Meat and masculinities : can differences in masculinity predict meat consumption, intentions to reduce meat and attitudes towards vegetarians?

1 Introduction

There is a widespread idea, in Western societies in particular, that "real men eat meat" (Rothgerber, 2013; Schösler et al., 2015). Throughout European history, meat has always been strongly associated with power, wealth and masculinity. For example, during the First World War women were asked to skip meat, to save it for the male soldiers that needed it more (Ruby & Heine, 2011). Today still men, more than women, believe that eating meat is natural to human beings (Rothgerber, 2013) and makes them strong and virile (Love & Sulikowski, 2018). For many men, a meal without meat is not a proper meal (Sobal, 2005). In general, both men and women strongly associate meat with masculinity (Rozin et al., 2012), while not eating meat (being vegetarian and especially vegan) is associated with being less masculine (Ruby & Heine, 2011; Thomas, 2016).

It has been suggested (Sobal, 2005), however, that the 'meat is masculine' idea is too stereotypical and does not apply to all men alike. Eating meat is associated with the socially constructed norms of hegemonic masculinity and the cisgendered construction of biological heterosexual men, acting masculine in relation to gender roles. This construction of masculinity is based on the notions of power, virility and strength and as mentioned before eating meat is linked to this construction of masculinity (Connell & Messerschmidt, 2005). Still, not all men conform to this norm, while the norm as such is also becoming more hybrid (Bridges & Pascoe, 2014) and inclusive (Anderson & McCormack, 2016), allowing men to negotiate different 'scripts' of masculinity in relation to food choices (Sobal, 2005). A few qualitative studies (Delessio-Parson, 2017; Greenebaum & Dexter, 2018; Roos et al., 2001) have supported this, showing that vegetarian and vegan men use their meatless diet – traditionally associated with femininity (cf. Sobal, 2005) - to emphasize their masculinity. A quantitative study also found that the strength of the 'meat is masculine' idea depends on cultural beliefs about patriarchy and dominant gender norms (Schösler et al., 2015). While Schösler and colleagues (2015) focused on group level differences, the current study will further investigate this on an individual level, aiming to investigate if and how different

forms of masculinity predict differences in meat consumption, willingness to reduce meat and attitudes towards vegetarians.

Indirectly, there are a few important health- and environmental aspects related to this study. The persevering 'meat is masculine' idea may challenge men to opt for a vegetarian diet. Men's masculinity maintenance may be one factor contributing to gender differences in meat consumption and health disparities related to overconsumption of meat (Nakagawa & Hart, 2019). These strong ties between men and meat, reinforced throughout Western societies, make some men very resistant to reducing their meat intake. The promotion of meatless or meat-reduced diets focusing on health- or ecological issues does not convince a large population of men, because they fear to lose their masculine identity (Rothgerber, 2013). As long as meat is associated with masculinity, efforts to promote meat-reduced diets among men may be undermined (Kildal & Syse, 2017). In this sense, a better understanding of the connection between meat and beliefs about masculinity can indirectly play an important role for achieving sustainability and health objectives (Schösler et al., 2015).

This paper starts with reviewing the literature about the 'meat is masculine' construct, looking at who sustains this belief, where this belief (may) come from, and why it can be considered stereotypical, since not all men are alike. From this review hypotheses are formulated and tested by means of a cross-sectional survey design. A total of $N = 309$ male participants (meat eaters) were surveyed about their self-reported masculinity, their attachment to meat, willingness to reduce their meat intake, and attitudes towards vegetarians. Results show that as expected, the 'meat is masculine' construct fits least with nontraditional masculinities, which in turn are negatively related to meat attachment and positively to willingness to reduce meat intake. These results are discussed along with implications and suggestions for marketeers and policy makers.

1.1 Meat, men and masculinity

Compared to women, men tend to think differently about meat eating, having stronger pro-meat attitudes, stronger denials of animal suffering, and stronger beliefs that it is human's fate to eat meat (Rothgerber, 2013). Men are found grilling meat at the barbecue more often than women, and some men will not consider to have had a decent meal if they have not eaten any meat (Sobal, 2005). Men have strong beliefs about meat on both implicit and explicit levels (Love & Sulikowski, 2018) and associate masculinity with eating meat, and both men and women attach meat to men and masculinity on implicit and explicit levels (Rozin et al. 2012). According to Nath (2010) meat is also linked with male sexuality and strength. Not eating meat, and especially avoiding all animal products (i.e. being vegan) is associated with appearing less masculine (Ruby & Heine, 2011; Thomas, 2016). As compared to female vegetarians and vegans, male vegetarians and vegans are evaluated more negatively (MacInnis & Hodson, 2017). Advertisements (Rogers, 2008) and other popular mass media (Julier & Lindenfeld, 2005; Rothgerber, 2013) further support and strengthen the 'meat is masculine' construct. Commercials about meat even refer to meat consumption "as a means to restore hegemonic masculinity in the context of attacks on its continuous dominance" (Rogers, 2008, p. 282). Men's Health, a lifestyle magazine read by men all over the world, also consistently proclaims the idea that real men eat meat. Being a carnivore is actually labeled as one of the characteristics of the ideal man (Rothgerber, 2013). And even trending vegan blogs continue to support the 'meat is masculine' construct if they sell meatlike recipes as "manly meals" for "carnivorous men" (Hart, 2018).

1.2 Explanations for the associations between meat, men and masculinity

Across time and cultures men ate and eat more meat as compared to women (Beardsworth, Bryman, 1999, Beardsworth et al, 2002; Gossard & York, 2003; Prättälä et al., 2006; Pfeiler & Egloff, 2018), and this may explain why we associate meat more readily with men. Even in India, where the rate of vegetarianism is very high, but where meat consumption is on the rise in some regions, men consume more meat than women (e.g. especially during fasting, see e.g. Gupta &

Mishra, 2014). Some of these numbers rely on self-report measures, however, and a recent study showed that women may underreport their meat consumption in survey research, especially when they have been primed about animal pain or distress (Rothgerber, 2019). Then again, observational studies in Hunter Gatherer societies also point to evidence that men have a stronger preference for meat (Berbesque & Marlowe, 2009) and also that men eat more meat as compared to women (e.g. among the *Yanomami*, see Lizot, 1977, and among the *Hadza*, see Berbesque et al., 2011). Although some have attributed these sex differences in Hunter Gatherer societies to the idea that 'men hunt for meat' (Lee & Devore, 2017), it must not be forgotten that meat hunting refers to the acquisition of meat, and not the consumption of it, and, moreover, women in Hunter Gatherer societies hunt for (smaller) animals too (Marlowe, 2006). "Men the hunters" is nothing more than a sexual division of labor (Gurven et al., 2009) and cannot support sex differences in meat consumption.

Other explanations for the given, though small, sex differences in meat consumption in Hunter Gatherer societies refer to potential sex differences in nutritional requirements, or the fact that meat is less secure (more variation in access), and women prefer secured access foods, although these explanations must be taken carefully (Berbesque et al., 2011). Whatever may be the reason, there is some, although small, evidence that men have a stronger preference for meat as compared to women, and this may trace back to a very long time of our human history, given that Hunter Gatherer societies of today may still reflect our evolutionary past (Marlowe, 2005). Eating meat is deeply rooted in our evolutionary history (Stanford & Bunn, 2001), and even today many people's meat craving is strong (Leroy & Praet, 2015). Altogether, meat is considered "natural, normal, necessary and nice" (Piazza et al., 2015), which makes it very hard to change these deeply rooted habits to eat meat (Leroy & Praet, 2015).

1.3 Not all men are alike: the construction of masculinities

The role meat plays in the modern diet of many people today goes far beyond mere nutritional needs; people attribute meanings to meat consumption, and for some this ties into their identity

(Oleschuk, Johnston & Baumann, 2019). In order to change eating habits, cultural, social and personal values must also be kept in mind (Macdiarmid, Douglas & Campbell, 2016). Masculinity is the object of social norms, which change and can be negotiated by individuals. Connell (2005), the key theorist of masculinity, explains how norms of masculinity are not fixed but historically evolve and take on a variety of forms, leading to multiple masculinities. At any given time, a certain form of masculinity is 'hegemonic', as it is broadly accepted as the norm (Connell & Messerschmidt, 2005). However, not all men conform to this norm, nor is it the only version of masculinity; for instance, Connell (2005) also distinguishes 'subordinate masculinity' (associated with homosexual men) and 'marginalized masculinity' (associated with subordinated classes or ethnic groups).

Although Connell's concept of 'hegemonic masculinity' is still widely used, also in the literature about the male preference for meat (e.g. Sumpter, 2015), its validity to describe contemporary masculinity is increasingly questioned. Many academics observe changes in the norms of masculinity. For instance, Bridges and Pascoe (2014) use the term 'hybrid masculinities' to designate the incorporation of elements of subordinate and marginalized masculinities and even femininity into masculine identities. Anderson and McCormack (2016) more narrowly defined 'inclusive masculinity' as masculine norms incorporating elements formerly associated with homosexuality, in a (Western) cultural context of decreasing 'homohysteria'.

While these and other new forms of masculinity are widely discussed and qualitatively researched, as Kaplan, Rosenmann and Shublender (2017) point out such 'nontraditional' forms of masculinity are rarely operationalized and measured. They distinguish between 'traditional masculinity', in line with the abovementioned concept of 'hegemonic masculinity', and 'new masculinity', a more ambiguous concept with roots both in therapeutic discourse (referring to more individual, emotional forms of masculinity) and commercial discourse (referring to the 'metrosexual' man interested in fashion and grooming). Commenting on the vagueness of these and other conceptualizations of new masculinity, Kaplan, Rosenmann and Shublender (2017) devised and tested a New Masculinity Inventory (NMI) which will be used in this study to

quantitatively measure to what degree individuals adhere to 'new' norms of masculinity and how this relates to their meat preferences. This new masculinity is conceptualized by a number of components such as holistic attentiveness, questioning male norms, authenticity, domesticity and nurturing, and sensitivity to male privilege.

1.4 Masculinity to predict individual differences in associations between men and meat

Research increasingly investigates if and how different forms of masculinity relate to meat consumption. While some men eat not only to fuel their body, but their male identity as well, (Adams, 2010; Sobal, 2005), especially among lower-income men (Roos, Prättälä & Koski, 2001), other men avoid meat to destabilize the meat-masculinity nexus (DeLessio-Parson, 2017) and fight the dominant view of hegemonic masculinity (Greenebaum & Dexter, 2018; Roos et al., 2001). Some of these studies were inspired by Carol Adams' (2015) book, *The Sexual Politics of Meat*, that built an argument to explain the association between meat, men and masculinities. Adams argues that since meat implies the death of an animal, and animals are oppressed, meat can be linked to oppression. She then compares the human oppression of animals to men's oppression of women, linking meat to patriarchy; by eating meat, men want to oppress. On the contrary, not eating meat can be seen as a critique of patriarchal society. Both women and men can avoid meat for that reason, and her theory predicts that the more masculine identities shift away from the hegemonic one, the more likely men will be open to the idea of avoiding meat and also to embracing vegetarianism, perceived as being less masculine (Ruby & Heine, 2011; Thomas, 2016). The few studies that have further explored this idea were either theoretical (Sobal, 2005) or based on qualitative interviews (Roos et al., 2001; DeLessio-Parson, 2017; Greenebaum & Dexter, 2018), and the question still remains if and how different norms of masculinity can predict individual men's attitudes towards and consumption of meat. More quantitative approaches focused on group level differences in meat consumption and found that the 'meat is masculine' construct is stronger in cultural groups that adhere to traditional framings of masculinity as compared to cultural groups

that exhibit lower gender differences (Schösler et al., 2015). From this it can be predicted that, on an individual level too, men who identify more strongly with new forms of masculinity will:

Consume less meat (Hypothesis 1),

Have a weaker attachment to meat (Hypothesis 2),

Have a greater tendency to reduce their meat intake (Hypothesis 3), whereby

This may be mediated by their meat attachment (Hypothesis 4). And,

Have less negative attitudes towards vegetarians (Hypothesis 5).

2 Materials and Method

2.1 Sample and procedure

A total of N = 334 respondents started the online survey after informed consent, of which n = 13 were immediately excluded again because they were women. A further n = 4 were excluded because they completed the survey in less than 300 seconds (the median survey completion time was 674 seconds), and n = 2 failed to report an existing country of origin and current residence. Lastly, n = 4 Muslims and n = 2 Hindus were excluded because their religious beliefs prohibit the consumption of (some kinds of) meat. The final sample of N = 309 consisted of mainly higher educated men (70.9% had a higher education degree) between the ages of 18 and 73 (M_{age}= 35.37, SD= 15.28).

Cross-sectional data were collected in [country blinded for review] through a fully anonymous (no IP-addresses were obtained) web-based survey in spring 2018 by means of convenience sampling. The weblink to the survey was shared via social media, and via flyers that were distributed on public places. This study was implemented in full compliance with American Psychological Association (APA) guidelines on the conduct of research involving human subjects. All participants were fully informed about the general aims of the study, provided informed consent and were fully debriefed about the details of the study upon completion. This study was part of a single-study Master's Dissertation research project, data were collected fully

anonymous, among adult populations and did not include sensitive topics. For these types of research, the Ethics Committee [blinded for review] states that no ethical clearance is required.

2.2 Materials

The survey consisted of questions to measure respondents' masculinity, meat attachment, willingness to eat meat, attitudes towards vegetarians, and a few demographics (gender, age and dietary identity). All materials were translated from English to [blinded for review] using a back-translation technique (Brislin, 1970). The materials were pretested among five male subjects. These subjects had an age ranging from 19 to 52 years (M = 27; SD = 14.02). Except for the unclarity of one item of the New Masculinity Inventory, no major issues occurred. One item of the New Masculinity Inventory was omitted (see 2.2.1.), and further only minor changes were made to some of the wordings of the translations.

2.2.1 New masculinity

The New Masculinity Inventory (NMI; Kaplan, Rosenmann, & Shuhendler, 2017) was used to assess participants' identification with nontraditional norms of masculinity. The NMI consists of 17 items, but one item ("Society's definition of masculinity is partial and too restrictive") was omitted because participants of a pretest rated it as too difficult to understand, resulting in a 16-item scale. Reliability was assessed with Cronbach's alpha, with a value of .753 in our sample. Respondents indicated the extent they agreed with each of the 16 items statements on a 5-point Likert-type scale ranging from 1 (completely disagree) to 5 (completely agree), with higher scores indicating leaning more towards new forms of masculinity.

2.2.2 Meat attachment

The Meat Attachment Questionnaire (MAQ; Graça, Calheiros, & Oliveira, 2015) was used to assess participants' attitudes towards eating meat, with higher scores indicating a more positive attitude

towards meat consumption. This scale consists of 16 items rated on a 5-point Likert-type scale ranging from 1 (completely disagree) to 5 (completely agree). Four subscales (hedonism, affinity, entitlement, and dependence) load on a second-order meat attachment factor. The Cronbach's alpha of .910 indicates a high reliability for the total scale.

2.2.3 Willingness to reduce meat intake

Respondents' willingness to reduce their meat intake was measured with a single item: "Indicate to what extent you are planning to reduce your meat consumption in the following six months." A 7-point response scale was provided, ranging from 1 (not at all) to 7 (very much so).

2.2.4 Meat intake

Respondents actual meat intake was measured by asking them how many days a week they ate meat for breakfast, lunch, dinner and in between as snack on a 0 (never) to 7 (every day) scale. Questions were asked separately for each meal and snack to ensure respondents considered all food intake options, and not only their main meals.

2.2.5 Attitudes Towards Vegetarians

Participants' attitudes towards vegetarians were assessed with the 21-item Attitudes Towards Vegetarians Scale (ATVS; Chin, Visak, & Sims, 2002). Higher scores indicate a more negative attitude towards vegetarians. Agreement with each statement was indicated on a 5-point Likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree). Seven items were reverse scored, as instructed by the scale authors (personal communication, April 3, 2019). One item ("Vegetarians should not try to hide their eating habits") was omitted because it had a dubious meaning, resulting in a 20-item scale with good internal consistency ($\alpha = .890$).

2.3 Analyses

Hypotheses described at the end of 1.4. and the analytic plan described here were specified before data were collected. To test hypothesis one and five, descriptive statistics and (M)ANCOVA analyses were performed in SPSS 25. The analyses for hypotheses two to four were performed in Mplus 8 (Muthén & Muthén, 2017). Weighted least squares with mean and variance adjustment (WLSMV) estimation was used, because this is the most suited estimation method for scales with five or less response options (Rhemtulla, Brosseau-Liard, & Savalei, 2012). The CFA- and SEM-models were evaluated using the following model fit indices: root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis index (TLI) (Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999). Values of $< .08$ for RMSEA and $\geq .95$ for CFI and TLI indicate a good model fit (Hooper et al., 2008).

New masculinity. A second-order confirmatory factor analysis (CFA) with the five components as first-order factors and new masculinity (NM) as second-order factor was performed to assess the factor structure of the scale. The second-order CFA, following the structure of the original NMI (Kaplan, Rosenmann, & Shuhendler, 2017), did not fit the data well (RMSEA = .106, CFI = .931, TLI = .916). By allowing one cross-loading ("Men should emphasize dialogue and listening to others as a way of life" on questioning male norms) and one covariance between error terms of two items of the authenticity component, a more acceptable fit was attained (RMSEA = .057, CFI = .980, TLI = .976).

Meat attachment. In accordance with the procedure followed by the authors of the scale (Graça, Calheiros, & Oliveira, 2015), a second-order confirmatory factor analysis (CFA) with the four subscales as first-order factors and meat attachment (MA) as second-order factor was computed. This model had an acceptable fit (RMSEA = .061, CFI = .987, TLI = .977), confirming the original scale factor structure.

Attitudes towards vegetarians. A CFA confirmed that all items of the ATVS loaded on a single factor (RMSEA = .062, CFI = .950, TLI = .944), with a mean standardized factor loading of .633 (range: .444 to .838).

2.3.1 Mediation

A mediation analysis with structural equation modeling (SEM) was carried out to test whether new masculinity is related to willingness to reduce meat consumption via lower meat attachment. A model was constructed with new masculinity predicting willingness to reduce meat consumption directly and indirectly, via meat attachment. To account for possibly confounding effects, age and education were added as control variables.

2.3.2 Missing Data

Missing data were handled using pairwise deletion. The indirect effect of the MPlus model was tested via a bootstrap analysis with 1000 samples, generating a 95% confidence interval of the indirect effect. The indirect effect is significant if the confidence interval does not include 0.

3. Results

3.1 Meat consumption in relation to the New Masculinity Inventory

Descriptive statistic results show that the participants of this study frequently eat meat for lunch (M = 3.859 SD = 2.147) and dinner (M = 5.034 SD = 1.680), whereas meat consumption is lower for breakfast (M = 1.693 SD = 2.181) and snacking (M = 0.786 SD = 1.206). Using a MANCOVA analysis with the different meals as dependent, the New Masculinity Inventory (NMI) as predictor and controlling for age and education, results show that the NMI and education predict differences in eating meat for breakfast and snacking, but not for having meat for lunch and dinner (see Table 1). Men who score higher on the NMI and men with a higher degree of education eat meat for breakfast and snacking less often than men with lower NMI scores and lower levels of education. Age also inversely related to eating meat as a snack, indicating that this is more common among younger men (see Table 1). Models with interactions between NMI, age and education

showed that none of the interactions were significant. These findings partly confirm the first hypothesis, that men who identify more strongly with new forms of masculinity consume less meat.

Table 1
MANCOVA analysis for the relation between the New Masculinity Inventory and meat consumption for breakfast, lunch, dinner and snacking, controlling for age and education

Variables	B (SE)	t	*p*	CI	η^2
Intercept					
Breakfast	5.54 (1.02)	5.45	.000	[3.54, 7.54]	.092
Lunch	5.42 (1.03)	5.24	.000	[3.38, 7.45]	.085
Dinner	6.46 (.80)	8.06	.000	[4.88, 8.04]	.180
Snack	3.46 (.55)	6.25	.000	[-.195, .223]	.117
NMI					
Breakfast	**-.64 (.25)**	**-2.51**	**.013**	**[-1.13, -.13]**	**.021**
Lunch	-.18 (.26)	-.17	.476	[-.69, .32]	.002
Dinner	-.17 (.20)	-.83	.405	[-.56, .23]	.002
Snack	**-.43 (.14)**	**-3.08**	**.002**	**[-.70, -.15]**	**.031**
Age					
Breakfast	-.01 (.01)	-.82	.411	[-.02, .01]	.002
Lunch	-.00 (.01)	-.33	.743	[-.02, .01]	.000
Dinner	-.01 (.01)	-.80	.424	[-.02, .01]	.002
Snack	**-.01 (.01)**	**-2.38**	**.018**	**[-.02, -.001]**	**.019**
Education					
Breakfast	**-.28 (.10)**	**-2.78**	**.006**	[-.48, -.08]	**.026**
Lunch	-.17 (.10)	-1.66	.097	[-.37, -.03]	.180
Dinner	-.13 (.08)	-1.67	.096	[-.29, .02]	.009
Snack	**-.16 (.06)**	**-2.84**	**.005**	**[-.27, .05]**	**.027**

3.2. The New Masculinity Inventory predicts willingness to reduce meat intake

Table *2*
Means, Correlations and Standard Deviations (on the Diagonal)

Variable		1	2	3	4	5	6
1	NM	0.49					
2	MA	-.13*	0.74				
3	WRMC	.18**	-.42**	1.61			
4	ATV	-.28**	.47**	-.34**	0.57		
5	Age	.02	-.02	.05	.22	15.28	
6	Education	.07	-.15*	.09	-.13*	.34**	1.30
	M	3.67	3.55	3.06	1.99	35.37	4.61

Note. NM = new masculinity; MA = meat attachment; WRMC = willingness to reduce meat consumption; ATV = attitude towards vegetarians. * $p < .05$, ** $p < .01$.

Descriptive statistics of the measures are displayed in Table 1. The correlation coefficients indicate that a stronger identification with new forms of masculinity (high scores on NMI) is related

to a weaker meat attachment ($r_{NM\text{-}MA}$ = -.13*) and a greater willingness to reduce meat intake ($r_{NM\text{-}WRMC}$ = .18**), confirming Hypothesis 2 (men who identify more strongly with nontraditional forms of masculinity have a weaker attachment to meat) and Hypothesis 3 (men who identify more strongly with nontraditional forms of masculinity have a greater tendency to reduce their meat intake). A stronger identification with nontraditional masculinities is also related to a more positive attitude towards vegetarians ($r_{NM\text{-}ATV}$ = -.28). Stronger meat attachment is related to more negative attitudes towards vegetarians ($r_{MA\text{-}ATV}$ = .47**), and men with more negative attitudes towards vegetarians tend to be less willing to reduce their meat intake ($r_{rWRMC\text{-}ATV}$ = -.34**).

3.3 The association between masculinity and willingness to reduce meat consumption is mediated by meat attachment

A mediation analysis was carried out to test whether the association between masculinity and willingness to reduce meat consumption is mediated by meat attachment. Results of the analysis are displayed in Figure 2. First, a model without mediation was constructed, in which willingness to reduce meat consumption (WRMC) was regressed on new masculinity (NM) directly, with age and education as control variables. This model had a good fit: RMSEA = .051, CFI = .977, TLI = .972, and the direct association between NM and WRMC was significant, β = 0.224, p = .001. Next, the mediation by meat attachment (MA) was added. This model also had an acceptable to good fit: RMSEA = .052, CFI = .951, TLI = .947. NM was significantly associated with MA (β = -0.281, p = .002), and MA with WRMC (β = -.0424, p < .001). The direct association between NM and WRMC was no longer significant when the mediation via MA was added (β = 0.132, p = .071). However, the indirect effect of NM via MA on WRMC was significant, β = 0.119, p = 0.004, supported by the results of the bootstrap analysis: 95% CI = [0.047, 0.210]. This signifies indirect-only mediation (Zhao, Lynch Jr, & Chen, 2010) of NM via MA on WRMC, meaning that the data suggest that compared to more traditional men, those who

tend to embrace new masculinity more, are more willing to reduce their meat consumption, because they tend to be less attached to meat, confirming hypothesis 4.

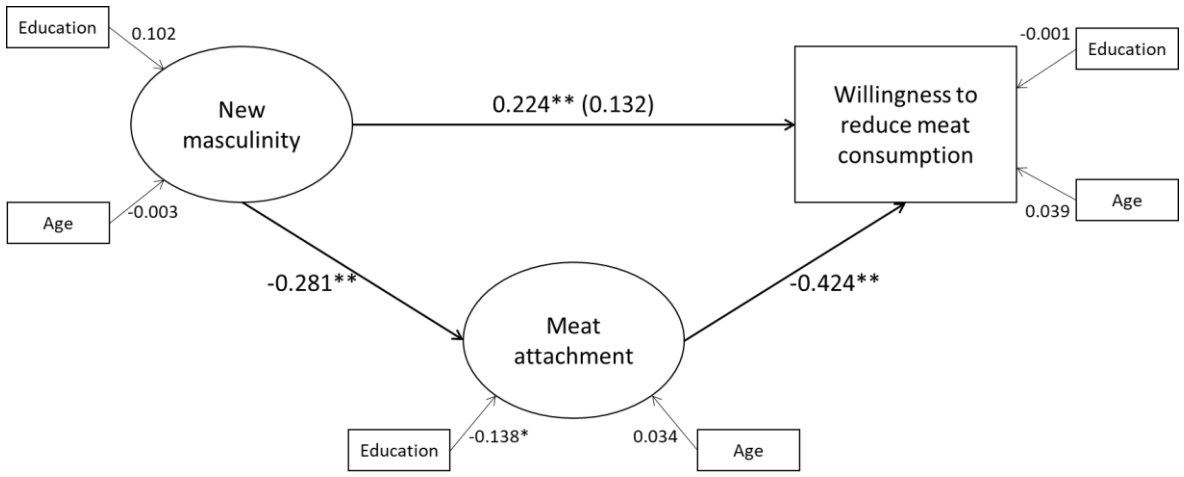

Figure 2. Standardized regression coefficients for the mediation model, showing the total effect of new masculinity on willingness to reduce meat consumption via meat attachment. The direct effect of new masculinity on willingness to reduce meat consumption is shown in parentheses. For clarity, the first-order factors of the latent factors and their indicators are not shown.

3.4 The New Masculinity Inventory predicts attitudes towards vegetarians

To test Hypothesis 5 (the more men identify with nontraditional forms of masculinity, the less negative attitudes they will have towards vegetarians), participants' attitudes towards vegetarians were regressed on their scores on the New Masculinity Inventory, controlling for age and education. As can be seen in Table 3, nontraditional masculinity (higher scores on the NMI) was related to more positive attitudes towards vegetarians (lower scores on the ATVS).

Table 3
SEM regression analysis for the relation between the New Masculinity Inventory and Attitudes Towards Vegetarians, controlling for age and education

Variables	*b (SE)*	*b* (SE)*	95% *CI b**	*p*
NMI	**-0.62 (0.09)**	**-0.52 (0.05)**	**[-0.63, -0.42]**	**0.000**
Age	0.00 (0.00)	0.05 (0.05)	[-0.05, 0.15]	0.320
Education	-0.10 (0.05)	-0.10 (0.06)	[-0.21, 0.01]	0.062

Note. Model fit: RMSEA = .044, CFI = .947, TLI = .943.

4 Discussion

Social scientific research has repeatedly shown that there are sex differences in meat consumption and attitudes towards vegetarians (see e.g. Rothgerber, 2013; Thomas, 2016; Rozin et al., 2012; Love & Sulikowski, 2018; Vandermoere et al., 2019). However, the focus on the difference *between* men and women, and the related perception that meat eating is a masculine practice, has distracted the attention from the differences *within* the seemingly homogeneous group of men. In this study, we have tried to fill this gap by studying the relationship between meat preferences and new norms of masculinity. Results show that the more men identify with nontraditional forms of masculinity, the weaker their attachment to meat is, the more positive their attitudes towards vegetarians, and the stronger their tendency to reduce their meat intake. These findings question the stereotypical idea that "real men eat meat" (Rothgerber, 2013; Schösler et al., 2015) as they clearly show that this is not true for all men. Only men who identify less with new forms of masculinity have a stronger attachment to meat and a more negative perception of vegetarians. The results of this study are in line with what previous researchers found in their qualitative research (Delessio-Parson, 2017; Greenebaum & Dexter, 2018; Roos et al., 2001). We therefore advise any future research on sex differences in attitudes towards meat to not only focus on biological sex differences, but to take gender identities into account as well.

Next, the descriptive statistics revealed that NMI and level of education did not predict the frequencies of eating meat for dinner, but only for breakfast and snacks. This indicates that variations in how much meat men eat may not occur that much for main meals, but would rather be found in data about their breakfast and snack consumption. Breakfast and snacks are usually individual meals, eaten alone (Yates & Warde, 2017). In contrast, especially dinners are meals that in [country blinded for review] are traditionally still eaten as a family. A possible explanation for the similar meat consumption rates of men that score high or low on the NMI may be that they compromise their food choices with partners or friends (Sobal, 2005). The differences found for breakfast and snacks in this study are rather coincidental; we separated daily food intake moments to get a more accurate reflection in the answers, but we suggest future researchers to

not focus on meat intake in general, or main mails, but include specific consumption rates for breakfasts and snacks as well.

Both this result, and the general outcomes of this study should be taken into account by health organizations and marketeers that want to promote meat-reduced diets. Meat can be part of a healthy and sustainable diet (Willett et al., 2019). It cannot be denied, however, that an overconsumption of meat is detrimental for our environment (e.g. Walker et al., 2019), and the health of human individuals, men in particular (Nakagawa & Hart, 2019). Some studies pointed to the fact that men are hard to convince to eat less meat, because of their fear to face identity issues (Rothgerber, 2013), but again, our study shows that this may not be true for all men. Men who identify more strongly with new forms of masculinity seem less attached to meat and more open to meat reduction. Perhaps, and instead of focusing on the health and environmental benefits of a meat reduced diet, health organizations and marketeers could focus on making new forms of masculinity more attractive as the social norm. We further propose that perhaps not only a better understanding of why 'meat is masculine' (Schösler et al., 2015), but a better understanding of traditional male identities and the place of meat consumption therein would enable health organizations and marketeers to target the group that is least in favor of reducing their meat intake, while most probably most in need of it in terms of their personal health.

5 Limitations

A first limitation of this study is that we did not control for different types of meat being consumed. There are studies pointing to the fact that sex differences in meat consumption mainly apply to red meat consumption (Sobal, 2005; Nath, 2011), and therefore the results of this study may differ when controlling for different types of meat. Then again, others have recently argued that these differences may be smaller than expected (Pfeiler & Egloff, 2018). In line with this argument, this study also did not take openness to plant-based products into mind, which would be a good addition for future research. Second, some methodological shortcomings need to be

acknowledged. Our (convenience) sample was limited in terms of size and it contained relatively more higher educated men. In addition, no use was made of longitudinal or experimental data, which makes it difficult to draw conclusions about causal relationships. Further research could therefore investigate whether some of the relationships also run in the opposite direction. Third, this study only focused on men, and differences in male gender roles, but it may very well be that similar patterns would arise in studies with women. The reason to focus on a male population came from the predominant 'meat is masculine' construct, but it would be interesting to further test if differences in female gender roles could also explain differences in women's (weaker) attachment to meat, and (stronger) willingness to reduce their meat intake. Fourth, data for this study were collected in only one [blinded for review] country, and focused on high-educated Western men only. It would be interesting to see how our results relate to other countries, and to the ethnic-cultural diversity within a country (De Backer et al., 2019). Social definitions of what it means to be 'a new man' are culturally specific, and eating little or no meat may be connected in multiple ways to these 'new masculinities'. It is possible that 'meat as a symbol of masculinity' is not equally strong everywhere, as has been suggested in a recent publication about vegetarianism worldwide (De Backer et al., 2019).

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