The Social Norms in Meat Consumption

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Abstract

One of the biggest challenges facing today’s society is the (excessive) consumption of meat, which is one of many behaviors causing the issue of Earth’s long-term unsustainability. Social norms can have a significant impact on behavioral outcomes, which consequently can have an impact on societal outcomes. Limiting the consumption of meat and/or consuming meat replacement products (MRP) as a substitute for meat is one way of making our diets more sustainable. This study explored the topic of whether people accurately perceive other people’s attitudes towards meat consumption and the willingness to consume MRPs and if that might influence their own attitudes. A survey was conducted to ask participants their own personal attitudes and participants’ perceived attitudes of their peers regarding views on meat consumption and MRPs. LISS panel data was also extracted to use for comparison. A moderate positive correlation was found between participants’ perceived attitudes of their peers and participants’ own attitudes on views regarding meat consumption and willingness to consume MRPs. People therefore might not be willing to reduce meat consumption or consume MRPs because they perceive their peers’ as not willing to do so. A significant difference was also observed between participants’ own attitudes compared to participants’ perceived attitudes of their peers on views regarding meat consumption and willingness to consume MRPs. Participants overestimated their peers’ willingness to reduce red meat consumption, beliefs regarding whether eating meat is bad for the planet, and willingness to consume MRPs. A possible explanation is that the social norm regarding meat consumption and willingness to consume MRPs has changed significantly in the last decade. More research is needed to get a more complete picture of this phenomenon.

Keywords: meat replacement products, meat consumption, social norms, descriptive norms, sustainable diets, misperceived norms
The Social Norms in Meat Consumption

Meat consumption has been deeply rooted into human culture and behavior ever since it became a staple of the hominid diet well over 2 million years ago (Stanford & Bunn, 2001). Many countries attribute rich cultural and social meanings to meat consumption far more so than other types of food (Fiddes, 2004). Meat is also a part of some national identities (DeSoucey, 2010), and from 2000 to 2018, meat production increased from 232.50mt to 341.16mt (46.7%) (Ritchie, 2017). However, with growing concern over the planet’s sustainability, meat consumption and its detrimental effects on the planet have garnered increasing attention (Dietz et al., 1995; Janda & Trocchia, 2001; Fox & Ward, 2008; Ruby, 2012; Rosenfeld, 2018). Parallel to these realizations, the consumption of meat is becoming a conflicting social norm, as different groups within society are beginning to hold conflicting notions regarding meat consumption (McDonald et al., 2014).

Two of the most well-known plant-based diets are vegetarianism (i.e. individuals who abstain from consuming meat) and veganism (i.e. individuals who abstain from all animal-related products), referred together from now on as veg*ans. The decision by individuals to relinquish meat from their diets can become a defining social identity which is likely to influence a person’s values, attitudes, beliefs, and well-being (Nezlek & Forestall, 2020). Despite the obvious benefits of veg*anism, such as lower environmental impacts (Rosi et al., 2017) and reducing the risk of heart disease (Kahleova & Barnard, 2018), diabetes (Pawlak, 2017), and some cancers (Godos et al., 2017), veg*an diets are still in many places not fully culturally accepted (Fiddes, 2004), and MacInnis and Hodson (2017) empirically demonstrate the existence of an anti veg*an bias. With meat consumption often firmly established in society and various cuisines, but with the growing need for a dietary change that is more sustainable, meat replacement products have increasingly been finding their way into people’s diets (Tziva et al., 2020).
Meat replacement products (MRPs) are food products that mostly consist of proteins made primarily from plume (e.g. soy), fungi, other plants, or grown in-vitro in labs (McIlveen, Abraham, & Armstrong, 1999; Sadler, 2004; Datar & Betti, 2010). Therefore, MRPs might become the perfect substitute for omnivores, but as mentioned above, meat consumption is not showing signs of slowing down, followed sometimes by ignorance of and disdain towards the more sustainable veg*an diet. In the following section, I will be taking a closer look at why this seems to be the case and how the trend of (excessive) meat consumption can be changed, specifically with the theory of socially normative behavior (Rimal & Real, 2005).

Social norms

Young (2015) described social norms as “the unwritten codes and informal understandings that define what we expect of others and what others expect of us.” By this definition, and with meat consumption the expected normative dietary behavior in most societies, it is comprehensible that switching to a veg*an diet and/or limiting meat consumption can be a rigid transition.

Social norms have been extensively researched; evidence shows that they can influence a broad variety of behaviors, including conservation activities (Allcott, 2011), charitable donations (Croson, Handy & Shang, 2009), alcohol consumption (Neighbors et al., 2010), and diet and exercise habits (Yun & Silk, 2011). Furthermore, social norms can have important implications for societal outcomes such as cessation of smoking in public places (Nyborg & Rege, 2003; Vardavas et al., 2013), abandonment of foot-binding in China, and changed fertility norms (Young, 2015). Therefore, it seems that what other individuals do and think has a great significance on people’s actual behavior, which can under certain circumstances have an impact on societal behaviors.
In this paper, I will focus on descriptive norms, which refer to what most people do, whereas injunctive norms describe what most people approve of doing (Stok et al., 2014). A descriptive social norm can be interpreted as a heuristic (Shah & Oppenheimer, 2008), which should work as a decisional shortcut for behavior. What people think most people do is likely to be right, so doing as other people do is reducing cognitive load (Cialdini, 2009). This is therefore a type of ‘informational’ social influence which helps identify adaptive behavior. This heuristic, relying on what they think other people do to adjust behavior, accordingly, can sometimes lead to misperceptions of the social norm, which can have detrimental effects.

Reasons for the effect of why descriptive norms can have such an effect on individuals are varied. People may seek to fit in socially, gain social esteem, or avoid social disapproval. The behavior of others can also serve as an indication of what is most effective in certain circumstances or they might anticipate reciprocity in exchange for conforming to these norms (Farrow, Grolleau & Ilbanez, 2017).

Studies have shown the effect of misperceived social norms; in Saudi Arabia, the vast majority of young married men privately supported women working outside the home but substantially underestimated the support for women by other similar men, even from the same social setting (Bursztyn & Yanagizawa, 2020). This misperceived social norm can result in a feedback loop that keeps women from working outside the home. In essence, young married men might be hesitant and/or unwilling to express their support towards women working outside the home, which severely restrains the societal change and reform that might lead women to entering the job market merely due to a misperceived social norm. Another study showed that UK adolescents overestimated their peers’ diet of unhealthy snacks versus their own (Lally, Bartle & Wardle, 2011), which can lead adolescents to reason that eating more unhealthy snacks is the norm, increasing an unhealthy diet. Drinking social norms are also a prevalent factor in the sometimes-excessive amount of alcohol people consume; Berkley-
Patton et al. (2003) showed that these norms can be changed. They researched incoming university freshmen who had significantly greater misperceptions of their peers’ alcohol consumption and therefore higher levels of drinking than baseline university freshmen, but when their false misperceptions were corrected, their alcohol consumption decreased. These findings highlight the fact that people sometimes misperceive what is common. This may drive their own, and even society’s, behavior towards sustaining a norm that most people, at times, do not even agree with. Therefore, this misperceiving of social norms could be one reason some people seem inflexible in limiting their meat intake and making a gradual transition to a more sustainable diet.

Informational social influence may be a main underlying reason regarding the influence descriptive norms have on behavior. Descriptive norms have been demonstrated to activate an individual’s goal to make accurate and efficient decisions (Jacobson et al., 2011). Peer descriptive norms may also act as a form of social proof (Cialdini, Reno & Kallgren, 1990), which then helps individuals make better-informed decisions regarding their behavior (Cialdini & Goldstein, 2004). Research on eating behavior has been shown to support these findings. Salmon et al. (2014) used a hypothetical food choice task, and under conditions of low self-control, participants made more healthy choices when they were described as being common. Additionally, Cruwys et al. (2012) showed that an eating norm set by peers from the same social group had a more significant effect on food consumption than an eating norm set by an unrelated peer. For instance, if descriptive norms do in fact employ influence as a decisional shortcut (‘what most people are doing is probably the right thing to do’), then the depletion of cognitive resources should make individuals especially likely to turn to this signaling and therefore be influenced by descriptive norms. People don’t want to be socially rejected; following the prevailing norm is therefore an easy way to avoid that possibility.
Therefore, with meat consumption the common social norm and eating a highly social activity (Choe, 2019), taking a step towards MRPs and limiting meat consumption might be perilous.

With people over- or underestimating behaviors around them, it is therefore likely that they refrain from acting in certain ways which they misperceive as against the norm, even though they are not principally opposed to these acts, in this specific case, meat consumption and the willingness to try MRPs. This research yields context that people might actually be willing to try MRPs, limiting their meat consumption, or perhaps changing to a more plant-based diet. But because of their (false) beliefs of the prevalent social norm in society, they might be hesitant and/or unwilling to try MRPs and limit meat consumption; with what has been discussed above, the descriptive norm seems to favor an omnivorous diet. Changing to a more sustainable diet might be happening at the individual level but not necessarily at the societal level due to meat consumption being the prevailing social norm. Descriptive norms might play a significant role in this process if people perceive others as unwilling to reduce meat consumption and to consume MRPs or misperceive the prevalence of individuals within society that choose a veg*an diet.

**Current study**

Little has been done to empirically test what the descriptive norm is regarding either meat consumption or the willingness to consume MRPs. Social norms have clear implications towards behavioral outcomes, which in turn can have an effect on societal outcomes. This avenue of research could highlight the fact that people are misperceiving this specific social norm, that most people approve of transitioning to more sustainable diets, but the misconception prevails, in turn slowing down this process. This is therefore the first exploration of this specific topic, i.e. whether people accurately perceive other people’s attitudes towards meat consumption and the willingness to consume MRPs. Therefore, I will be investigating this relationship with 16- to 30-year-olds in the Netherlands to provide a
possible starting point for the exploration of this newly arisen dilemma regarding meat consumption.

Based on what has been discussed above, the following hypotheses are therefore presented. Hypothesis 1a: That there is a positive relationship between participants’ perceived descriptive norm and participants’ own attitudes on willingness to reduce red meat. Hypothesis 1b: That there is a positive relationship between participants’ perceived descriptive norm and participants’ own attitudes that eating meat is bad for the planet. Hypothesis 1c: That there is a positive relationship between participants’ perceived descriptive norm and participants’ own attitudes on willingness to consume MRPs.

In addition, to see whether people accurately perceive the descriptive norm, the following hypotheses are therefore presented. Hypothesis 2a: That there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to reduce red meat consumption. Hypothesis 2b: That there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on whether eating meat is bad for the planet. Hypothesis 2c: That there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to consume MRPs.

Methods

Participants

A total of 1,076 participants were recruited via WhatsApp Groups, Reddit, and a Dutch University Facebook group for the study. Data from 688 participants who had either missing data, were not aged 16 to 30, or who indicated a dietary preference other than “omnivore” were excluded from the analysis, leaving a final sample of 388 participants (\(M_{age} = 23.36, SD_{age} = 4.17; 40.5\% \text{ female}, 3.8\% \text{ other})\). A sensitivity analysis using G*Power
(Faul et al., 2007) showed that the sample size afforded 95% power to detect a small difference \((d = 0.167)\) between the population mean and the surveyed mean (with \(\alpha = 5\%\)). Before the start of the survey, a consent form appeared which informed participants of the study’s intention, that their participation was completely voluntary, of their right to withdraw at any time, that no personal data will be collected, and of potential contacts should any questions regarding the study or data protection arise. Participants were required to answer every question in the survey to complete participation. An ethics approval was provided from the Ethics Review Board of Tilburg School of Social and Behavioral Sciences by the thesis supervisor. The survey posed minimal risk to the participants; questions regarding participants’ views on MRPs and meat consumption of others were unlikely to affect participants emotionally or otherwise.

**Materials**

I extracted data containing three representative samples of 2,444 (1), 2,115 (2), and 1,920 (3) Dutch 16- to 30-year-old individuals via the LISS (Longitudinal Internet Studies of the Social Sciences) panel (Scherpenzeel & Das, 2010), which is a probability sample of Dutch households drawn from the population register. Data of panel members are representative of the Dutch population on measures such as age, gender, education, and income (see http://lissdata.nl for more details). Data from 1,664 (68%) (1), 1,104 (52%) (2), and 1,684 (87%) (3) participants who had missing data were excluded from the analysis, leaving a final sample of 780 \((M_{age} = 22.60, SD_{age} = 4.62; 59.2\% \text{ female})\) (1), 1,011 \((M_{age} = 23.53, SD_{age} = 4.24; 60.3\% \text{ female})\) (2), and 236 \((M_{age} = 26.12, SD_{age} = 2.82; 74.2\% \text{ female})\) (3) participants respectively. Question (1) was administered in May of 2012, question (2) was administered in July of 2018, and question (3) was administered in October of 2012.

Three questions were chosen that were thought to be suited to measure participants’ attitudes towards willingness to consume MRPs and on views regarding meat consumption.
The three separate questions were as follows: (1) “How much do you favor or oppose: Limiting the amount of red meat in diet”, with a provided 5-point Likert scale from 1 – *Strongly oppose* to 5 – *Strongly favor*; (2) “Eating meat is bad for the planet”, with a provided 7-point Likert scale from 1 – *Strongly disagree* to 7 – *Strongly agree*; and finally, (3) “To what extent do you personally eat a meat replacement product instead of meat at least once a week?”, with a provided 5-point Likert scale from 1 – *Definitely not* to 5 – *Definitely / I already do so*. All three questions came from the three different datasets (see above) and are listed with corresponding numbers in parentheses.

To measure surveyed participants’ own attitudes, the three questions chosen from the LISS panel were then administered with the same provided Likert scales as mentioned above. To measure participants’ perceived attitudes of their peers, a text appeared before every question stating: “What do you think 16- to 30-year-old’s in the Netherlands think of the following:” followed by either question one, two or three. In short, instead of exclusively asking participants their views on MRPs and meat consumption, participants were also asked what they think other people’s (i.e. 16-to 30-year-old’s in the Netherlands) views are on MRPs and meat consumption.

**Design and procedure**

An online survey was created using Qualtrics which was posted to WhatsApp Groups, Reddit, and a Dutch university Facebook group for data collection. When participants clicked on the survey link, a consent form appeared where they were informed that their participation was completely voluntary, that they had the right to withdraw at any time, that no personal data would be collected, and of potential contacts should any questions regarding the study or data protection arise. Participants then clicked next if they agreed to the terms and formally began participation in the study. First, participants answered each of the following questions in succession, (1) “How much do you favor or oppose: Limiting the amount of red meat in
diet”, evaluated on a 5-point Likert scale from 1 – Strongly oppose to 5 – Strongly favor; (2) “Eating meat is bad for the environment”, evaluated on a 7-point Likert scale from 1 – Not important to 7 – Very important; (3) “To what extent do you personally eat MRPs instead of meat at least once a week”, evaluated on a 5-point Likert scale from 1 – Definitely not to 5 – Definitely / I already do so. Second, a text appeared stating that these questions had been administered to 16- to 30-year-olds in the Netherlands and that participants should answer how 16- to 30-year-olds would have responded to the same questions. The questions were then administered in an identical order as mentioned above with corresponding Likert scales, albeit with a slight adjustment, all beginning with the statement “What do you think 16- to 30-year-olds in the Netherlands think of the following”. Participants then indicated their respective dietary preference and answered general demographic questions. In order to complete the survey, participants were required to answer all questions.

**Statistical analysis**

The statistical software SPSS was utilized for descriptive statistics and data analysis. First, data from participants who had missing data and/or did not fit certain requirements were excluded from the analysis. Second, a Pearson’s Correlation Coefficient was administered to examine the relationship between scores of participants’ personal attitudes and participants’ perceived attitudes of 16- to 30-year-olds in the Netherlands on willingness to limit the amount of red meat in diet, beliefs regarding whether consuming meat was bad for the planet, and willingness to consume MRPs. Third, three paired t-tests were used to examine whether there were any differences between participants’ perceived attitudes of 16- to 30-year-olds in the Netherlands and their own personal attitudes regarding MRPs and meat consumption. Last, three one-sample t-tests were used to examine whether there were any differences between the LISS panel sample mean and the surveyed mean, with the variables being: “Test
value”, the means given by the LISS panel sample, and the “Test variables”, the means of the participants answers in the Qualtrics survey.

**Results**

**Hypothesis 1a**

To examine the hypothesis that there is a positive relationship between participants’ perceived descriptive norm and participants’ own attitudes on willingness to reduce red meat consumption, a Pearson’s Correlation Coefficient was used. Participants’ own scores and participants’ estimates were found to be moderately positively correlated, $r(386) = .30, p < .001$. The results show that participants who themselves are more willing to reduce red meat consumption are also more likely to perceive others as being more willing to reduce red meat consumption and vice versa. The results therefore support the hypothesis.

**Hypothesis 1b**

To examine the hypothesis that there is a positive relationship between participants’ perceived descriptive norm and participants’ own attitudes that eating meat is bad for the planet, a Pearson’s Correlation Coefficient was used. Participants’ own scores and participants’ estimates were found to be moderately positively correlated, $r(386) = .43, p < .001$. The results show that participants who themselves are more likely to believe that meat consumption is bad for the planet are also more likely to perceive others to believe that meat consumption is bad for the planet and vice versa. The results therefore support the hypothesis.

**Hypothesis 1c**

To examine the hypothesis that there is a positive relationship between participants’ perceived descriptive norm and participants’ own attitudes on willingness to consume MRPs, a Pearson’s Correlation Coefficient was used. Participants’ own scores and participants’ estimates were found to be moderately positively correlated, $r(386) = .32, p < .001$. The
results show that participants’ who themselves are more willing to consume MRPs are also more likely to perceive others as more willing to consume MRPs and vice versa. The results therefore support the hypothesis.

**Hypothesis 2a**

I examine the hypothesis that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to reduce red meat consumption. A paired $t$-test was conducted between participants’ predicted attitudes of their peers with the actual attitudes of their peers from the surveyed sample. However, against predictions, there was no significant difference between participants’ attitudes ($M = 3.36, SD = 1.13$) and participants’ perceived attitudes of their peers ($M = 3.37, SD=0.97$), $t(387) = -0.203; p = .839, d = 0.009$. In short, the average scores for participants’ attitudes did not differ significantly when compared to the average scores for participants’ perceived attitudes of their peers. Participants accurately perceived their peers’ attitudes when it comes to willingness to limit the amount of red meat in their diets. Therefore, the results do not support the hypothesis.

I further examine the hypothesis that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to reduce red meat consumption. A one sample $t$-test was conducted between participants’ predicted attitudes of their peers with the actual attitudes of their peers’ taken from the average scores of participants’ that were recruited from the LISS panel sample. Participants significantly overestimated their peers level of willingness to reduce red meat consumption ($M = 3.37, SD = 0.97$) compared to what the LISS panel sample provided ($M = 2.98, SD = 0.84$), $t(387) = 7.938; p < .001, d = 0.402$. In short, participants significantly overestimated their peers’ attitudes towards willingness to reduce red meat consumption compared to the actual attitudes of their peers’ taken from a LISS panel sample. Therefore, the results support the hypothesis.
Hypothesis 2b

I examine the hypothesis that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on whether eating meat is bad for the planet. A paired \( t \)-test was conducted between participants’ predicted attitudes of their peers with the actual attitudes of their peers from the surveyed sample. As predicted, there was a significant difference between participants’ attitudes (\( M = 4.97, SD = 1.56 \)) and participants’ perceived attitudes of their peers (\( M = 5.28, SD = 1.22 \)), \( t(387) = -4.010; p < .001, d = 0.221 \). In short, participants significantly overestimated their peers’ beliefs on whether eating meat is bad for the planet compared to their own personal beliefs. Therefore, the results support the hypothesis.

I further examined the hypothesis that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on whether eating meat is bad for the planet. A one-sample \( t \)-test was conducted between participants’ predicted attitudes of their peers with the actual attitudes of their peers’ taken from the average scores of participants’ that were recruited from the LISS panel sample. As predicted, there was a significant difference between participants’ predicted attitudes of their peers (\( M = 5.28, SD = 1.21 \)) compared to the actual attitudes of their peers provided by the LISS panel sample average (\( M = 4.24, SD = 1.74 \)), \( t(387) = 16.824; p < .001, d = 0.859 \). In short, participants significantly overestimated their peers’ beliefs on whether meat consumption is bad for the planet compared to the actual attitudes of their peers taken from a LISS panel sample. Therefore, the results support the hypothesis.

Hypothesis 2c

I examine the hypothesis that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to consume MRPs. A paired \( t \)-test was conducted between participants’ predicted attitudes of their peers
with the actual attitudes of their peers from the surveyed sample. As predicted, there was a significant difference between participants’ attitudes ($M = 3.05, SD = 1.52$) and participants’ perceived attitudes of their peers ($M = 3.29, SD = 1.04$), $t(387) = -3.115; p < .01, d = 0.184$. In short, participants significantly overestimated their peers’ attitudes towards willingness to consume MRPs, compared to their own personal attitudes. Therefore, the results support the hypothesis.

I further examine the hypothesis that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to consume MRPs. A one-sample *t*-test was conducted between participants’ predicted attitudes of their peers with the actual attitudes of their peers’ taken from the average scores of participants that were recruited from the LISS panel sample. As predicted, there was a significant difference between participants’ predicted attitudes of their peers ($M=3.29, SD=1.04$) compared to the actual attitudes of their peers provided by the LISS panel sample average ($M = 2.87, SD = 1.39$), $t(387) = 8.028; p < .001, d = 0.403$. In short, participants significantly overestimated their peers’ attitudes towards willingness to consume MRPs compared to the actual attitudes of their peers taken from the LISS panel sample. Therefore, the results support the hypothesis.

**General Discussion**

Social norms can have a significant effect on societal outcomes, and one of the biggest challenges facing today’s society is Earth’s sustainability, with meat consumption one of the drivers causing the unsustainability we are encountering. Limiting the amount of meat in one’s diet or using MRPs as a substitute for meat is one of many avenues which could help make our diets more sustainable. Previous research shows that people are prone to misperceiving the social norm, and perceived social norms are what drive people’s behavior. This introduces a possibility that people keep consuming meat because they perceive
everyone else doing the same even though that might be false. As the topics of environmental protection, the welfare of animals, and Earth’s sustainability become ever more salient in the general public, it is interesting to see whether people are actually willing to take a step in a direction that favors the longevity of our planet. This study explored the specific topic of whether people accurately perceive other people’s attitudes towards meat consumption and the willingness to consume MRPs and if that might have an effect on people’s own attitudes. It was hypothesized that there would be a positive relationship between participants’ perceived descriptive norm and participants’ own attitudes regarding willingness to limit red meat consumption, whether eating meat is bad for the planet, and willingness to consume MRPs. It was also hypothesized that there would be a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to reduce red meat consumption, whether eating meat is bad for the planet and willingness to consume MRPs.

Hypothesis 1a showed a moderate positive relationship between participants’ perceived descriptive norm and participants’ own attitudes regarding willingness to limit red meat consumption. The results revealed that participants who were willing to limit their meat red consumption were also likely to perceive their peers as willing to limit their red meat consumption. The results also revealed that participants who were less willing to limit their red meat consumption were also likely to perceive their peers as less willing to limit their red meat consumption.

Hypothesis 1b showed a moderate positive relationship between participants’ perceived descriptive norm and participants’ own attitudes regarding beliefs on whether meat consumption is bad for the planet. The results revealed that participants who held beliefs that meat consumption is bad for the planet were also likely to perceive their peers as sharing that belief. The results also revealed that participants who were less likely to hold beliefs that meat
consumption is bad for the planet were also less likely to perceive their peers as sharing that belief.

Hypothesis 1c showed a moderate positive relationship between participants’ perceived descriptive norm and participants’ own attitudes regarding willingness to consume MRPs. The results revealed that participants who were willing to consume MRPs were also likely to perceive their peers as willing to consume MRPs. The results also revealed that participants who were less willing to consume MRPs were also likely to perceive their peers as less willing to consume MRPs.

Together, these results appear to display people’s tendency to project their personal attitudes regarding specific behaviors on to their peers (Thijs & Zee, 2019). A possible explanation for the relationship between participants’ perceived descriptive norm and participants’ own attitudes could be the participants social group. What people perceive as the descriptive norm seems to translate into their personal attitudes. A person willing to limit their consumption of red meat is likely to belong to a group of people who share the same views regarding meat consumption (Higgs, 2015). As social norms are powerful in shaping behavior, these results might also show people’s willingness to change their personal attitudes to conform to what they perceive is the descriptive norm. People don’t want to be socially rejected, so conforming to what they perceive as the descriptive norm is more comfortable rather than not conforming. However, these results might also highlight the fact that if people perceive their peers’ attitudes as unwilling to limit meat consumption and unwilling to consume MRPs, they are unlikely to make the change to a more sustainable diet.

Hypothesis 2a predicted that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to reduce red meat consumption. The first analysis, which compared surveyed participants’ own attitudes to people’s perceived attitudes of their peers found no significant difference. Participants in the
surveyed sample seem to approximately anticipate their peers’ willingness to reduce red meat consumption. The second analysis for hypothesis 2a, which compared LISS panel participants’ own attitudes to the perceived attitudes of their peers from the surveyed sample, showed a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers. Participants significantly overestimated their peers’ willingness to reduce red meat consumption.

Hypothesis 2b predicted that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on whether eating meat is bad for the planet. The first analysis, which compared surveyed participants’ own attitudes to participants’ perceived attitudes of their peers, showed a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers. Participants significantly overestimated their peers’ beliefs on whether eating meat is bad for the planet. The second analysis for hypothesis 2b, which compared LISS panel participants’ own attitudes to the perceived attitudes of their peers from the surveyed sample, showed a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers. Again, participants significantly overestimated their peers’ beliefs on whether eating meat is bad for the planet.

Hypothesis 2c predicted that there is a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers on willingness to consume MRPs. The first analysis, which compared surveyed participants’ own attitudes with participants’ perceived attitudes of their peers, showed a significant difference between people’s own attitudes compared to people’s perceived attitudes of their peers. Participants significantly overestimated their peers’ willingness to consume MRPs. The second analysis for hypothesis 2c, which compared LISS panel participants’ own attitudes with the perceived attitudes of their peers from the surveyed sample, showed a significant difference between
people’s own attitudes compared to people’s perceived attitudes of their peers. Again, participants significantly overestimated their peers’ willingness to consume MRPs.

Participants misperceived their peers’ intentions and beliefs regarding the attitudes towards meat consumption and willingness to consume MRPs. Studies that have shown the effect of misperceived social norms usually find that people generally tend to expect other people’s beliefs to be more unfavorable than their own, therefore refrain to act in certain ways. For instance, married men in Saudi Arabia privately supporting women working outside the home but underestimating the support for women by other men (Bursztyn & Yanagizawa, 2020), adolescents overestimating their peers’ diet of unhealthy snacks and therefore eating more unhealthy (Lally, Bartle & Wardle, 2011), and excessive drinking habits by university freshmen due to their overestimation of their peers’ drinking habits (Berkley-Patton et al., 2003). Based on this, it is therefore surprising to see people overestimating other people’s willingness to consume MRPs, beliefs regarding whether consuming meat is bad for the planet, and willingness to reduce meat consumption, behaviors that would be considered to be beneficial.

Reasons as to why the overestimation pattern has emerged consequently demand further consideration. A possible explanation for the current results is that the social norm regarding meat consumption is moving in a direction that favors an increasingly sustainable diet, and attention regarding the planet’s sustainability and meat consumption and its detrimental effects has been growing (Dietz et al., 1995; Janda & Trocchia, 2001; Fox & Ward, 2008; Ruby, 2012; Rosenfeld, 2018). People are likely more aware than ever of what effects meat consumption has on the planet. This might therefore explain participants’ significant overestimation of their peers’ attitudes towards meat consumption and MRPs. The results might also show a trend towards the limitation of meat in people’s diets and the willingness to try MRPs, which might sequentially bring sustainable diets closer to being the
social norm. We should therefore expect to see an increase in the number of people turning towards a more sustainable diet in the coming years. This means that grocery stores, restaurants, and marketeers should have increased confidence in making veg*an options more available to consumers.

Furthermore, participants in this study were either late adolescents or young adults, which might help explain the prevalence of overestimation by participants, as veg*anism seems to be a more widespread form of diet among the researched age group rather than older generations (de Boer, Schösler & Aiking, 2017; Vergeer et al., 2020). It could therefore be that veg*anism is a more prominent subject of conversation among this age group, which might also help explain the overestimation among participants in the current study.

**Limitations and future directions**

One of the limitations to this study is the sample which was used in this current research. Several exclusions were put in place to have the sample homogenous. Only participants aged 16- to 30-years-old were used in the analysis. It is therefore impossible to generalize the findings to other age groups. Future research should allow for a wider range of age groups to be used for analysis to see whether the results presented in this paper are also exhibited with samples of older generations, or if the opposite occurs, i.e. what was hypothesized. Another limitation to the study is the exclusion of participants’ indicating a dietary preference other than omnivore. Examining the social norm regarding attitudes towards meat consumption and willingness to consume MRPs would be an interesting avenue of research when other dietary groups are examined. Future research could examine whether the same patterns emerge when other dietary groups are analyzed, e.g. pescatarians, vegetarians, and flexitarians. Additionally, it is interesting to see that when looking only at omnivores, individuals who don’t have a dietary restriction, that we observe an overestimation of their peers’ willingness to limit meat consumption, beliefs regarding
whether meat consumption is bad for the planet, and willingness to consume MRPs. Future research could also attempt to find explanations as to why omnivores assume that their peers are more willing to limit meat consumption and to consume MRPs rather than themselves. I suggest using the same methods as in this study but including additional questions that make participants explain their reasoning behind their answers.

Another limitation of this study is the recency of the panel data questions extracted. The first question surveyed was administered to the Dutch population in May of 2012, the second question was administered in July of 2018, and the third question in the survey was administered in October of 2012. When seeking information on matters such as social norms, it is ideal that both datasets used in comparison are from a comparable timeline. Especially relevant for the first and third question in the survey is that social norms sometimes change quickly, and a lot could have happened in the 8 years since the questions were administered to the Dutch population until this survey was administered. Future studies should therefore be wary when using panel data for research that aims to capture concepts such as social norms, as they can shift frequently. I recommend either making sure researchers have up-to-date panel data or constructing new questionnaires and administering them to multiple samples to make comparisons.

The sustainability of our planet should be a topic of considerable discussion. I therefore expect more research to be done on sustainable diets and the social norms surrounding them, as they could give a better idea of what people approve of as research accumulates and a better picture gradually emerges. This paper should serve as a good starting point for future studies that want to explore this particular topic, i.e. the social norms regarding willingness to either limit meat consumption and/or willingness to consume MRPs.
Conclusion

In conclusion, the results show that participants who themselves are more willing to limit meat consumption believe that meat consumption is bad for the planet and who are willing to consume MRPs are also likely to think that their peers share the same attitudes. The results also show that participants overestimate their peers’ willingness to limit red meat consumption, beliefs regarding whether eating meat is bad for the planet, and willingness to consume MRPs. Social norms are a powerful tool when it comes to shaping behavior; people conform to these norms to what they perceive as the descriptive norm. It is therefore not surprising that people think their peers share the same attitudes towards meat consumption. However, when comparing mean scores of surveyed participants, as well as participants from a LISS panel survey, a significant overestimation appeared on all fronts, except when comparing participants’ attitudes and participants’ perceived attitudes on willingness to reduce red meat consumption. Therefore, either the social norm regarding meat consumption and willingness to consume MRPs has changed significantly in the last decade or omnivores significantly misperceive other people’s intention regarding meat consumption. Future studies should be careful when using panel data to use in comparing current social norms. A better and more comprehensive study should either make sure panel data is up to date or collect two independent datasets that can be compared to each other to get a more present-day assessment. Future studies should build on this current research to get a more complete picture of the social norm regarding meat consumption and willingness to consume MRPs by including more age and dietary groups.
References


