The effect of moral appeals and personal responsibility on meat consumption

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Abstract

This study investigated the effectiveness of moral appeals on intention and attitude towards lowering meat consumption. Additionally, the effect of personal responsibility attributions on the intention and attitude towards lowering meat consumption was investigated. Using a 3x2 between-subjects design, moral appeals were manipulated by formulating persuasive messages about meat consumption using the moral foundations of harm/care, and purity/sanctity, from Moral Foundations Theory. These two moral appeal conditions, as well as a control condition, were then split into two versions. One with personal responsibility attribution, and one without, resulting in a total of six conditions. The data gathered from 296 participants in the Netherlands revealed that moral appeals did not affect intention and attitude towards lowering meat consumption. Personal responsibility attributions also did not influence intention and attitude towards lowering meat consumption. Implications and trends in the data are discussed, and recommendations are made for future research in the same field.

(In)Effectiveness of Moral Appeals

Meat consumption has become a highly divisive topic, owing to its prominent role in climate change, negative health outcomes (Godfray et al., 2018), water pollution (Mekonnen & Hoekstra, 2012), and animal exploitation (Kahsay, 2019). A wide range of parties, from governments to animal rights activists, have a vested interest in reducing meat consumption (Guardian, 2021). However, globally, meat production and consumption are still growing every year, and a 14% increase in the trillion-euro industry is expected by 2025 (Business Wire, 2022). Despite a large portion of that growth coming from the less polluting poultry industry, the desire to reduce our dependence and use of animal meat is growing (OECD-FAO, 2022). The growth in meat consumption comes as a product of an increasingly wealthy world. This increase results from a growing population, urbanisation, rising per capita income, and an increase in the overall wealth of developing countries (OECD-FAO, 2022).

The effect on climate change is one of the major talking points surrounding the need to reduce global meat consumption, as meat production accounts for about 54% of total agricultural emissions, and is expected to increase by a further 5% by 2030. This is whilst accounting for less than 18% of the total calorie supply from agriculture, less than 37% of protein, and 77% of agricultural land (Ritchie & Roser, 2013). The agricultural industry accounts for over a quarter of global greenhouse gas emissions, as well as being the cause of 78% of global ocean and freshwater eutrophication (Ritchie & Roser, 2020), which highlights the substantial impact of meat production on our environment. The discrepancy between projected meat production increase and meat emissions increase is a result of increased contribution from the poultry industry and higher meat output from individual animals (OECD-FAO, 2022).

The need for reduction in meat consumption is clear, but the best way to go about it still invites discussion. The fundamental issue of how to change consumer's attitudes is a key

question, and one potentially fruitful avenue of approach is using moral appeals. Moral appeals are forms of persuasive messaging that engage a person's sense of what is right and wrong (Chen et al., 2009). Conflicting evidence exists about the efficacy of moral appeals in changing attitudes, with some studies finding moral appeals to have no significant effect, in this case on cheating behaviour among university students (Spear & Miller, 2012), and some studies finding mixed results, in this case about park visitors views on feeding wildlife (Hockett & Hall, 2007). However, there are some studies that find moral appeals to be effective, like this research on cooperation in public good dilemmas (Chen et al., 2009), or this paper that studied moral appeals effects on blood donation (Ferrari & Leippe, 1992). The continued uncertainty over their efficacy prompts questions into when moral appeals work, and what kinds of moral appeals are most effective.

One approach to the content of moral appeals is the Moral Foundations Theory (MFT), which has found significant use in enabling a practical approach to creating moral appeals. Moral Foundations Theory proposes that there are numerous inherent and universally available psychological systems which form the basis of our ethicality (Graham et al., 2013). It has been successfully used in research regarding political views, where it was found that using the correct moral foundations to frame arguments could increase conservatives' liberal attitudes (Day et al., 2014). MFT has also been used in research for understanding differing stances of the elite towards stem cell research, where both supporters and opponents use rhetoric that highlights different moral foundations depending on the desired effect (Clifford & Jerit, 2013). Moral Foundations Theory therefore offers an enticing avenue of approach to the construction of moral appeals, and as such, warrants further investigation.

Whilst moral appeals and their content are critical elements to the success of the appeal, there could be merit in investigating the targeting of the message as well. Personal

responsibility messaging has been a cornerstone of public health campaigns for years. Pleas to the individual to make a change and take responsibility have been shown to be pervasive and impactful, often finding great success in stirring individuals to engage with life-saving programs, such as bone marrow donation (Schwartz, 1970), or organ donation (Hansen et al., 2017). Studies have found substantial impact of personal responsibility attributions to the effectiveness of a message trying to induce behaviour change (Carfora et al., 2020; Fransson & Garling, 1999). Specific investigation into the role that personal responsibility attributions might be able to play in moral appeals for meat consumption therefore remains a priority.

Following from these propositions, this study investigated the effectiveness of moral appeals and personal responsibility in attitude change towards meat consumption.

Effectiveness of Interventions on Reducing Meat Consumption

Meat reduction techniques typically focus on three facets of meat consumption. The impact meat has on our climate, the impact it has on our health, and the harm that is done to animals. Interventions exist and have been studied for each of these facets, for which successful techniques have been found to encourage people to reduce their meat consumption in all three of these avenues (Kwasny, Dobernig, & Riefler, 2022). Important factors that determined an interventions' success were whether information is provided on the effects of meat on health, the environment, and animal welfare, as well as whether the message is emotionally or cognitively framed (Kwasny, Dobernig, & Riefler, 2022). Framing of the message is important, as there are individuals that are either more or less attached to their meat consumption, and as such benefit more from different interventions (Graca et al., 2015).

The idea of different interventions being more successful for different people is supported by research that showed that targeted interventions for meat consumption have substantial success (Lacroix & Gifford, 2020). Those that are more open to reducing meat

consumption benefit more from support of their current behaviour intentions, whilst those that are resistant to reducing their meat consumption benefit from knowledge of available alternatives (Lacroix & Gifford, 2020). Targeting interventions is also important because of the large gender discrepancies in meat reduction willingness (Pohlmann, 2022), which suggests different strategies would do better for men than for women, and vice versa.

Highlighting animal welfare has found substantial success in meat reduction interventions (Mathur et al., 2021), despite receiving limited research attention compared to environmentally and public health framed interventions. The strength of activation of a person's emotions when meat consumption is framed using animal welfare can be a significant tool for promoting meat reduction (Mathur et al., 2021), and moralising meat consumption using animal welfare is therefore a promising avenue of research for moral appeals.

Moral Foundations Theory

Moral Foundations Theory (MFT; Haidt & Joseph, 2004) proposes that moral foundations are psychological systems that guide our intuition of what is moral and what is not moral behaviour, deeply rooted in evolutionary history and differing cultural purposes. This consists of social approval and moral perception of one's own and other's actions (Haidt & Graham, 2007). The theory suggests that the foundation of morality is shared across humanity and is inherent to all humans, which develops and adapts depending on the culture and region in which we grow up (Graham et al., 2013). This moral processing is complex and automatic, meaning that more than just one of the foundations are engaged when perceiving a certain action or individual (Graham et al., 2013).

Since the original conceptualisation of Moral Foundations Theory, six distinct foundations have arisen (Graham et al., 2013). The first foundation is that of harm/care,

which relates to compassion towards the suffering of others and the feeling of anger towards the individual causing harm. Kindness and nurturing are often associated with this foundation. The second foundation is fairness/reciprocity, which is based on reciprocal altruism and equality. It is associated with ideas of justice, autonomy, and rights. The third foundation is ingroup/loyalty, which is based around cooperation and trust of in-group members, as well as wariness of out-group members. It is associated with patriotism and self-sacrifice. The fourth foundation is authority/respect, which is built on the idea of adherence to social hierarchy through leadership and followership, and is tied to deferring responsibility to an authority figure, as well as valuing traditions. The fifth foundation is purity/sanctity, which is often related to disgust, both physical, in the form of filth and contamination, but also through the lens of religious beliefs and practices, such as viewing immoral actions as impure. The final foundation is that of liberty/oppression, which relates to resentment of those that limit liberty or are considered oppressors, and often comes in conflict with the authority foundation. This foundation is closely associated with the idea of solidarity against oppressors.

These foundations represent several inherent moral systems that exist within everyone to varying degrees (Graham et al., 2013). Depending on the issue being discussed, framing things through the lens of one of these foundations might be more impactful than another. For example, Feinberg and Willer (2012) found that an appeal based on the foundation of purity/sanctity increased conservatives' pro-environmental attitudes. The purity/sanctity foundation is related to the environment due to the pollution and contamination of climate change, making it a good foundation to use to promote more pro-environmental attitudes. Later research by the same authors also found that attitudes towards same-sex marriage could be positively influenced using the foundation of ingroup/loyalty (Feinberg & Willer, 2015). As the utilisation of different foundations in these studies suggests, not all foundations are

effective for all issues, and specific selection of the appropriate and most relevant foundations is important to the success of the appeal.

Research found that when discussing ethical and unethical food, words related to the foundations of harm/care, fairness/reciprocity, and purity/sanctity are most frequently used, with purity/sanctity being most strongly related to the ethicality of food (Makinkiemi et al., 2013). Further research found that those that consumed no meat scored higher on measures of care and empathy than meat-eaters (De Backer & Hudders, 2015). Care and empathy are typically associated with the harm/care moral foundation, highlighting the link between the harm/care foundation and moral perceptions of meat consumption. Research also found that meat reduction interventions that highlight the harm done to animals consistently reduce participants meat consumptions (Mathur et al., 2021), adding further support to the viability of the harm/care foundation as a moral appeal to reduce meat consumption.

De Backer and Hudders (2015) also found a significant difference in the purity/sanctity foundation between flexitarians and vegetarians, with vegetarians having a higher regard for purity/sanctity when it comes to diet choice. Therefore, framing an appeal with the purity/sanctity foundation could yield stronger results for those who are already less resistant to meat reduction. Additionally, the finding that conservatives value the purity/sanctity foundation more strongly than liberals (Feinberg & Willer, 2012), including this foundation in the present research can broaden the net of who is affected by the appeals, as an effort to counteract the importance of targeting interventions. These findings suggest that the foundations of harm/care and purity/sanctity have particular promise for creating effective moral appeals to reduce meat consumption for a broad range of individuals, and as such could compensate for the lack of targetability. As such, the following hypothesis were set forth:

Hypothesis 1a: Appeals based on the moral foundations of harm and purity will have a stronger effect on intention of lowering meat consumption than an appeal that is not based on moral foundations

Hypothesis 1b: Appeals based on the moral foundations of harm and purity will have a stronger effect on attitude towards lowering meat consumption than an appeal that is not based on moral foundations.

Personal Responsibility

Personal responsibility entails a feeling of accountability and culpability for the outcome of a situation, and the consequences it bears. Attribution theory (Heider, 1958; Weiner, 1986) suggests that people use information to causally explain events and behaviour, trying to explain the actions of others, and themselves. This theory is built on the principle that attribution is a three-stage process. First, behaviour is observed, then it has to be determined whether it was deliberate. If it was, the last step is attributing that behaviour to either internal, or external causes (Sullivan & Weiner, 1974). If behaviour is deemed to be deliberate and attributable to internal causes, then the person is deemed responsible for the effect of their actions on the outcome of the situation (Sullivan & Weiner, 1974). The idea of internal causes of behaviour is known as dispositional attribution (Heider, 1958), where the cause of the behaviour is the internal characteristic of the individual, such as personality, rather than external forces or influences. Dispositional attributions tend to also rely on subjective judgements of social desirability of an action, as we are more likely to attribute socially undesirable behaviour to internal causes (Jones & Davis, 1965).

Once a dispositional attribution occurs, an individual can feel responsible for their actions, and the consequences of those actions, which is where behaviour change can occur. Studies on pro-environmental behaviour found that a greater feeling of personal

culpability/responsibility on the part of the participant predicted more pro-environmental behaviour (Kaiser, Ranney, Hartig, & Bowler, 1999). A study by Punzo et al. (2019) found the same principles in play, with participants that felt more responsible for their actions found to exhibit more pro-environmental behaviour. Another study found that feelings of responsibility predicted pro-environmental behaviour more strongly when there was belief that the behaviour actually made a difference or had an impact (Eden, 1993). These findings suggest that successfully inducing feelings of responsibility can be a powerful tool for behaviour and attitude change.

Feeling responsible has consequences not only on behaviour, but on the processes that guide it. Induced responsibility was found to increase willingness to perform pro-environmental behaviour, as well as encourage building a more comprehensive understanding of the issue (Banos-Gonzalez et al., 2021). Furthermore, feeling responsible for an issue was found to predict ecological behaviour even when knowledge of expectations of what constituted ecological behaviour was not present (Kaiser & Shimoda, 1999), suggesting that knowledge of alternative options or the required behaviour change is not necessary for responsibility to have an impact on behaviour. The same study also found that social desirability, whilst an inevitable factor, did not significantly influence the effect of feelings of responsibility on behaviour change. The mechanisms discussed above shows that personal responsibility has a role in promoting not only behaviour change, but also intention to change. As such, the following hypotheses were set forth:

Hypothesis 2a: Appeals highlighting personal responsibility will have a stronger effect on intention of lowering meat consumption than an appeal that does not highlight personal responsibility.

Hypothesis 2b: Appeals highlighting personal responsibility will have a stronger effect on attitude towards lowering meat consumption than an appeal that does not highlight personal responsibility.

Methods

Participants

Using a power calculator (G*Power 3.1), we determined that a sample of at least 244 participants was required for detecting an effect at effect size 0.20, with an alpha significance level of .05 and a power level of .80. The actual sample was comprised of 310 participants, though only 296 completed the survey. Their age was between 18 and 72 (M=28.54), and 148 identified as male, 140 as female, and three as non-binary/agender. Participants indicated that they consumed meat an average of 4.27 days each week (SD= 1.71).

The educational background of the sample was as follows: two participants completed some high school as their highest form of education, whereas a high school degree was the highest completed education for 84 participants. The most frequent form of highest completed education was a bachelor's degree, with 127 participants, and a master's degree followed with 65 participants. 8 achieved a Ph.D. or higher as their final level of completed education, and the sample was rounded out by 3 who completed trade school, and 2 participants that chose not to answer.

Regarding employment, participants were able to select multiple employment options (e.g. employed part-time and student), so the total number of selected different employment positions will exceed the number of participants. Of the total sample of 296, 108 participants indicated that they are employed full-time, with a further 71 being employed part-time. 117 participants are currently students, and 21 are seeking opportunities. 3 are working minijobs, and there were 13 unemployed participants. Finally, there was 1 retiree and 5 participants opted not to disclose their employment status. The last element of demographic data that was

collected was yearly income, which was broken down into five different categories. 144 participants earned less than €25,000 in the past year, whilst 79 participants earned between €25,000 and €50,000. 43 participants had an income of between €50,000 and €100,000, and 5 participants earned over €100,000. Finally, 20 participants opted to not provide their income information.

Participants were recruited through the online service Prolific (https://www.prolific.co), where we selected for a sample based in and around the Netherlands, and did not have any dietary restrictions that affected meat consumption (e.g. pescatarian, vegetarian, vegan). Once participants completed the study, they were compensated with £1.25.

Procedure

Ethics approval was obtained from the Psychology Ethics Committee of Leiden University before recruitment began. Participants were provided with a link to the online survey using Qualtrics (www.qualtrics.com), where they were informed about the study, the confidentiality of their data, the compensation they were due to receive, and information about how to contact any of the study authors if any questions or issues arose. The aim of the study was presented as wanting to hear the participants' opinions about the meat industry. The actual aim was hidden so that participants would not provide answers that aimed to please the researchers.

After consenting to taking part in the study, participants were asked whether they consume meat at least once a week. If they answered no, the study ended there, but if they did consume meat at least once a week, they moved on to the manipulations. Participants were randomly assigned to one of six conditions, and were shown a message that was based on either the harm moral foundation, the purity moral foundation, or a control group. Each of these three conditions also had a duplicate version to which the personal responsibility

modifier was added, with the aim of manipulating participants' feelings of responsibility. To ensure that participants properly read and comprehended the manipulation message, they were only able to proceed after 20 seconds. Following the manipulation, a questionnaire that measured emotions, affect, and discomfort was administered, as part of a different research project, before a comprehension check was administered to ensure that participants understood the content of the manipulation they had read. However, participants that failed the comprehension check were not removed from the sample, as their inclusion had no impact on the outcome of the analysis. Then, a manipulation check was administered. Participants were then presented with the scales to measure attitude and intentions toward eating less meat, followed by a moral commitment questionnaire that was again, part of a different research project. Next, demographic data about participants' age, income, employment status, education, place of residence, and how often they usually eat meat was collected, before participants were finally debriefed and presented with the true goal of the research project.

Design

Stimulus Materials

This research project used a 3 (moral appeal) x2 (personal responsibility modification) between-subject design. The three moral appeal groups, namely the control group, the harm moral foundation group, and the purity moral foundation group, were each split into two personal responsibility groups, namely a condition that did not highlight personal responsibility, and a condition that did. This design yielded a total of six different conditions, and participants were randomly assigned to one of the different conditions. The manipulations can be found in full in Appendix A.

Pilot Study

Prior to the main study, three pilot studies were conducted to assess whether the manipulation of moral appeals related to the moral foundation they were linked to. These pilot studies were also used to assess the personal responsibility modifier that was used. In the final pilot (N=37), a Bonferroni post hoc test showed that there was no difference in valence between the harm condition and the purity condition (p= .164), though there was a difference between the control group and the experimental groups (p< .001). The degree to which the messages appealed to a participant's morality also did not differ between the manipulated groups, according to Bonferroni post hoc tests (p=.290)

The harm condition was predominantly seen as being related to the harm foundation, with 94.1% of participants relating it in that way, $X^2(6, N=37) = 12.22$, p= .057. The purity condition was also most frequently seen as related to the purity foundation (38.2%), compared to any other foundation, $X^2(6, N=37) = 8.82$, p= .225. The control condition was mostly interpreted as unrelated to any of the moral appeals (67.6%), $X^2(4, N=37) = 13.70$, p= .008.

For the personal responsibility modifiers, four versions were tested, two of which were considered to highlight personal responsibility, and two which were considered to explicitly not highlight personal responsibility. The variations were assessed with a 7-point Likert scale (see Appendix B). A t-test revealed that the personal responsibility message was indeed perceived as a better indicator of personal responsibility (M=5.45) than the message without personal responsibility (M=4.47), p<.001.

Measures

To measure the participants' intention to eat less meat, the scale designed by Krispenz & Bertrams (2020) was used. Intention to eat less meat was measured using three items. One of the items was as follows: *In the future, I intend to eat meat at least one day less per week,* and had answer options ranging from 1 (*Extremely Unlikely*) to 7 (*Extremely Likely*). For the

other items, see Appendix C. To attain the final score, participants' answers were averaged, with higher scores indicating a higher intention to eat less meat.

The same questions were also used to assess intentions to lower meat consumption by half, rather than once per week. The items transformed items can be found in Appendix C. The high correlation of the items for intention to eat less meat once per week and intention to reduce meat intake by half (r= .71, p < .001) resulted in a new combined scale, which was reliable, Cronbach alpha = .87.

To measure participants' attitude towards eating less meat, five items were taken from the study by Krispenz & Bertram (2020). A single prompt was provided: *For me, in the future, eating meat at least one day less a week would be…*. It was followed by five scales that participants answered in relation to the prompt. The options were: a: 1 (*Harmful*) - 7 (*Beneficial*); b: 1 (*Worthless*) - 7 (*Valuable*); c: 1 (*Pleasant*) - 7 (*Unpleasant*); d: 1 (*Enjoyable*) – 7 (*Unenjoyable*); e: 1 (*Good*) – 7 (*Bad*). Items three, four, and five are reversed, and had to be recoded for analysis. To attain the final score, participants' answers were averaged, with higher scores indicating a positive attitude towards eating less meat.

The same questions were also used to assess participants' attitude towards reducing their meat consumption by half, rather than once per week. The revised prompt was as follows: *For me, eating half the amount of meat per week (as I do now), would be…*. The high correlation of the items for attitude to eat less meat once per week and attitude to reduce meat intake by half (r= .802, p < .001) resulted in a new combined scale, which was reliable, Cronbach alpha = .92.

A comprehension check was administered that consisted of a multiple-choice question, which led with the prompt: *The piece of information you read earlier about the meat industry was about:*. The answer options were as follows: “Statistical information about meat consumption”, “chemicals to keep meat fresher and impure feed”, “cruel treatment and

slaughter of animals", and "how long animals are alive before reaching slaughter age". The fourth answer option was an unrelated situation which had nothing to do with any of the manipulations. A manipulation check was also administered by asking participants to "what degree the information they had just read pertained to" … "harm done to animals", and, "the impurity of animals in the meat industry". Both questions had answer options in the form of a Likert scale that range from 1 (*Not at all*) to 5 (*Very Much*).

Data Analysis

Statistical analysis was performed using IBM SPSS Statistics 27, with an ANOVA performed to assess the hypotheses that moral appeals would have a stronger effect on attitude and intention of meat consumption than a non-moral foundation based appeal. For the hypotheses that personal responsibility messaging would have a greater effect on attitude and intention of meat consumption than non-personal responsibility appeals, an ANOVA was performed.

Results

Normality tests for the dependent variables found that attitude towards eating less meat indeed resembles a normal distribution (K-S (296)= .046, p = .200), however intention toward lowering meat consumption does not meet normality (K-S (296)= .072, p= .001). By virtue of the large sample size though, and evaluation of the histogram for the intention toward lowering meat consumption variable, which contains no major outliers and roughly follows the expected shape of a bell curve, normality can be assumed. The assumption of homoscedasticity of error variances was met for the dependent variable of attitude towards eating less meat, as the Levene's test revealed non-significant error variances, F (5,290)=1.900, p= .094. The assumption was also met for the variable of intention towards eating less meat, as the Levene's test revealed non-significant error variances, F (5,290)= 1.099, p= .361.

Manipulation Checks

The comprehension check that was provided to participants was answered incorrectly by 29 participants. A manipulation check was also administered, in which participants were asked to what degree the message that they saw related to, first, harm, and second, purity. A two-way ANOVA revealed that there was a main effect of manipulation condition on the degree to which a message was perceived as being related to harm, $F(5,290)= 160.66$, $p <.001$, $\eta^2_p=.74$. The message based on the harm foundation was, independent of responsibility manipulations, seen as most related to harm ($M=4.49$, $SD= .65$), compared to the purity condition ($M=3.35$, $SD=1.00$, $p< .001$) and the control condition ($M=1.32$, $SD=0.65$, $p< .001$), which were less related to harm.

A second two-way ANOVA was performed that revealed that there was an effect of manipulation condition on the degree to which a message was perceived as being related to purity, $F(5,290)=72.754$, $p< .001$, $\eta^2_p=.556$. The message based on the purity foundation was, independent of responsibility manipulations, seen as most related to purity ($M=3.72$, $SD= 1.12$), whilst the harm condition ($M=2.019$, $SD=1.176$, $p< .001$) and the control condition ($M=1.109$, $SD=0.442$, $p< .001$) were less related to purity. The results of the manipulation checks show that, for both the moral appeal condition for harm and for purity, the manipulation was successful.

Hypotheses

Hypothesis 1

Hypothesis 1a posited that appeals based on the moral foundations of harm and care result in stronger intention toward reduced meat consumption than a message not based on moral foundations. A univariate ANOVA was performed to compare the effect of moral appeals on intention toward meat consumption. The results indicate that between the control condition ($M=4.33$, $SD=1.65$) and both the harm ($M=5.23$, $SD=1.40$) and purity conditions

(*M*=3.95, *SD*=1.48), there is no main effect of condition on intention towards decreasing meat consumption, $F(2,290)$,= 1.69, p= .186, η^2_p= .012. Therefore, hypothesis 1a is not supported. The same trend follows for hypothesis 1b, which posited that appeals based on the moral foundations of harm and care would have a stronger positive effect on attitude toward meat consumption than an appeal not based on moral foundations. Again, a univariate ANOVA was performed to compare the main effect of moral appeals on attitude toward meat consumption between the control condition (*M*=5.01, *SD*=1.24), the harm condition (*M*=5.00, *SD*=1.18), and the purity condition (*M*=4.83, *SD*=1.11). The results indicate no main effect of condition on attitude toward decreasing meat consumption, $F(2,290)$= .777, p= .461, η^2_p= .005. Therefore, hypothesis 1b is also not supported.

Hypothesis 2

Hypothesis 2a posited that an appeal that highlighted personal responsibility would have a stronger positive effect on intention toward meat consumption than an appeal that does not highlight personal responsibility. A univariate ANOVA was performed to compare the effect of personal responsibility on intention toward meat consumption. The results indicate that there is no main effect of responsibility condition (*M*=4.26, *SD*=1.50) compared to the non-responsibility condition (*M*=4.09, *SD*=1.52) on intention towards decreasing meat consumption, $F(1,290)$= .886, p= .347, η^2_p= .003. Therefore, hypothesis 2a is not supported.

Hypothesis 2b posited that an appeal that highlighted personal responsibility would have a stronger positive effect on attitude toward meat consumption than an appeal that does not highlight personal responsibility. A univariate ANOVA was performed to compare the effect of personal responsibility on attitude toward meat consumption. The results indicate that there is no main effect of the responsibility condition (*M*=5.05, *SD*=1.11) compared to the non-responsibility condition (*M*=4.85, *SD*=1.24) on attitude towards decreasing meat

consumption, $F(1,290)= 2.331$, $p= .128$, $\eta^2_p= .008$. Therefore, hypothesis 2b is also not supported.

Exploratory analysis into demographic data revealed interesting findings. There was no difference in responses when correcting for age or highest level of completed education, but statistically significant differences were found for gender. A significant difference was found between males ($M= 4.71$, $SD= 1.20$) and females ($M= 5.18$, $SD= 1.10$) for attitude toward meat consumption, $t(285.690)=-3.531$, $p < .001$. A significant difference was also found between males ($M=3.878$, $SD=1.537$) and females ($M= 4.446$, $SD= 1.405$) for intention toward meat consumption, $t(285.674) = -3.277$, $p= .001$. This effect persisted across all manipulation conditions.

Discussion

The present study aimed to examine the effects of both moral appeals and personal responsibility attributions on intention and attitude towards reducing meat consumption. We focused on moral appeals that were based on either the harm/care moral foundation, or the purity/sanctity moral foundation, which were then compared to a control group. These messages each had two versions, one which highlighted individuals' personal responsibility, and the other which did not. We wanted to evaluate whether these appeals and responsibility attributions would lead to a change in people's intention and attitude towards reducing their meat consumption.

Our study found no significant effect of moral appeals on either intention or attitude towards reducing meat consumption. We were unable to find differences between the control group and both appeal groups, or even between the two appeal groups, which shows that moral appeals do not seem to directly influence either intention or attitude towards reducing meat consumption. This results in both hypothesis 1a and 1b being rejected. Pre-existing literature has found consistent success of a variety of meat intake reduction interventions,

including ones focused on animal welfare (Mather et al., 2021), as was the case in the current study, but also when focused on the other major facets of meat intake: personal health, and climate change (Kwasny, Dobernig, & Riefler, 2022). These findings gave strong support to the idea that our appeals might find success in reducing meat intake intentions and attitudes, which resulted in our results being quite unexpected.

The personal responsibility manipulations found equally little success, as the personal responsibility condition was not significantly different from the non-personal responsibility condition. This shows that personal responsibility attributions do not seem to influence either intention or attitude towards reducing meat consumption, which results in both hypothesis 2a and 2b being rejected. Pre-existing literature had suggested that increasing participants feelings of responsibility would positively impact their willingness to alter their behaviour (Kaiser & Shimoda, 1999), which in this case would have meant a positive effect on their intentions and attitudes towards reducing their meat consumption.

The finding that both moral appeals and personal responsibility were unsuccessful in influencing participants attitudes and intentions could have something to do with how morality is attached to meat consumption. Eating meat comes with two distinct forces influencing its moralisation. First, cultural views on the naturality of meat eating, and personal enjoyment of meat-eating decreases moralisation, whilst compassion towards animal suffering encourages moralisation of meat eating (Feinberg et al., 2019). These conflicting forces of moralisation could result in moralisation through the appeals utilised in this study being counteracted by personal enjoyment and cultural views on meat consumption, resulting in a finding of no effect.

Another influence that could explain the lack of effect found in our study is the so-called “meat paradox” (Gradidge et al., 2021). The meat paradox refers to our dislike of causing suffering, including to animals, which directly opposes our behaviour of meat

consumption. This paradox has an interesting effect on people, in that it induces cognitive dissonance (Rothgerber, 2020), which describes a feeling of mental discomfort when a person holds two opposing beliefs, such as that eating meat is okay, and that causing suffering to animals is bad. This conflict leads to feelings of discomfort, and we are motivated to try to resolve these feelings. Often, that takes the form of doubling down on our current behaviour (McGrath, 2017), which in this case, would be that continuing to eat meat is okay. This form of dissonance reduction would result in a sort of protection against the appeal being presented, and the moralisation that it would induce (Bastian & Loughnan, 2016). An example of this is what is called “mind denial”, which is a phenomenon where people ascribe severely diminished mental capacity to animals which are typically used for food, as a tool of justifying their consumption behaviour (Bastian et al., 2011). Dissonance reduction is likely to have taken place, as the messages used in the study highlighted negative aspects of continuing meat consumption, such as harm to animals and the impurity of meat, which are likely to trigger dissonance, and in turn, dissonance reduction techniques. Utilising messages that highlight the positive aspect of reducing meat intake might have found more success by not triggering cognitive dissonance, but as this was not studied, no direct conclusions can be drawn from this.

Another potential avenue of explanation towards the lack of effect would be information avoidance. Research has found that people actively avoid information that they expect would induce cognitive dissonance (Edenbrandt et al., 2021), and that could include statistical information about meat consumption, as well as harm related information and purity related information. If people avoided information about the scale of the meat industry in the same way that they do the harm or impurity of the industry, in an effort to avoid cognitive dissonance or discomfort, then the control condition which we utilised could have been more effective than intended, by also inducing cognitive dissonance. Participants might

have responded to this by utilising dissonance reduction strategies and doubling down on their behaviour of favouring meat consumption. This effect casts doubt on whether moral appeals were indeed not effective regarding attitude and intentions towards reducing meat reduction, as the control condition could have had a substantial effect as well.

The finding that there was a significant difference between men and women in both attitude and intention towards meat consumption was unexpected but not unpredictable, as a study by Rothgerber (2019) found women to be more likely to underreport meat consumption, as a form of indirect self-justification. However, research by Pohlmann (2022) also highlighted the impact of compassion on gendered meat consumption, and that women are more responsive to compassion appeals, such as the messages used in the present study, which does suggest that the gendered effects are not entirely due to self-justification. Other demographic findings were in line with expectations, but it is still important to highlight that age, level of education, and employment status were not predictors of either attitude or intention for meat consumption.

Limitations and Future Research

The first limitation of the study is the measurement period. Attitudes and intentions were assessed at a single timepoint, within minutes of participants being exposed to the manipulation. This design makes long-term effects impossible to ascertain, as well as preventing any effects from participants continuing to think about the message of the appeal, which could increase its efficacy. Future studies should consider a longitudinal design to assess whether there is a time-delayed effect.

The second limitation is the absence of tools to avoid dissonance reduction strategies from enabling easy avoidance of cognitive discomfort. The reduced effect that dissonance reduction could cause on the intervention could be counteracted and push people towards needing to change their attitudes and intentions towards lowering meat consumption to avoid

cognitive dissonance. Studies looking to address meat consumption interventions should examine whether techniques to prevent dissonance reduction can provide a stronger effect of moral appeals or responsibility attributions. This could be achieved through reaffirming individual responsibility, highlighting the harm that their meat consumption does, and looking to assuage their fear of losing identity if they stop eating meat (Bastian & Loughnan, 2016).

A third limitation relates to the personal responsibility manipulations. When the responsibility modifiers were originally selected, they were all tested with the control message. The selected responsibility modifier was found to most substantially highlight participants personal responsibility, and the selected non-responsibility modifier was found to highlight responsibility the least. It is however possible that when used in conjunction with the appeal messages, the non-responsibility modifier still influenced participants feelings of responsibility. Future studies should evaluate whether different messages can affect the responsibility attribution effect of a message, and whether a greater discrepancy between how much each message highlights responsibility would yield greater effects. This study fell short in its investigation of different responsibility attributions, and future research on responsibility attributions should experiment in greater depth with different combinations of responsibility modifiers, such as not including any modifier for the non-responsibility condition, and seeing how that compares to a non-responsibility modifier that still highlights some responsibility.

Lastly, lack of specificity in the appeal during the personal responsibility attribution could have diminished impact as well. Participants in the personal responsibility condition were presented with a message that highlighted that they could have an impact on the topic of their appeal condition, such as the harm being suffered by livestock, by reducing their meat consumption. However, no target was provided for the participant to aim for in their

reduction. Specifying reduction amounts or time-frames, such as asking participants to reduce their meat intake by one time per week, or to do challenges such as Meat Free Mondays (Meat Free Mondays, 2022), provide participants with a specific aim to work towards that feels more attainable and real than simply asking for reduction. The lack of perceived attainable routes to reducing meat consumption could lead to cognitive dissonance, which, as previously mentioned, could obscure the effect of the manipulation.

Conclusions

Currently, governments, companies, and individuals are faced with a problem in the form of growing meat consumption. The impact that that has on the environment, individual health, and animal welfare, drives a need for research on effective methods of encouraging a reduction in meat intake. Overall, moral appeals, specifically those based on the moral foundations of harm/care and purity/sanctity, seem to not be effective methods for encouraging a reduction in meat consumption. The same goes for personal responsibility attributions, where participants that were exposed to a message that highlighted their responsibility for the effects of their meat consumption did not differ from participants that received a non-responsibility modifier in their message. The finding that there were gender effects should however be the focus of future research to better understand the effects of moral appeals, as well as responsibility attributions, on meat consumption.

References

Banos-González, I., Esteve-Guirao, P., & Jaén, M. (2021). Future teachers facing the problem of climate change: Meat consumption, perceived responsibility, and willingness to act. *Environmental Education Research*, *27*(11), 1618–1637. https://doi.org/10.1080/13504622.2021.1926433

Bastian, B., Loughnan, S., Haslam, N., & Radke, H. R. (2011). Don't mind meat? The denial of mind to animals used for human consumption. Personality and Social Psychology Bulletin, 38(2), 247-256. https://doi.org/10.1177/0146167211424291

Bastian, B., & Loughnan, S. (2016). Resolving the meat-paradox: A motivational account of morally troublesome behavior and its maintenance. *Personality and Social Psychology Review*, *21*(3), 278–299. https://doi.org/10.1177/1088868316647562

Business Wire (2022) Global Meat Markets, 2021-2025 by Product (Chicken, Beef, Mutton, Pork and Others), & Type (Raw and Processed)- ResearchAndMarkets.com. Retrieved from https://www.businesswire.com/news/home/20210920005477/en/Global-Meat-Markets-2021-2025-by-Product-Chicken-Beef-Mutton-Pork-and-Others-Type-Raw-and-Processed---ResearchAndMarkets.com

Carfora, V., Conner, M., Caso, D., & Catellani, P. (2020). Rational and moral motives to reduce red and processed meat consumption. Journal of Applied Social Psychology, 50(12), 744–755. https://doi.org/10.1111/jasp.12710

Chen, X. P., Pillutla, M. M., & Xin Yao. (2009). Unintended consequences of cooperation Inducing and Maintaining Mechanisms in Public Goods Dilemmas: Sanctions and Moral Appeals. Group Processes & Intergroup Relations, 12(2), 241–255. https://doi.org/10.1177/1368430208098783

Clifford, S., & Jerit, J. (2013). How words do the work of politics: Moral foundations theory and the debate over Stem Cell Research. The Journal of Politics, 75(3), 659–671. https://doi.org/10.1017/s0022381613000492

Day, M. V., Fiske, S. T., Downing, E. L., & Trail, T. E. (2014). Shifting liberal and conservative attitudes using moral foundations theory. Personality and Social Psychology Bulletin, 40(12), 1559–1573. https://doi.org/10.1177/0146167214551152

De Backer, C. J. S., & Hudders, L. (2015). Meat morals: Relationship between meat consumption consumer attitudes towards human and animal welfare and moral behavior. Meat Science, 99, 68–74. https://doi.org/10.1016/j.meatsci.2014.08.011

Eden, S. E. (1993). Individual Environmental Responsibility and its role in public environmentalism. Environment and Planning A: Economy and Space, 25(12), 1743–1758. https://doi.org/10.1068/a251743

Edenbrandt, A. K., Lagerkvist, C. J., & Nordström, J. (2021). Interested, indifferent or active information avoiders of carbon labels: Cognitive Dissonance and ascription of responsibility as motivating factors. *Food Policy*, *101*, 102036. https://doi.org/10.1016/j.foodpol.2021.102036

Feinberg, M., & Willer, R. (2012). The Moral Roots of Environmental Attitudes. Psychological Science, 24(1), 56–62. https://doi.org/10.1177/0956797612449177

Feinberg, M., & Willer, R. (2015). From Gulf to Bridge. Personality and Social Psychology Bulletin, 41(12), 1665–1681. https://doi.org/10.1177/0146167215607842

Feinberg, M., Kovacheff, C., Teper, R., & Inbar, Y. (2019). Understanding the process of moralization: How eating meat becomes a moral issue. *Journal of Personality and Social Psychology*, *117*(1), 50–72. https://doi.org/10.1037/pspa0000149

Ferrari, J. R., & Leippe, M. R. (1992). Noncompliance with Persuasive Appeals for a Prosocial, Altruistic Act: Blood Donating 1. Journal of Applied Social Psychology, 22(2), 83–101. https://doi.org/10.1111/j.1559-1816.1992.tb01523.x

Fransson, N., & Garling, T., (1999). Environmental concern: Conceptual definitions, measurement methods, and research findings. Journal of Environmental Psychology, 19(4), 369–382. https://doi.org/10.1006/jevp.1999.0141

Godfray, H. C. J., Aveyard, P., Garnett, T., Hall, J.W., Key, T.J., Lorimer, J., Pierrehumbert, R.T., Scarborough, P., Springmann, M., & Jebb, S.A. (2018). Meat consumption, health, and the environment. Science, 361(6399), https://doi.org/10.1126/science.aam5324

Gradidge, S., Zawisza, M., Harvey, A. J., & McDermott, D. T. (2021). A structured literature review of the meat paradox. *Social Psychological Bulletin*, *16*(3). https://doi.org/10.32872/spb.5953

J. Graça, A. Oliveira, M.M. Calheiros (2015) Meat, beyond the plate. Data-driven hypotheses for understanding consumer willingness to adopt a more plant-based diet. Appetite, 90, pp. 80-90, 10.1016/J.APPET.2015.02.037

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2013). Moral Foundations Theory. Advances in Experimental Social Psychology, 55–130. https://doi.org/10.1016/b978-0-12-407236-7.00002-4

Guardian News and Media. (2021, July 14). Food strategy for England calls for big cut in meat consumption. The Guardian. Retrieved from https://www.theguardian.com/environment/2021/jul/15/food-strategy-for-england-calls-for-big-cut-in-meat-consumption

Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. Social Justice Research, 20(1), 98–116. https://doi.org/10.1007/s11211-007-0034-z

Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. Daedalus, 133(4), 55–66. https://doi.org/10.1162/0011526042365555

Hansen, S. L., Eisner, M. I., Pfaller, L., & Schicktanz, S. (2017). "Are you in or are you out?!" moral appeals to the public in organ donation poster campaigns: A multimodal and ethical analysis. Health Communication, 33(8), 1020–1034. https://doi.org/10.1080/10410236.2017.1331187

Heider, F. (1958). The psychology of interpersonal relations. https://doi.org/10.1037/10628-000

Hockett, K. S., & Hall, T. E. (2007). The effect of moral and fear appeals on Park Visitors' beliefs about feeding wildlife. Journal of Interpretation Research, 12(1), 5–27. https://doi.org/10.1177/109258720701200102

Jones, E. E., & Davis, K. E. (1965). From acts to dispositions the attribution process in person perception. *Advances in Experimental Social Psychology*, 219–266. https://doi.org/10.1016/s0065-2601(08)60107-0

Kahsay, M. (2019). Silent Slaughter: How freedom of speech and expression restrictions keep animal abuses hidden and stifle animal welfare activism in Europe and the United States. Derecho Animal. Forum of Animal Law Studies, 10(1), 144. https://doi.org/10.5565/rev/da.364

Kaiser, F. G., & Shimoda, T. A. (1999). Responsibility as a predictor of ecological behaviour. Journal of Environmental Psychology, 19(3), 243–253. https://doi.org/10.1006/jevp.1998.9123

Kaiser, F. G., Ranney, M., Hartig, T., & Bowler, P. A. (1999). Ecological behavior, environmental attitude, and feelings of responsibility for the environment. European Psychologist, 4(2), 59–74. https://doi.org/10.1027//1016-9040.4.2.59

Krispenz, A., & Bertrams, A. (2020). Correlates of the intention to reduce meat consumption. Sustainability, 12(11), 4774. https://doi.org/10.3390/su12114774

Kwasny, T., Dobernig, K., & Riefler, P. (2022). Towards reduced meat consumption: A systematic literature review of Intervention Effectiveness, 2001–2019. *Appetite*, *168*, 105739. https://doi.org/10.1016/j.appet.2021.105739

Lacroix, K., & Gifford, R. (2020). Targeting interventions to distinct meat-eating groups reduces meat consumption. Food Quality and Preference, 86, 103997. https://doi.org/10.1016/j.foodqual.2020.103997

Mathur, M. B., Peacock, J., Reichling, D., Nadler, J., Bain, P., Gardner, C. D., & Robinson, T. (2021). Interventions to reduce meat consumption by appealing to animal welfare: Meta-analysis and evidence-based recommendations. https://doi.org/10.31219/osf.io/bc2wy

McGrath, A. (2017). Dealing with dissonance: A review of Cognitive Dissonance Reduction. *Social and Personality Psychology Compass*, *11*(12). https://doi.org/10.1111/spc3.12362

Mekonnen, M.M., & Hoekstra, A.Y. (2012). A global assessment of the water footprint of farm animal products. Ecosystems, 15(3), 401-415, https://doi.org/10.1007/s10021-011-9517-8

Mäkiniemi, J. P., Pirttilä-Backman, A. M., & Pieri, M. (2012). The Endorsement of the Moral Foundations in Food-Related Moral Thinking in Three European Countries. Journal of Agricultural and Environmental Ethics, 26(4), 771–786. https://doi.org/10.1007/s10806-012-9401-3

OECD-FAO Agricultural Outlook 2021-2030 | FAO | Food and Agriculture Organization of the United Nations. (2022). Retrieved from https://www.fao.org/publications/oecd-fao-agricultural-outlook/2021-2030/en/

Pohlmann, A. (2022). The taste of compassion: Influencing meat attitudes with Interhuman and interspecies moral appeals. Appetite, 168, 105654. https://doi.org/10.1016/j.appet.2021.105654

Punzo, G., Panarello, D., Pagliuca, M. M., Castellano, R., & Aprile, M. C. (2019). Assessing the role of perceived values and felt responsibility on pro-environmental behaviours: A comparison across four EU countries. Environmental Science & Policy, 101, 311–322. https://doi.org/10.1016/j.envsci.2019.09.006

Ritchie, H., & Roser, M. (2013). Land use. Our World in Data. Retrieved from https://ourworldindata.org/land-use

Ritchie, H., & Roser, M. (2020). Environmental impacts of food production. Our World in Data. Retrieved from https://ourworldindata.org/environmental-impacts-of-food

Rothgerber, H. (2019). “But I don’t eat that much meat.” *Society & Animals*, *27*(2), 150–173. https://doi.org/10.1163/15685306-12341468

Rothgerber, H. (2020). Meat-related cognitive dissonance: A conceptual framework for understanding how meat eaters reduce negative arousal from eating animals. *Appetite*, *146*, 104511. https://doi.org/10.1016/j.appet.2019.104511

Schwartz, S. H. (1970). Elicitation of moral obligation and self-sacrificing behavior: An experimental study of volunteering to be a bone marrow donor. Journal of Personality and Social Psychology, 15(4), 283–293. https://doi.org/10.1037/h0029614

Spear, A. J., & Miller, A. N. (2012). The effects of Instructor Fear Appeals and moral appeals on cheating-related attitudes and behavior of university students. Ethics & Behavior, 22(3), 196–207. https://doi.org/10.1080/10508422.2012.659603

Sullivan, T. J., & Weiner, B. (1974). Achievement motivation and attribution theory. Contemporary Sociology, 4(4), 425. https://doi.org/10.2307/2062395

Weiner, B. (1986). Beyond achievement motivation: The generality of attribution theory. An Attributional Theory of Motivation and Emotion, 191–223. https://doi.org/10.1007/978-1-4612-4948-1_7

Appendix A

The six appeals that were presented to study participants

(In order: Control appeal with personal responsibility modifier, control appeal without personal responsibility modifier, harm appeal with personal responsibility modifier, harm appeal without personal responsibility modifier, purity appeal with personal responsibility modifier, purity appeal without personal responsibility modifier).


The average person in the Netherlands consumes approximately 76kg of meat per year, which averages out to approximately 200g of meat per day. People should lower their meat consumption.
Around 650 million animals are killed every single year in the Netherlands in a variety of ways with bolt guns and gas being common measures.
To meet that immense demand for meat whilst keeping costs low, animals are mistreated in the process of forced impregnation, involving cramped breeding sheds, physical abuse, and often, electric shocks. You can have an impact on this by lowering your meat consumption.


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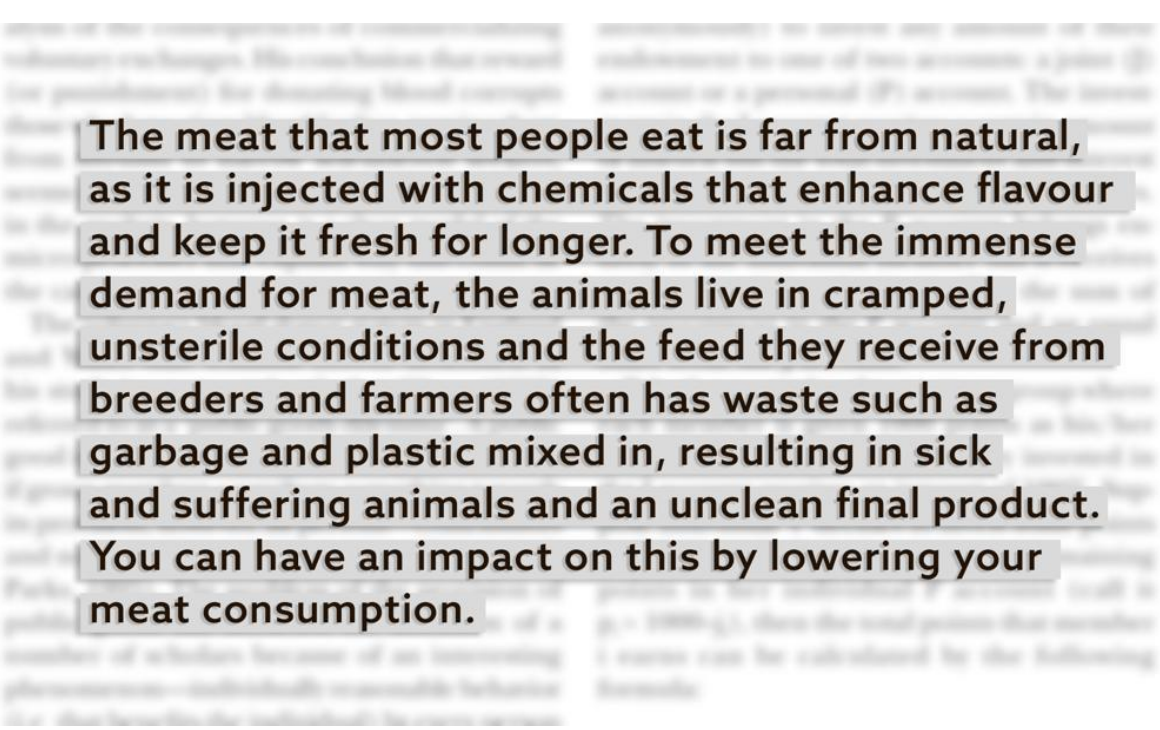
The meat that most people eat is far from natural, as it is injected with chemicals that enhance flavour and keep it fresh for longer. To meet the immense demand for meat, the animals live in cramped, unsterile conditions and the feed they receive from breeders and farmers often has waste such as garbage and plastic mixed in, resulting in sick and suffering animals and an unclean final product. You can have an impact on this by lowering your meat consumption.

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Appendix B

The Likert scale for the pilot study assessment of the personal responsibility conditions

Indicate how strongly the statement highlights your personal responsibility.

Participants then responded using a scale that ranged from 1 (*Not at all*) to 7 (*Strongly*) with higher scores indicating that the statement more strongly highlighted personal responsibility.

Appendix C

The Likert scales for intentions to lower meat consumption

The second item, *In the future, I will try to eat meat at least one day less per week,* had answer options ranging from 1 (*Definitely True*) to 7 (*Definitely Untrue*). This item had its scoring reversed for analysis. The third item, *In the future, I plan to eat meat at least one day less per week,* had answer options ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*).

Appendix D

The transformed Likert scales for intentions to lower meat consumption by half

The first item became: *In the future, I intend to eat meat at least by half less as I eat now*. The second item became: *In the future, I will try to eat meat at least by half less as I eat now*. The third item became: *In the future, I plan to eat meat at least by half less as I eat now*.