2008, p. 282). Meat has become associated with masculinity from an early point in history, and this association is still relevant and exploited in popular culture today.

In the field of psychology researchers have recently also made forays into a more quantitative study of the relationship between meat and masculinity (Pohlmann, 2014; Rothgerber, 2013; Rozin, Hormes, Faith, & Wansink, 2012; Ruby & Heine, 2011). Rozin et al. (2012) demonstrated that meat and maleness are conceptually linked using a variety of methods (e.g. implicit association, free association, linguistic analysis). They found that meat and maleness were linked verbally, linguistically, in expressed preference and even in subconscious thought. Other research revealed that men, when asked to justify their consumption of meat, use direct reasoning, such as expressing pro-meat attitudes and denying animal suffering, whereas women tend to avoid the issue by dissociating animals from food when they consume meat (Rothgerber, 2012). A follow-up study from Rothgerber (2012) revealed that these male strategies were correlated with both greater meat consumption and perceived masculinity. Another study investigating people's perceptions of vegetarianism showed that vegetarians were rated as being more virtuous than omnivores, but also less masculine (Ruby & Heine, 2011). It is clear that there is ample evidence, both qualitative and quantitative, indicating the link between meat consumption and masculinity. There has, however, been very little research that attempts to test the association between meat consumption and masculinity by actively experimenting with and measuring the influence of the one on the other.

The only research that I was able to find of this kind was from Pohlmann (2014), who carried out a series of experimental studies and found that when men's masculine status is threatened (via fabricated poor results on a gender knowledge test), they increase their meat intake in order to reduce their anxiety. When allowed to affirm their masculinity in another way, men were more open to a vegetarian meal option. The effect of masculine status on meat consumption was modified by the extent to which men identified with traditional masculine norms. Men's level of gender identification influenced how anxious they felt when their masculinity was threatened, and also how successfully they could affirm their masculinity by reading a passage about a more feminine man as a way of buffering against the masculinity threat. In other words, men who identified more strongly with traditional masculine norms were more negatively affected both by the masculinity threat, and more positively affected by the affirmation of their masculinity. This finding is also supported by research showing that men from cultural groups in the Netherlands with more traditional views of gender demonstrated a stronger meat-masculinity link and consumed more meat (Schösler, de Boer, Boersema, & Aiking, 2015).

There are multiple types of masculinity, however, both traditional, such as the breadwinner and the rebel (Holt & Thompson, 2004) and non-traditional, such as inclusive masculinity (Morris & Anderson, 2015). Inclusive masculinity refers to a recent shift in values among younger generations of males marked by a growing acceptance of homosexuality and traditionally female gendered behaviors. According to inclusive masculinity theory, importance is placed on authenticity and expressing one's individuality, rather than traditional male traits like strength and virility (Morris & Anderson, 2015). In the modern world men are able to navigate and interpret these different masculinities in whatever way suits their life choices and preferences, rather than being limited by the traditional or hegemonic ideals of masculinity that previously existed (Sobal, 2005).

This purpose of this study is to explore the ways in which different types of masculinity are associated with and affect men's attitudes and intentions towards meat. Pohlmann (2014) showed that when their masculinity is threatened, men will show a higher preference for meat, and demonstrated this for two different types of types of masculinity: the rebel and the breadwinner. It is not clear, however, how men will react when masculinity is simply activated without being threatened. Also, while the rebel and the breadwinner are two different types of masculinity, they are both still very traditional concepts of masculinity, whereas the link, if any, between a more nontraditional (such as inclusive) masculinity type and meat consumption has not been explored.

It is clear that there is a positive link between traditional masculinity and consuming meat. However, this study is more interested in potential behavioral changes, and in that case just studying meat consumption is not enough, because there are many factors beyond an individual's control that could influence meat consumption, such as the fact that someone else (e.g. parent, partner) might be doing the grocery shopping and preparing of meals. Ajzen's (1981) theory of planned behavior states that two important factors in predicting a behavioral change are attitudes and intentions. Hence, in this study we will focus on meat attachment as a reflection of attitude, and willingness to reduce meat consumption as a reflection of intention, and their potential relationship to masculinity. These concepts have not previously been investigated in experimental research, so our findings will also provide new insights for this area of study, and attempt to address several questions that have yet to be answered. For instance, is the association between meat consumption and traditional masculinity strong enough that just activating a traditional masculinity stereotype can strengthen men's attachment to meat? And if a nontraditional masculinity is characterized by its acceptance of previously feminized behaviors, will activating a nontraditional masculinity lead men to report feeling less attached to meat?

In this experimental study I will try to answer the question of how activating a different masculine stereotypes (traditional masculinity vs. a nontraditional masculinity vs. not activating masculinity at all) can affect a man's attachment to meat. Since the eventual goal is to find ways for people in general, and men in particular, to reduce their meat consumption, I am also interested in comparing the ways different types of masculinity could influence men's willingness to reduce their meat consumption.

It has already been shown that meat consumption and traditional concepts of masculinity are firmly linked in people's minds, even on a subconscious level (Rozin et al., 2005). The concept of stereotype activation explains how this link can affect subsequent behavior. Stereotype activation refers to the fact that research has shown that when a stereotype is activated in a person's mind, that person is more likely to engage in behavior that is consistent with the stereotype (e.g. walking more slowly when an elderly stereotype is activated; Wheeler & Petty, 2001). So if a traditional, stereotyped masculinity is activated, one of the behaviors it could lead to is an increased desire for or attachment to meat, since meat consumption is consistent with this stereotype. Nontraditional masculinities are not really pervasive or established enough to be stereotyped, but since inclusive masculinity is characterized by openness and acceptance, it seems reasonable to posit that activating it could lead to an openness to what are usually considered more feminine behaviors, including a

lower attachment to meat and more willingness to reduce meat consumption. My hypotheses are therefore as follows:

H1a: Activating a traditional masculinity will cause men to report higher levels of meat attachment than when activating a nontraditional masculinity or not activating any masculinity.
H1b: Activating a nontraditional masculinity will cause men to report lower levels of meat attachment than when not activating any masculinity.

H2b: Activating a traditional masculinity will cause men to report a lower willingness to reduce meat consumption than when activating a nontraditional masculinity or not activating any masculinity.
H2b: Activating a nontraditional masculinity will cause men to report higher willingness to reduce meat consumption than when activating a traditional masculinity or not activating any masculinity.

In their development of the Meat Attachment Questionnaire, Graca and colleagues (2015) found that a person's level of attachment to meat provided explanatory variance above and beyond attitudes, subjective norms and perceived behavioral control in predicting the willingness and intention to substitute meat. Therefore I predict that:

H3: The effect of activating different kinds of masculinity on participants' level of willingness to reduce meat consumption will be mediated by their reported attachment to meat.

Additionally in this study we will examine the possible moderating role of gender identification in the effect of activating masculinity. Gender identification refers to the extent to which a person considers their gender to be an important part of their identity and self-concept (Schmader, 2002). Research has shown that the detrimental impact of activating a negative stereotype depends on the extent to which an individual identifies with the group that is being stereotyped. For instance, when a gender stereotype was activated, only women with high gender identification behaved consistently with the stereotype by performing worse on a math test (Schmader, 2002). Therefore, it should follow that the effect of activating a stereotypical masculinity depends on the extent to which a person considers his gender to be

important to his identity. It is unclear what the effect of gender identification would have on the effect of activating a nontraditional masculinity; this question will be explored when analyzing the data. My hypotheses are as follows:

H4a: Activating a traditional masculinity will cause men to report higher levels of meat attachment especially when they report a high (vs. low) level of gender identification.
H4b: Activating a traditional masculinity will cause men to report a lower willingness to reduce meat consumption especially when they report a high (vs. low) level of gender identification.

In order to test these hypotheses, a study was carried out in which participants were divided into three groups: in one group, a traditional (stereotypical) masculinity was activated, in another group a nontraditional (inclusive) masculinity was activated, and in the third group masculinity was not activated at all in order to act as a control. To check the effect of the masculinity activation on the different groups, participants' meat attachment and level of willingness to reduce meat consumption were then measured. The design and procedure of the study are described in detail below in the method section.

Method

Participants and Design

Participants predominantly living in the United States were recruited online via Amazon's Mechanical Turk (MTurk) to take part in a Qualtrics survey. The study was ostensibly for the purpose of consumer research into the relationship between a consumer's personality and their food product preferences. MTurk was used because of its ability to gather reliable data from a large number of diverse participants in a short amount of time (Buhrmeister, Kwang, & Gosling, 2011), and because it doesn't allow participants to be paid unless they have fully completed the study (therefore eradicating or at least reducing the prevalence of missing data). MTurk also recruits primarily among US residents. US residents were our target group because our definition of traditional masculinity was culled from American culture and therefore certain to resonate, and because meat consumption in the United States is more than three times the global average, making any research into how to influence that consumption particularly relevant (Daniel et al., 2011). In order to ensure that the majority of our participants were male without making it too obvious that we were only interested in male participants, the description of the study displayed on MTurk mentioned that since we already had the required number of female participants, we only needed male

participants at this point in time. Upon completion of the study, participants were paid $1.45 (the rate was determined both by university and MTurk reimbursement norms).

A total of 198 participants, 20 of whom were women, filled in the questionnaire. We excluded the women from the analyses, since the hypotheses only concerned the behavior and opinions of men. The final sample consisted of 178 men, who ranged in age from 19 to 73 (M = 33.37, SD = 9.93). Level of education ranged from less than high school to doctorate degrees (a four-year college degree comprised the mode at 36 percent of the sample). Approximately 46 percent of the sample reported living in a suburban area, 37 percent in an urban area, and 17 percent in a rural area. Participants were randomly allocated to one of the three conditions of a 3 (masculinity activation: traditional vs. nontraditional vs. control) x1 between-subjects design.

Procedure and Measures

In order to mask the true purpose of the study and prevent any skewing of the results, participants were told that the aim of the study was to investigate the relationship between personality traits and certain food product preferences, for the purpose of consumer research. All participants confirmed their informed consent before proceeding with the study. Refer to Appendix A to see the complete questionnaire as filled out by participants.

Gender identification. Participants first filled out a section containing measures of various personality attributes, which they were told was part of the research into consumer food product preferences. The section consisted of a ten-item big five personality inventory (BFI-10), as developed by Rammstedt and John (2007), and several questions regarding the importance of four concepts to participants' identity. There were for four questions regarding that assessed how important each of the concepts were to their identities, which were adapted from Schmader's (2002) use of the importance to identity subscale of the Collective Self-Esteem Scale by Luhtanen and Crocker (1992).

The main goal of this section on identification was to measure participants' level of gender identification, an important variable which we predict to have an effect on meat attachment and willingness to reduce meat consumption, as well as interact with the impact of our experimental manipulation. This measure consisted of the following four items: "Being a man is an important part of my self-image," "Being a man is unimportant to my sense of what kind of person I am" (reverse scored), "Being a man is an important reflection of who I am," and "Being a man has very little to do with how I feel about myself." (reverse scored) (1 = strongly disagree, 5 = strongly agree; α = .91). For the sake of consistency, the

same items were used for each of the four identification concepts (e.g. “My personal relationships are an important part of my self-image,” etc).

Masculinity activation. In the next section participants were randomly assigned to one of three conditions of the experimental design. In the two experimental conditions in which we aimed to activate concepts of masculinity, participants were asked to read a paragraph about John, which described several of his characteristics and personality traits. Participants were told that the passage described the personality of a representative potential target group member whose consumer preferences we were interested in.

In the traditional condition, the John described fit many of the attributes that are traditionally (and stereotypically) associated with masculinity (e.g. stoic, physically fit, independent, rebel, family breadwinner):

> John is 30 years old and engaged to his girlfriend of 4 years. Two years ago he started his own construction firm the business is small but doing well. He is considered trustworthy and is always willing to lend a hand to friends and neighbors. He leans towards the socially conservative side but believes everyone has the right to their opinion, and doesn’t often share his own. Some of his hobbies are mountain biking and rock climbing, and he enjoys both watching and playing football. His favorite type of movies are action movies with a clever plot. He used to be a bit of a rebel and was considered a little wild when he was younger, but while he’s maintained his independent spirit, he’s come to enjoy having more responsibilities and is ready to get married and have a family to take care of.

In the nontraditional condition, John is described in a way that still allows for him to be seen as masculine (physically fit, girlfriend), but also in a way that shows that he does not entirely subscribe to a stereotypical or traditional masculinity type but rather engages in a more inclusive masculinity (e.g. cares more about ethics than money/power, comfortable watching chick flicks, accepts and respects everyone regardless of who they are/how masculine they are):

> John is 30 years old and engaged to his girlfriend of 4 years. Two years ago he started his own technology firm the business is still small but doing well. John used to make a lot of money at a larger firm, but quit when he realized he didn’t agree with some of their ethical choices. His hobbies include mountain biking and rock climbing, and he

> enjoys both listening to and playing jazz piano. John's favorite movies are comedies, but he's equally as comfortable watching action movies or chick flicks with his fiancé. John doesn't identify as liberal or conservative, but considers it more important to teach his future children to treat everyone with respect, regardless of their race, gender, or sexual orientation.

A pretest (N = 35) was done to check that both descriptions of John did indeed activate traditional and nontraditional masculinities by having participants read one of the two passages about John and rate him on various character qualities. Neither John differed significantly in how masculine they were perceived to be ($M_{traditional}$ = 4.00, SD = 0 .61; M_{modern} = 3.67, SD = 0.91). The traditional John, however, was rated to be more traditional ($M_{traditional}$ = 3.41, SD = 0.87, M_{modern} = 2.78, SD = 0.81; $F(1,33) = 4.99$, $p = .032$, $\eta_p^2 = .13$) than modern John, while modern (i.e. nontraditionally masculine) John was rated as more modern ($M_{traditional}$ = 3.12, SD = 0.70, M_{modern} = 3.94, SD = 0.54, $F(1,33) = 15.52$, $p < .001$, $\eta^2 = .32$). Therefore, we concluded that our descriptions accurately described a man who was traditionally masculine and a man who was nontraditionally masculine, and that participants saw them as such; our masculinity activation was successful.

In both conditions, participants were then asked to indicate on a five-point Likert scale the degree to which John seemed likable, how much they had in common with John, and whether they could see themselves in John (1 = completely disagree, 5 = completely agree). These items were included in order to check whether participants in both conditions found John to be (equally) likable and could identify with him. Of the items measuring participants' opinion of John, the two items measuring how much they had in common with John and to what degree they saw themselves in John produced a Cronbach's alpha of .87 and were therefore averaged into one variable measuring perceived similarity to John. The first item rating John's likability, however, only detracted from the reliability of the variable and was kept separate. Keeping these items separate was more logical in terms of content as well; while John may or may not be perfectly likable, that doesn't have to have any bearing on whether or not a participant sees himself to be similar to John. The items also served to further the experimental manipulation by ensuring that participants thought about how much they had in common with John, and therefore connect the masculinity type that we activated via John to themselves. In

the control condition, participants did not read any passages about John and skipped over to the next section of the questionnaire.

Condiment ratings. In the next section of the survey participants in the traditional and nontraditional condition then were asked to rate the degree to which they believed John would be interested in buying each of eleven different condiments (1= not at all interested, 5 = very interested; with a sixth option for participants to select if they did not know what a certain condiment was). The 11 condiments were ketchup, mustard, balsamic vinaigrette, BBQ sauce, mango chutney, mayonnaise, Sriracha, salsa, Worcestershire sauce, Tabasco and pesto. The reason condiments were chosen for this section was two-fold: first, it fit with the pretense that the study was actually about rating food products and consumer preferences, and second, condiments are generic, widely used food items that could be used on meat but do not actually include any meat products, and therefore would not skew the results by making meat products too salient.

Additionally, we predicted that some condiments would be 'gendered,' or more highly associated with masculinity than others. A small pretest study (N = 35) was carried out to measure the perceived masculinity of these condiments (for a full description and results of the pretest please see Appendix B). Results showed that barbecue (BBQ) sauce (M = 4.47, SD = 0.75) and Tabasco (M = 4.24, SD = 0.86) were considered the most masculine of the condiments, and balsamic vinaigrette (M = 2.00, SD = 0.74) and mango chutney (M = 2.09, SD = 0.67) were considered the least masculine condiments. We therefore expected that participants in the traditional condition would rate John as being most interested in BBQ sauce and Tabasco and least interested in mango chutney and balsamic vinaigrette, and that participants in the modern condition would rate John as being approximately equally interested in everything, but more interested in mango chutney and balsamic vinaigrette than traditional John would be.

This section of the survey had a double purpose. First, by having participants rate what John would prefer, they had to place themselves in his shoes, thereby furthering the experimental manipulation and activating a certain masculinity. Second, if participants rated John's interests as predicted, this would indirectly confirm that the manipulation achieved its goal, by confirming that participants actually viewed John as either traditionally masculine or modern, and demonstrated their ability to think like him by rating traditional John as preferring more masculine products and modern John as being equally as interested in products regardless of their masculinity association. As mentioned before, participants in the

control condition were not given a passage about John, and instead were simply asked to rate their interest in the eleven condiments according to their own personal preferences.

Meat attachment and willingness to reduce meat consumption. In the last part of the study all participants (regardless of condition) were asked to give their opinions about one of purportedly several food groups, though all participants were questioned about meat. This section of the study contained the dependent variables. In order to measure meat attachment, the Meat Attachment Questionnaire was utilized in this study (see Appendix A for the full questionnaire). The questionnaire was created by Graca, Calheiros, and Oliveira (2015), and consists of 16 items measuring people's positive bond with meat consumption. Internal reliability was determined for the global scale containing the 16 items (α = .92). The Meat Attachment Questionnaire consists of four subscales: hedonism, affinity, entitlement and dependence on meat. The hedonism subscale measures the degree to which meat is seen as a source of pleasure (four items: e.g. "To eat meat is one of the good pleasures in life;" α = .87). Affinity measures affinity with meat consumption, measured in opposition to repulsion (four items, reverse scored; e.g. "I feel bad when I think of eating meat;" α = .87). Entitlement refers to feeling that people have the right to consume meat (three items; e.g. "To eat meat is an unquestionable right of every person;" α = .79). Dependence measures the degree to which people cannot do without meat (five items, e.g. "Meat is irreplaceable in my diet;" α = .87). (1 = disagree strongly, 5 = agree strongly). As a measure of participants' real life meat consumption, they were asked how many days a week they consumed meat (1= I don't eat meat, 2 = 1-2, 3 = 3-4, 4 = 5-7).

Because this research is for the ultimate goal of reducing meat consumption, all participants then read a short paragraph containing information about the negative health and environmental consequences for consuming meat. Directly afterward we assessed their willingness to reduce meat consumption. Participants who indicated that they consumed meat one or more times a week (173 of 178 participants) were asked to rate the extent to which they agreed with the following statements about their future meat consumption: "I would be willing to eat meat less often per week", I would be willing to eat smaller quantities of meat per meal", ; I would be willing to adopt a more plant-based diet; I am planning to reduce my meat intake in the near future" (1 = disagree strongly, 5 = agree strongly; α = .92). Participants who indicated that they do not eat meat (5 of 178 participants) were not asked these questions, but instead were asked about their motivation behind their non-meat consumption ("the reasons listed above [health and environment] are why I do not eat meat;"

1 = yes, 2 = partially, 3 = no). Participants were then debriefed and reimbursed for their participation.

Results

Checks

Participants' perception of John was measured in two ways. First, participants were asked how likable John was and how similar they felt they were to John. Both John's likability () and perceived similarity to John differed significantly between the two experimental conditions. Participants found modern John to be more likable (M = 4.42, SD = 0.81) than traditional John (M = 4.07, SD = 0.82), $F(1,111) = 5.16$, p = .025 $\eta_p^2 = .04$. Participants also felt themselves to be more similar to modern John (M = 3.89, SD = 0.86) than traditional John (M = 3.16, SD = 1.09), $F(1,111) = 15.77$, $p < .001$, $\eta^2 = .12$. An analysis of covariance showed, however, that this difference in John ratings did not affect how participants rated their meat attachment or willingness to reduce meat consumption. Also, regardless of their differences, both groups on average found John to be likable, and found that they had something in common with him, which hopefully means that participants also were able to relate to him more and therefore be more susceptible to the masculinity activation.

Second, participants were asked to rate the degree to which they felt John would be interested in certain products. If the manipulation of activating a different type of masculinity per the different descriptions of John was successful, then participants in the traditional condition should rate John as being more interested in condiments more highly associated with masculinity, and participants in the modern condition should rate John as being equally interested in condiments regardless of their association with masculinity, meaning they will rate modern John as being more interested in less masculine condiments than traditional John. The pilot study showed that BBQ sauce and Tabasco are considered to be the most masculine, while balsamic vinaigrette and mango chutney are considered to be the least masculine. Analyses of variance were carried out to see if condiment ratings differed across conditions (the control group was excluded from the analysis since we were only interested in seeing the effect of the different descriptions of John). See Table 1 for a full account of the results. Participants in the traditional condition did rate John as being significantly more interested in BBQ sauce and Tabasco than they did in the modern condition, and in the modern condition they rated John as being more interested in mango chutney and balsamic vinaigrette than they did in the traditional condition. Therefore, it is reasonable to assume that participants did indeed perceive the traditional John to be more traditionally masculine, and

the modern John to be less traditionally masculine and equally interested in things regardless of their association with masculinity.

Table 1. *Means and standard deviations of condiment ratings and how they differ across traditional and modern masculinity conditions (N = 104-112).*

Condiment	Traditional *M*	*SD*	Modern *M*	*SD*	*df*	*F*	*p*	η_p^2
BBQ sauce	4.54	0.71	3.90	1.00	1, 105	14.15	.000	.12
Tobasco	4.12	1.01	3.62	1.03	1, 104	6.34	.013	.06
Sriracha (hot sauce)	3.77	1.04	3.85	0.93	1, 105	0.20	.656	.00
Worcestershire sauce	3.48	1.08	3.63	0.92	1, 106	0.59	.443	.01
Ketchup	4.32	0.73	3.81	1.07	1, 109	8.51	.004	.07
Mustard	4.11	0.93	3.93	0.90	1, 110	1.10	.298	.01
Salsa	3.88	0.98	4.07	0.84	1, 105	1.14	.288	.01
Mayonnaise	4.04	0.82	3.49	1.12	1, 109	8.45	.004	.07
Pesto	2.92	1.13	3.81	0.83	1, 103	21.59	.000	.17
Mango chutney	2.68	1.24	3.53	1.14	1, 103	13.39	.000	.12
Balsamic vinaigrette	2.94	1.31	3.95	0.97	1, 105	20.52	.000	.16

Note. *N varies per condiment because answers of "I don't know what this is" were excluded in the analysis.*

Testing the Hypotheses

Meat attachment. In order to test Hypothesis 1, that activating a traditional (vs nontraditional) masculinity will cause men to report higher (vs lower) levels of meat attachment than when activating a nontraditional (vs traditional) masculinity or not activating any masculinity, ANOVAs were performed with masculinity activation as the independent variable and the meat attachment scale (and subscales) as dependent variables. See Table 2 for the means and standard deviations of the variables across conditions and Table 3 for the full results of the analyses. The analyses showed that there were no significant main effects of masculinity activation for either the total scale or the subscales. Participants did differ on the dependence subscale of meat attachment in a way that approached significance, however.

$F(2, 175) = 2.19$, $p = .115$, $\eta_p^2 = .02$). An LSD post-hoc test showed that the results trended in the hypothesized direction: participants in the traditional condition reported slightly higher levels of dependence on meat ($M = 3.72$, $SD = 1.06$) than both participants in the control condition ($M = 3.36$, $SD = 1.10$; $p = .064$) and in the modern condition ($M = 3.36$, $SD = 0.93$; $p = .073$). There was no significant difference between meat dependence between the modern and control condition, $p = .991$. Hypothesis 1, therefore, was not supported by the data.

Table 2. *Means and standard deviations of the dependent variables across conditions (N = 173-178).*

Dependent variables	Control *M*	*SD*	Traditional *M*	*SD*	Modern *M*	*SD*
Meat attachment	3.80	0.83	3.94	0.73	3.78	0.77
Hedonism	4.00	0.89	4.07	0.89	3.95	0.88
Affinity	4.19	0.91	4.14	0.95	4.17	0.91
Entitlement	3.77	0.96	3.87	0.86	3.71	1.03
Dependence	3.36	1.10	3.72	1.06	3.36	0.93
Willingness to reduce	2.94	1.05	2.74	1.22	3.00	1.29

Note. *N varies between variables because vegetarians (5) did not answer the willingness to reduce meat consumption question.*

Willingness to reduce meat consumption. In order to test Hypothesis 2, that activating a traditional (vs nontraditional) masculinity will cause men to report a lower (vs higher) willingness to reduce meat consumption than when activating a nontraditional (vs traditional) masculinity or not activating any masculinity, an ANOVA was performed with masculinity activation as the independent variable and willingness to reduce meat consumption as the dependent variable. See Table 2 for the means and standard deviations of the variable across conditions and Table 3 for the full results of the analysis. The analysis showed that there was no significant main effect for the masculinity activation on willingness

to reduce meat consumption, $F(2, 171) = 0.71$, $p = .493$, $\eta_p^2 = .01$, and Hypothesis 2 was therefore not supported.

Table 3. *Analyses of variance of meat attachment and willingness to reduce meat consumption by experimental condition (N = 173-178).*

Dependent variables	*df*	*F*	*p*	η_p^2
Meat attachment	2, 176	0.69	.505	.01
Hedonism	2, 176	0.24	.785	.00
Affinity	2, 176	0.05	.953	.00
Entitlement	2, 176	0.43	.649	.01
Dependence	2, 176	2.19	.115	.02
Willingness to reduce	2, 171	0.71	.493	.01

Note. *N varies between variables because vegetarians (5) did not answer the willingness to reduce meat consumption question.*

Mediation. In Hypothesis 3 we predicted that the effect of activating different kinds of masculinity on participants' level of willingness to reduce meat consumption will be mediated by their reported attachment to meat. The ANOVA showed that condition had no main effect on meat attachment, and no main effect on willingness to reduce meat consumption; therefore the data did not provide support for mediation or Hypothesis 3. A correlation analysis did show a significant negative relation ($r = -.556$, $p < .001$) between meat attachment and willingness to reduce meat, indicating that when meat attachment goes up, willingness to reduce meat consumption tends to go down. This finding is line with what we predicted in Hypothesis 3.

Gender identification. In order to determine the effect of gender identification on the dependent variables, simple linear regressions were carried out to predict meat attachment and willingness to reduce meat consumption based on gender identification. The analyses indicated a significant main effect for both variables. See Table 4 for the full results of the analysis. The regression coefficient for meat attachment was positive ($\beta = .28$), which means that as a participant's gender identification grows stronger, so does his attachment to meat. The regression coefficient for willingness to reduce meat consumption was negative ($\beta = -$

.19), which means that as a participants's gender identification grows stronger, his willingness to reduce meat consumption lessens.

Table 4. *Linear regression analyses predicting meat attachment and willingness to reduce meat consumption by gender identification (N = 173-178).*

	Unstandardized Coefficients		Standardized Coefficients		
Variables	*B*	*SE(B)*	β	*t*	*p* (sig)
Meat attachment	.20	.05	.28	3.902	.000
Willingness to reduce	-.20	.08	-.19	-2.495	.014

In order to explore the potential moderating effect of gender identification on how the masculinity activation affected participants' meat attachment and willingness to reduce, moderation analyses were carried out using Hayes' (2013) PROCESS macro, which allows us to perform an analysis with an independent variable with more than two levels using dummy encoding. See Table 5 for the full results, where the experimental conditions are compared to the control condition. There were no interaction effects on meat attachment for either condition, which means that gender identification neither strengthens nor weakens the impact of activating a certain type of masculinity on participants' reported meat attachment. This also means that Hypothesis 4a, which predicted that activating a traditional masculinity would cause men to report higher levels of meat attachment especially when they report a high (vs. low) level of gender identification, is not supported by the data. There was, however, a significant interaction effect on willingness to reduce meat consumption for the traditional masculinity activation.

Dependent Variable	Predictors	*B*	*SE(B)*	*t*	*p*
Meat Attachment	Gender Identification	0.14	0.08	1.67	0.097
	Traditional Masculinity	-0.23	0.47	-0.49	0.622
	Modern Masculinity	-0.38	0.46	-0.81	0.417
	Traditional*Gender ID	0.10	0.12	0.77	0.441
	Modern*Gender ID	0.11	0.13	0.84	0.401

Willingness to reduce meat consumption	Gender Identification	0.03	0.13	0.19	0.851
	Traditional Masculinity	1.40	0.75	1.88	0.062
	Modern Masculinity	0.98	0.73	1.34	0.182
	Traditional*Gender ID	-0.44	0.20	-2.23	0.027
	Modern*Gender ID	-0.27	0.20	-1.35	0.178

Table 5. *PROCESS moderation analysis for the interaction of gender identification and masculinity activation on meat attachment (N = 178) and willingness to reduce meat consumption (N = 173).*

Figure 2 shows the direction of the interaction effect for gender identification and traditional masculinity; activating a traditional masculinity leads men to report a lower willingness to reduce meat consumption especially when they report a high (vs. low) level of gender identification. Hypothesis 4b is therefore supported by the data.

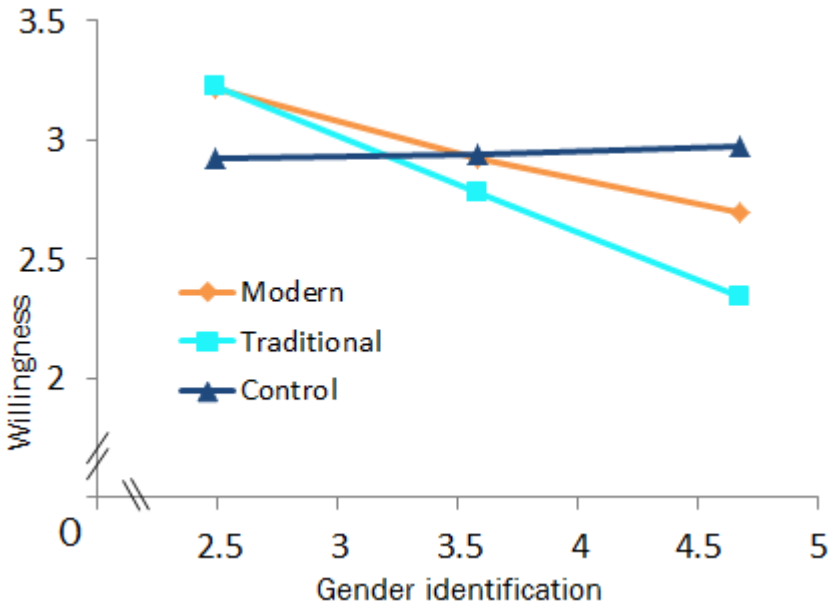


Figure 2. *Simple slopes of masculinity activation predicting willingness to reduce meat consumption for 1* SD *below the mean gender identification, the mean gender identification, and 1* SD *above the mean gender identification (*N = *173).*

Discussion

The goal of this experimental study was to gain insight into the effects of the activation of different types of masculinity (control vs. traditional vs. nontraditional) on men's attachment to meat and their willingness to reduce its consumption. We predicted that activating a traditional masculinity would lead participants to report stronger meat attachment and less willingness to reduce its consumption, whereas activating a nontraditional masculinity would lead participants to report weaker meat attachment and more willingness to reduce its consumption. We predicted that meat attachment would mediate the effect that masculinity activation would have on willingness to reduce meat consumption. Additionally, we explored the potential moderating role of gender identification in this. We predicted that a higher gender identification would strengthen the expected effect of activating a traditional masculinity on meat attachment and willingness to reduce meat consumption, and explored whether this interaction effect would also occur when activating a nontraditional masculinity.

We did not find that activating different types of masculinity significantly affected men's reported level of meat attachment. In other words, men were similarly attached to meat regardless of whether they were asked to think like a traditional man, a modern man, or just as themselves. We also found that, on the whole, activating different types of masculinity did not affect men's willingness to reduce meat consumption. Having the participants think like a traditional or modern man did not influence their willingness to give up eating meat. We cannot claim that meat attachment mediates the effect of activating different masculinity types on willingness to reduce meat consumption, because there was no direct effect of masculinity activation on either meat attachment or willingness to reduce its consumption. However, we did find a direct relationship between meat attachment and willingness to reduce meat consumption. The more attached participants were to meat, the less willing they were to reduce their meat consumption. We found a main effect of gender identification on both meat attachment and willingness to reduce meat consumption; the more strongly men identified with their gender, the more strongly they were attached to meat and the less willing they were to give it up. A moderation analysis did not produce any significant results for meat attachment, meaning that gender identification did not strengthen the effect of activating different types of masculinity on men's attachment to meat. An interaction effect for gender attachment and masculinity attachment *was* found for willingness to reduce meat consumption. Further investigation showed that this interaction was only true for the traditional condition; activating a traditional masculinity in men who identified strongly with

being male led them to be less willing to reduce their meat consumption. Men's level of gender identification didn't impact the effect of activating a nontraditional masculinity.

Interpretation and Implications

The finding that there were no main effects of masculinity activation on meat attachment could be explained by the fact that our experimental manipulation was very subtle. We asked participants to read a passage about a person (John) that represented either a traditional or modern type of masculinity and then to rate condiments according to what they thought John would be interested in, how likable they felt John was and how much they felt they had in common with John. It is possible that this was not a strong enough manipulation to really make participants think in the frame of mind of a modern or traditional man.

On the other hand, participants in the traditional and nontraditional condition did differ in how they rated John's interests in condiments. Participants thought that traditional John would be the more interested than modern John in condiments that are considered more masculine (e.g. BBQ sauce and Tabasco), and that modern John would be more interested than traditional John in condiments that are considered less masculine (e.g. balsamic vinaigrette and mango chutney). This finding shows that the participants were able to imagine what each type of masculinity would be interested in, and they did so in the way that we predicted; therefore, our masculinity activation worked. Participants perceived John to be either traditional or modern, and could subsequently predict his preferences along those lines, but the activation was not strong enough for the qualities of that masculinity to project itself onto the participants' own preferences and intentions. It is possible that, had we asked participants what they thought *John's* meat attachment and willingness to reduce consumption would be, we would have found a significant main effect of masculinity activation. Rating John's attachment and willingness would only require participants to think within the parameters of a certain masculinity, and would not require them to transfer it to themselves, where the participants' own character and preferences can interfere with the effects of experimental manipulation.

Though it goes against what we predicted, upon deeper reflection, the finding that meat attachment in general did not change makes sense, in that while what a person may prefer at any given time can be influenced by other factors such as emotion or social context, their general tastes, their likes and dislikes, are fairly stable and tend to solidify over time (Lyman, 1989). If a man feels a certain way about meat, he has probably felt this way for a long time, and this is not likely to change simply because he is encouraged to think along the lines of a certain masculinity type. A more sensitive measure of the effectiveness of the

masculinity activation would have to been to measure how much meat participants preferred *at that given time* rather than how attached they were to meat in general; if we had done this, we probably would have found a significant effect of experimental manipulation. Pohlmann (2014), for instance, measured how many meat toppings participants wanted on their pizza at that given moment. The fact that meat attachment is more like a personality trait than a changeable state could clarify why we found no main effects.

The finding that there was no main effect of masculinity activation on willingness to reduce meat consumption is probably, as already mentioned, due to the subtlety of the experimental manipulation. Specifically, however, the fact that having the participants think like a modern man did not lead them to report weaker meat attachment and more willingness to reduce their meat consumption could be because modern masculinity is fairly new as a concept. There has been little research, experimental or otherwise, investigating or defining this concept, and if we are defining 'modern masculinity' as a masculinity that is nontraditional, this also leaves a lot of room for interpretation, as there are countless nontraditional interpretations of masculinity. Additionally, while traditional masculinity is associated with meat attachment and consuming more meat, there is no research that has definitely shown that modern masculinity is associated with a weaker attachment to meat or consuming *less* meat. If the two concepts are not linked in people's minds, then there is no reason that activating a modern masculinity would lead to more willingness to reduce meat consumption.

The finding that meat attachment is negatively correlated with willingness to reduce meat consumption supports the research of Graça and his colleagues (2015), who found that a person's level of attachment to meat went beyond attitudes, subjective norms and perceived behavioral control in predicting the willingness to substitute meat in their diet.

The finding that participants who felt that being a man was important to their sense of self were both more attached to meat and less willing to reduce their meat consumption than participants for whom being a man was unimportant to their sense of self makes sense; if meat is associated with masculinity, as ample research has shown, then men for whom being masculine is important will be more strongly attached to meat and less willing to give it up.

Lastly, we found that activating a traditional masculinity led to less willingness to reduce their meat consumption, but only in men who identified strongly with their gender. So, men who were encouraged to think like a traditional man and who felt that being a man was important to their sense of self, were not as willing to eat less meat. This finding is in line with previous research showing that activating a stereotype only influences a person's

behavior to the degree that that person identifies with the group being stereotyped (Schmader, 2002), and also supports the research of Pohlmann (2014), who found that the effect of activating different types of masculinity on buffering against masculinity threat was moderated by their gender identification. In other words, activating a type of masculinity more associated with feminine traits (i.e., 'the breadwinner') acted as a buffer against having their masculinity threatened, which then led to participants reacting more positively to a vegetarian stir-fry, but *only* for participants who identified strongly with being male.

We did not find this effect for meat attachment, however; participants in the traditional group did not report higher levels of meat attachment than participants in the control or modern groups, even when controlling for how much they identified with their gender. It is not entirely clear why the traditional masculinity and gender identity interacted to affect only willingness to reduce meat consumption and not meat attachment. One possible explanation is that, as mentioned previously, whether someone likes meat is a fairly strong and stable quality, whereas a man's willingness to reduce his meat consumption is more malleable, because it implies potential and future change rather than concrete action. Willingness to change one's behavior is only one factor in developing the intention to change behavior, and subsequently changing one's behavior, as explained in Azjen's theory of planned behavior (1985). It is therefore probably not as difficult to prompt someone to express the willingness to change a behavior than to persuade them to actually change their long-term preference for a certain item.

The fact that we did not find any interaction effects between gender identification and the nontraditional masculinity is not as unexpected- we were unsure what would happen here, which is why we decided to keep out analyses exploratory rather than trying to predict this relationship. As stated above, a modern or nontraditional masculinity does not yet have a clear form or definition, either in scientific research or popular culture, and therefore does not really evoke standard stereotypes. The expected interaction between gender identification and the effect of activating certain stereotypes is therefore not really in play here. Also, gender identification is measured in a way that generally demonstrates how strongly men identify with gender as it is *traditionally* defined. What relationship gender identification and nontraditional masculinity might have is therefore unclear.

Our findings have several practical implications. Policy makers and public health officials interested in reducing meat consumption could focus on weakening the association between masculinity and meat, because then even those who identify strongly with a masculine gender would not necessarily feel the need to consume meat. Any means of

reducing men's attachment to meat would also lead them to be more willing to reduce their consumption of meat. The association of meat and masculinity is so entrenched, however, and men are so attached to meat, that weakening those associations and attachment may prove extremely difficult. A different approach might be wiser; for instance, participants not only identified more with but also liked 'modern John' more than they did 'traditional John'. Perhaps the likability of the modern John could be employed to encourage a connection between modern masculinity and eating less meat. It seems reasonable to assume that creating a new conceptual link between modernity and eating less meat would be more effective, and certainly less difficult, than trying to dismantle such an old and well-established association between meat and traditional masculinity.

Suggestions for Future Research

The subtlety of our experimental manipulation, the trait-like quality of meat attachment, and the fact that modern or nontraditional masculinity is still fairly unexplored territory explain why we did not find any direct effect of masculinity activation. The study might have had stronger results if it had only focused on participants' own gender identification, what type of masculinity they personally subscribe to, and how that affects their meat attachment and willingness to reduce meat attachment. However, in doing so, our research would have lost its experimental aspect, which we were particularly interested in pursuing, especially since there is so little experimental research existing in this subject. Another option, as was previously mentioned, that of measuring what participants thought John's meat attachment and willingness to reduce meat consumption would be, would probably have been more sensitive to the subtlety of our manipulation, because it would not have required participants to internalize the effects of the masculinity activation, which is the point where our experimental manipulation ceased to work. This is something to consider in the future; however, we also specifically wanted to focus on men's actual meat attachment and willingness to reduce meat consumption.

By using meat attachment as our dependent variable, we most likely curtailed the possibility of finding significant results, because meat attachment is a measurement of a very stable long-term preference that is not easily altered. Previous research has never used meat attachment as a dependent variable before, so we have also served to demonstrate the previously unknown stability of meat attachment in the face of experimental manipulation. This is useful for future researchers, because they can now better focus on short-term meat

preferences as a more achievable variable to be manipulated. Our initial findings and exploration, even those of non-significance, serve to provide more clarity and concrete suggestions for subsequent research in this under-researched field.

Some of our findings also inspire other questions for future research. For instance, since gender identification, meat attachment, and willingness to reduce meat consumption are all connected, it would be interesting to see if there is a way of reducing or discouraging gender identification, and measuring the effect that has on meat attachment and willingness to reduce meat consumption.

Another avenue of research would be to to try to investigate what, if any, link there is between nontraditional masculinity, meat attachment and willingness to reduce meat consumption. This could be done, as mentioned previously, by activating a nontraditional masculinity through a similar experimental manipulation, but having participants rate what they think John's meat attachment and willingness to reduce meat consumption would be. If participants were to indicate that modern John has less meat attachment and was more willing to reduce his meat consumption, then it could demonstrate that less traditional forms of masculinity *are* associated with weaker meat attachment and willingness to give up meat, something that has yet to be researched. Another way of investigating this potential relationship is by measuring to what degree participants themselves subscribe to a nontraditional masculinity, how attached to meat they are and how willing they would be to reduce their consumption of meat, and checking for relationships among these measures.

Lastly, it would be interesting to connect our findings to masculinity threat. Pohlmann (2014) found that threatening participants' masculinity leads to increased anxiety, which in turn leads to a stronger preference for meat (presumably as a way of affirming masculinity). By allowing participants to affirm their masculinity before it was threatened, the need for increased meat consumption afterwards was eliminated. What if this effect (masculinity threat leading to increased meat consumption) works in reverse? In our study, we included a passage that discussed the harmful effects of meat to both individual health and the environment. It would be interesting to investigate whether this passage, or any kind of campaign that urges the reduction of meat-eating could be seen by some men as a threat to their masculinity, and whether this threat could be counteracted by allowing men to affirm their masculinity in some other way. It would have tremendous practical implications if we could determine if and how campaigns against meat consumption affect men and their feelings of masculinity.

Conclusion

In conclusion, our study has investigated some of the factors that influence men's attachment to meat and willingness to reduce its consumption, and has shown that gender identification plays an important role in this. This research has important implications for any efforts to reduce meat consumption, which is crucial for the improvement of both public health and the state of the environment. Though our results did not entirely confirm our predictions, they provide a solid foundation for further investigation to build upon. Our study is simply a prologue that serves to spark exciting new possibilities for future research into the relationship between masculinity, gender identification and meat, , and more precisely, how that relationship can be wielded to reduce meat consumption.

References

Adams, C. J. (2003). *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory*. New York, NY: Continuum.

Ajzen, I. (1985). From intentions to actions: A theory of planned behaviour. In J. Kuhl & J. Beckmann (Eds.), *Action-control: From cognition to behaviour* (pp 11-39). Heidelberg: Springer.

Buerkle, C. (2009). Metrosexuality can stuff it: Beef consumption as (heteromasculine) fortification. *Text And Performance Quarterly, 29*, 77-93.

Dagevos, H., Voordouw, J., van Hoeven, L., van der Weele, C., & de Bakker, E. (2012). Vlees vooral(snog) vanzelfsprekend; Consumenten over vlees eten en vleesminderen (Report No: 2012-029). Retrieved from the Wageningen UR (University and Research Centre) website: http://www.wageningenur.nl/nl/Publicatie-details.htm?publicationId=publication-way-343234363934.

Daniel, C. R., Cross, A. J., Koebnick, C., & Sinha, R. (2011). Trends in meat consumption in the United States. *Public Health Nutrition, 14*, 575-583.

Eshel, G., Shepon, A., Makov, T., & Milo, R. (2014). Land, irrigation water, greenhouse gas, and reactive nitrogen burdens of meat, eggs, and dairy production in the United States. *Proceedings of the National Academy of Sciences of the United States of America, 111*, 11996–12001. Retrieved from http://www.pnas.org/content/111/33/11996.full.pdf?sid=6254fe84-8c2e-4168-84ef-085e6b113253

Food and Agriculture Organization of the United Nations (2006). Livestock's long shadow: Environmental issues and options. Retrieved from: http://www.fao.org/docrep/010/a0701e/a0701e00.HTM

Goodland, R., & Anhang, J. (2009). Livestock and climate change: What if the key actors in climate change are cows, pigs and chickens? *World Watch Magazine, 22*, 10–19.

Graça, J., Calheiros, M., & Oliveira, A. (2015). Attached to meat? (Un)Willingness and intentions to adopt a more plant-based diet. *Appetite, 95*, 113-125.

Harish (August 23, 2012). Meat consumption patterns by race and gender. *Counting Animals.* Retrieved from: http://www.countinganimals.com/meat-consumption-patterns-by-race-and-gender/.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach.* New York, NY: The Guilford Press.

Holt, D. B., & Thompson, C. J. (2004). Man- of- Action heroes: The pursuit of heroic masculinity in everyday consumption. *Journal of Consumer Research, 31*, 425-440.

Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin, 18*, 302-318.

Lyman, B. (1989). *A Psychology of Food: More Than a Matter of Taste.* New York, NY: Van Nostrand Reinhold Company Inc.

Morris, M., & Anderson, E. (2015). 'Charlie is so cool like': Authenticity, popularity and inclusive masculinity on YouTube. *Sociology, 49*, 1200-1217.

Newcombe, M. A., McCarthy, M. B., Cronin, J., McCarthy, S. (2012). "Eat like a Man." A social constructionist analysis of the role of food in men's lives. *Appetite, 59,* 391-398.

Pohlmann, A. (2014). *Threatened at the table: Meat consumption, maleness and men's gender identities*. Retrieved from ProQuest Dissertations & Theses Global. (AAT 3582948)

Prättälä, R., Paalanen, L., Grinberga, D., Helasoja, V., Kasmel, A., & Janina, P. (2007). Gender differences in the consumption of meat, fruit and vegetables are similar in Finland and the Baltic countries. *European Journal of Public Health, 17*, 520-525.

Rogers, R. A. (2008). Beasts, Burgers, and Hummers: Meat and the Crisis of Masculinity in Contemporary Television Advertisements. *Environmental Communication, 2,* 281-301.

Rothgerber, H. (2013). Real men don't eat (vegetable) quiche: Masculinity and the justification of meat consumption. *Psychology of Men & Masculinity, 14*, 363-375.

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., & Heine, S. J. (2011). Meat, morals, and masculinity. *Appetite, 56*, 447-450.

Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math performance. *Journal of Experimental Social Psychology, 38,* 194-201.

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.

Sinha, R., Cross, A., Graubard, B., Leitzmann, M., & Schatzkin, A. (2009). Meat intake and mortality: A prospective study of over half a million people. *Archives of Internal Medicine, 169,* 562-71.

Sobal, J. (2006). Men, meat and marriage: Models of masculinity. *Food and Foodways: Explorations in the History and Culture of Human Nourishment, 13,* 135-158.

Veri, M., & Liberti, R. (2013). Tailgate warriors: Exploring constructions of masculinity, food and football. *Journal of Sport & Social Issues, 37,* 227-244.

Walker, P., Rhubart-Berg, P., McKenzie, S., Kelling, K., & Lawrence, R. S. (2005). Public health implications of meat production and consumption. *Public Health Nutrition, 8,* 348-356.

Wheeler, S., & Petty, R. (2001). The effects of stereotype activation on behavior: A review of possible mechanisms. *Psychological Bulletin, 127,* 797-826.

Appendix A: Qualtrics Questionnaire

Double click to view entire questionnaire:

Informed Consent

Personality and Product Preferences

In this study, we are interested in whether certain aspects of someone's personality can predict their food product preferences. You will be asked to fill in a questionnaire regarding your own personality, the potential preferences of different personality types, and your own preferences regarding certain food products. There are no right or wrong answers, only your own preferences and opinions. The whole questionnaire should take about 10-15 minutes to complete, after which you will be paid $1.50 if the questionnaire has been completely filled out.

If you have any additional questions or feedback before or after completing the questionnaire, please contact the researcher either via Mturk or by emailing Dr. Emma ter Mors at the following address: emors@fsw.leidenuniv.nl

By checking the box below, I acknowledge that:

- I am 18 or older.
- I understand the information provided and can contact the researcher with questions at any time.
- I am aware that participation is completely voluntary. I know that I can decide at any moment not to participate or to stop. I do not need to provide a reason for doing so.
- My responses are processed anonymously: no information I provide will be linked back to me.
- I give consent to use my data for the purposes that are mentioned in the information letter. I consent to participating in this study.

○ I understand and consent to the above information

Demographics

What year were you born?

▼

What is your gender?

○ Male
○ Female

What is the highest level of education you have completed?

○ Less than High School
○ High School / GED
○ Some College
○ 2-year College Degree
○ 4-year College Degree
○ Masters Degree
○ Doctoral Degree (Phd)
○ Professional Degree (JD, MD)

Which of the following best describes the area you live in?

○ Urban
○ Suburban

Appendix B: Pilot Study

A pilot study was carried out in order to both check that the descriptions of the traditional and modern John differed and John was actually perceived as being traditional or modern, and in order to determine how typically masculine condiments were perceived as being. The short questionnaire was made in Qualtrics and sent out via email and Facebook, and ended up with 35 participants. There were 12 males (34.3%) and the vast majority had obtained at least a four-year college degree or higher (91.4%). The majority of participants were between the ages of 26-30 (65.7%).

John Ratings

In order to test the descriptions of both the traditional and modern Johns, participants were assigned to read one of the two descriptions that we were planning on using in our study ($N_{\text{modern}} = 17$, $N_{\text{traditional}} = 18$). They were then asked to rate the degree to which a series of traits accurately described their John, including masculine, feminine, traditional and modern (1= not at all, 5 = completely). ANOVAs were performed to check if the two Johns differed in their perceived personality traits per description. For the full results see Table 1. While we expected both Johns to be seen as masculine, we also expected that modern John would be seen as more feminine and modern, as well as possessing more traits traditionally seen as feminine (sensitive, caring, open-minded). We expected traditional John to be seen as less feminine, more traditional, and possessing more traits traditionally seen as masculine (aggressive, strong).

The Johns did not differ significantly in their masculinity ratings, but modern John was seen as being more feminine than traditional John .The Johns were not perceived as differing in how independent, caring or strong they were. This makes sense; they were both described as self-employed, therefore independent. Though being caring is more traditionally a female trait, traditional John was described as having a fiancé and wanting to settle down with a family. While being strong is more traditionally masculine, both Johns were described as being equally physically fit. Traditional John was seen as being more aggressive, dependable and traditional. Modern John was seen as being more sensitive, confident, open-minded, likable and modern. The results were approximately what we expected, and it was clear that ‘traditional John’ was perceived as traditional, and ‘modern John’ was perceived as modern. Therefore, the passages describing both Johns were deemed acceptable for use in the main questionnaire.

Table 1. *Participants’ trait ratings for John by condition.*

Trait	*M* Traditional	*SD*	M Modern	*SD*	df	*F*	*p*	η_p^2
Aggressive	2.35	1.11	1.61	0.85	1, 33	4.94	.033	.13
Dependable	4.18	0.53	3.50	0.99	1, 33	6.30	.017	.16
Masculine	4.00	0.61	3.67	0.91	1, 33	1.60	.214	.05
Sensitive	3.06	0.56	3.67	0.67	1, 33	8.24	.007	.20
Independent	4.06	0.75	4.33	0.59	1, 33	1.46	.236	.04
Confident	3.88	0.70	4.33	0.59	1, 33	4.26	.047	.11
Caring	3.65	0.61	3.78	0.73	1, 33	0.33	.570	.01
Strong	3.76	0.66	3.89	0.76	1, 33	0.26	.611	.01
Feminine	2.06	0.75	2.50	0.62	1, 33	3.64	.065	.10
Open-minded	3.12	0.60	3.83	0.51	1, 33	14.40	.001	.30
Likable	3.53	0.62	4.00	0.59	1, 33	5.22	.029	.14
Traditional	3.41	0.87	2.78	0.81	1, 33	4.99	.032	.13
Modern	3.12	0.70	3.94	0.54	1, 33	15.52	.000	.32

Condiment ratings:

In the main study the goal was both to check the effectiveness of priming the two different Johns by rating how interested they would be in certain condiments, and to continue the manipulation itself by having participants think as John. If participants in the traditional condition rated John's preferences to be for condiments that were more highly associated with masculinity, than this would mean that the participants saw John as traditionally masculine. This acts as an indirect confirmation that the experimental manipulation has worked. We also expected participants in the modern condition to rate John as being more interested in condiments that are less associated with masculinity than participants in the traditional condition. This did not have to mean that participants thought John was feminine, or more interested in feminine condiments than masculine condiments, just that 'modern John' was equally interested in all condiments, regardless of how they were gendered.

In order to find out which condiments were the most associated with masculinity and femininity, in the pilot we asked all participants to rate how masculine they considered certain products to be (1 = not at all, 5 = extremely, and 6 = I don't know what this is). Unlike in the full study, there was no relationship between participants' ratings of the condiments and their ratings of John. They were asked simply to rate the masculinity of the

condiments according to their own personal opinions. Statistical analysis showed that which condition participants were placed in for the John section of the pretest did not affect their subsequent ratings of the condiments.

The condiments we tested were: ketchup, mustard, balsamic vinaigrette, BBQ sauce, mango chutney, Sriracha (hot sauce), salsa, guacamole, Worcestershire sauce, Tobasco and pesto. One participant indicated not knowing was mango chutney was. Most of the answers ranged between 1 and 5, except for mango chutney and balsamic vinaigrette (range: 1-3) and pesto (range 1-4). For a full list of the condiment mean ratings see Table 2. BBQ sauce was rated as the most masculine, with Tabasco as second most masculine. Balsamic vinaigrette and mango chutney were rated as the least masculine. Therefore in the main study we would expect participants in the traditional condition to rate John as being more interested in BBQ sauce than participants in the modern condition, and participants in the modern condition to rate John as being more interested in balsamic vinaigrette and mango chutney than participants in the traditional condition. Analyses of variance was performed to check that ratings of condiment masculinity did not differ across John conditions in the pilot study, and they did not.

Table 2. *Means and standard deviations for condiment masculinity ratings.*

Condiment	Mean	Standard Deviation
BBQ sauce	4.47	0.75
Tabasco	4.24	0.86
Sriracha (hot sauce)	4.03	0.80
Worcestershire sauce	3.82	0.90
Ketchup	3.26	0.86
Mustard	3.18	0.90
Salsa	3.06	0.89
Guacamole	2.76	0.82
Pesto	2.35	0.69
Mango chutney	2.09	0.67
Balsamic vinaigrette	2.00	0.74