To Eat or Not to Eat Meat: A Deep Dive Into Motivated Reasoning Behind Dietary

Choices

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Abstract

The present study critically examines the role of motivated reasoning in dietary choices. Particularly, we focus on the meat paradox and explore whether the saliency of the moral implications of meat consumption influences moral disengagement. The sample size ($N = 75$) consists mainly of international university students. Participants read a fictitious article presenting three arguments focused on the environmental, health, and moral consequences of meat consumption. Subsequently, they answered questions related to the supposed author´s motive for writing the article (prosocial or selfish), the persuasiveness of the presented arguments, and several theorized moderators, including 'niceness' (Piazza et al., 2015), which examined the pleasure derived from meat consumption. The analysis revealed that the arguments significantly less convinced omnivores compared to vegans and vegetarians. However, there was no difference between the dietary groups and the extent to which they inferred either motive from the supposed author of the text. Notably, the moderation analysis indicated that the higher the score on niceness, the more participants were convinced by the arguments in the article. We suggest that motivation is a crucial factor influencing human reasoning and should not be neglected in theoretical models. Furthermore, the results have significant implications for constructing health and meat-reduction-focused campaigns.

Keywords: dietary habits, the meat paradox, moral disengagement, cognitive dissonance, hedonism, niceness

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In 2021, worldwide meat consumption was estimated to be 328,4 million tons, excluding fish and seafood (Statista, n.d.). Despite the already enormous amount of meat consumed worldwide every year, the number is expected to rise by 14% by 2030 (Organisation for Economic Co-operation and Development, n.d.). Meat-eating is evidently central to many diets, especially in Western cultures (Bryant et al., 2022; Fiddes, 1994; Rothgerber, 2013). It is arguably considered standard due to social norms, most effectively exemplified by the status quo bias – being part of a society that is not inherently inclined to vegetarianism, meat consumption represents the conventional norm (Bryant et al., 2022). The majority follow this standard without further questioning, and those individuals who decide to opt out of meat consumption are seen as diverging from this widely acknowledged norm. In addition, social aspects, such as its connection to wealth, power, and status – for example, considering that meat used to be a luxurious rarity enjoyed only among people with higher socio-economic status or that meat-related pursuits like hunting had been highly prized by aristocrats (Fiddes, 1994) – play an undeniable role and influence the dietary choices to this day. Even the social construct of masculinity has its ties to meat consumption. Rothgerber (2013), for example, discussed how mainstream culture, the fast-food industry, and men´s low motivation for adopting a plant-based diet or advocating for animal rights contribute to meat consumption and shape the illusion of the "ideal meat-eating man." Clearly, apart from its dietary profile, meat consumption has a symbolic value and needs to be understood in the social context (Fiddes, 1994).

Still, such a tradition of meat overconsumption has irrefutably negative consequences. On the one hand, the livestock market grossly contributes to environmental problems such as greenhouse gases (Bellarby et al., 2013), water and land pollution (Bouwman et al., 2013),

etc. On the other hand, meat consumption has adverse effects on an individual´s health, such as its link to obesity (Wang & Beydoun, 2009), heart disease (Wright et al., 2017), and diabetes (Aune et al., 2009). Moreover, the questionable practices and use of various medications, such as antibiotics and hormones, on livestock adversely affect public health, for example, causing antimicrobial resistance (Martin et al., 2015) or increasing the risk of transferring infections and pathogens between animals and humans (Rothgerber, 2013). Moreover, there are concerns over animal welfare and the moral aspects of meat production. First, there is promising evidence that at least some animals have consciousness. For example, Griffin and Speck (2004) reviewed studies related to neurology, animal communication, and the versatility of animal behavior and cognition, all pointing to the existence of consciousness. Second, the high demand for meat products directly supports so-called "factory farms," meaning the animals are kept in confined spaces, exposed to violent and inhumane treatment, and often suffer from various injuries and diseases (Joy, 2011). Even though knowledge about these adverse effects has become quite salient in recent years (Loughnan et al., 2010), there has been little change in people's dietary habits. Why is this the case? Perhaps the social aspect of meat consumption (Fiddes, 1994) makes the behavior normative.

The Meat Paradox

The phenomenon of people both knowing about and disagreeing with the consequences of meat production is referred to as the "meat paradox," and it describes the concurrent aversion to harming animals and enjoyment of consuming meat (Loughnan et al., 2010). Such contradicting thoughts often result in cognitive dissonance, a state of internal conflict stemming from a discrepancy between values and behavior, with associated negative emotions (Buttlar & Walther, 2018). Interestingly, reducing such dissonance might alleviate the negative feelings and allow omnivores to continue consuming meat without confronting

any moral implications. There are three main ways to reduce cognitive dissonance: behavioral change, attitudinal change, and strategic ignorance. Applied to the "meat paradox," one can either adjust their attitudes, such as denying consciousness to animals or change their behavior at the source of the dissonance and become vegan or vegetarian (Onwezen & Van Der Weele, 2016). Strategic ignorance, on the other hand, is a cognitive strategy where individuals choose not to seek out or bypass certain information to avoid feelings of discomfort and moral conflict (Onwezen & Van Der Weele, 2016). As such, one might choose not to educate oneself about unethical practices involved in meat production in order to continue eating meat without feeling guilty or morally conflicted. All three pathways produce essentially the same result – resolution of the uncomfortable state of dissonance.

Although behavioral change might arguably be seen as the most reasonable one, it seems that people instead come up with justifications to continue their consumption behavior. Piazza and colleagues' (2015) "four Ns" framework captures some of these reasons. The "four Ns" refer to the categories of natural, normal, necessary, and nice – the bases on which omnivores commonly construct their arguments to defend their stance on meat-eating (Piazza et al., 2015). "Natural" represents our innate drive to consume meat from an evolutionary viewpoint, "normal" refers to the societal norm of including meat in one´s dietary habits, "necessary" relates to the survival need of a balanced diet, including proteins derived from meat, and "nice" covers the pleasure associated with meat consumption. All of these arguments serve to reduce dissonance in self-serving ways because they allow omnivores to rationalize their dietary choice. In other words, it reassures the consumers that their actions coincide with their beliefs about animal welfare and prevailing societal standards. Importantly, this also shields the individual from any moral consequences if the behavior is just deemed 'normal' or 'natural.' Specifically, it reduces the perceived responsibility for the ethical implications of meat consumption. If the action represents the standard practice, then

one simply follows the societal and evolutionary norm rather than consciously choosing to contribute to animal suffering. Similarly, the 'necessary' argument creates an illusion of minimized harm. If one deems meat crucial for survival, then the moral implication of meat consumption is lessened. For example, the majority of people believe that it is impossible to maintain a protein-sufficient diet without including some amount of meat (Piazza et al., 2015), despite the research suggesting the opposite ("American Dietetic Association", 2009).

Compared to the first three Ns – normal, natural, and necessary, which stem from more socially grounded reasoning, the 'nice' aspect highlights individual differences. It emphasizes enjoyment and satisfaction and shifts the attention to the pleasurable features of meat consumption, such as taste, smell, and visual appeal, thus largely overriding related moral concerns. The concept of 'niceness' can also be rephrased in terms of hedonism or hedonistic values. Hedonism, in its simplest form, refers to pleasure-seeking and pain-avoidance tendencies as primary goals in life ("Hedonism," n.d.). Applied to omnivores in particular, hedonism involves the pleasure derived from meat consumption, feeling entitled to eat meat, embracing the positive qualities linked to meat, and even appealing to the taste of meat (Lentz et al., 2018), clearly analogous to 'nice' subcategory. One could argue that 'niceness' is the shallowest of the four Ns – it purely focuses on the hedonistic pursuit without any social, ethical, ecological, or health concerns. We can only hypothesize whether this necessitates that omnivores, for example, deny consciousness to animals to resolve the cognitive dissonance caused by the meat paradox (Loughnan et al., 2010; Onwezen & Van Der Weele, 2016). Nevertheless, it seems that instant gratification outweighs any related moral considerations.

The Social Origins of the Meat Paradox

Considering both between- and within-person factors, the four Ns framework captures a variety of reasons omnivores use to morally disengage via justification for continued

behavior. This leads to the resolution of the cognitive dissonance caused by the desire to consume meat while being aware of its consequences. Furthermore, the framework operates primarily on socially ingrained factors, which are extremely powerful in shaping social norms and expectations (Bryant et al., 2022). As described earlier, status quo bias is a pertinent illustration of such an influential social norm. Arising from this is the desire to fit in or, put differently, the fear of social rejection. Since meat-eating is the prevailing standard, vegans and vegetarians are seen as nonconformists, indicating a minority group (Bolderdijk & Cornelissen, 2022). This comes with a risk of disapproval, judgment, and being seen as violating the social norm (Bryant et al., 2022; Greenebaum, 2012). To avoid the possible negative impact on social relationships, people instead adhere to the predominant, normative, meat-based diet (Bryant et al., 2022). As such, the need to fit in is a compelling form of motivation that influences individuals' choices. Arguably, it is also relatively easy to follow the "prescribed" norm. First, it does not require much cognitive effort to consider the consequences of specific behavior since "everyone does it," and second, it directly ensures the social approval of others. The question is, what defines this "normative" behavior? Is "normal" just a reflection of what the majority does, regardless of its impact? It seems that as long as it is a view of the majority, people will find arguments to rationalize and defend the behavior in question.

Motivated Reasoning

According to Kunda (1990), motivation can lead individuals to make attributions that serve their interests and allow them to embrace beliefs that align with their desires and preferences. In other words, people believe just because they want to. Applied to the dissonance caused by the meat paradox, people justify their meat consumption by selectively focusing on the positive aspects of it, such as dietary importance or cultural significance, which allows them to reach a conclusion about the acceptability of meat consumption simply

because it serves their preference and interest. On the other hand, they tend to ignore or disregard arguments that challenge their view, for example, the moral implications of animal slaughter. As such, reasoning is seen as influenced by motivation via various cognitive processes and biases (Kunda, 1990). The status quo bias and the need to fit in discussed earlier are illustrative examples of such motivational bias. An example of an extreme form of motivated reasoning surrounds the controversy around Dr. Michael Greger, a famous American dietician and advocate for a plant-based diet ("NutritionFacts.org," n.d.). On the one hand, Dr. Greger seems so highly driven by his motivation to promote a plant-based diet that he selectively emphasizes studies supporting his claims and neglects or misinterprets those that refute his arguments (Minger, 2017). On the other hand, he receives considerable criticism from the scientific community and the general population. To a large degree, the criticism from professionals seems justifiable and stems mainly from the goal of protecting scientific integrity and informing the public of Dr. Greger´s questionable research practices. However, we can only speculate whether the general public is driven by the same motives as the professionals or their desire to preserve their meat consumption behavior because they feel threatened by Dr. Greger´s line of argumentation. Nevertheless, both parties clearly rationalize and interpret evidence to align with their personal views and beliefs.

Selecting only those arguments that support one´s desired conclusion is also clearly evident in Piazza and colleagues' (2015) framework. The "four Ns" are essentially biases in reasoning that allow people to overrule rational conclusions about meat production's moral consequences by instead relying on cultural and social arguments. Furthermore, the process of motivated reasoning seems to be largely unconscious (Kunda, 1990). Thus, by making these automatic biased attributions, individuals can preserve a feeling of cognitive consonance – a state in which one´s meat-eating behavior coexists with one´s belief that it is morally acceptable. Consequently, this helps them to deal with the discomfort caused by the meat

paradox. Thus, the suggestion is that motivation influences reasoning in self-serving ways (Kunda, 1990), including dietary choices.

Present Research

      The present research explores the principles of motivated reasoning and applies them to dietary habits. Specifically, we will examine the following question: "Does the salience of the moral implications of meat consumption predict moral disengagement?" We will use moral disengagement as an indicator of motivation and, consequently, of self-serving bias. However, since we cannot measure moral disengagement directly, we will present the participants with a text offering three arguments about the ecological, health, and moral implications of meat consumption. Then, we will examine first the persuasiveness of each argument and second compare the extent to which the participants infer that the supposed author´s motives were either prosocial (e.g., they will acknowledge that the author aims to inform the public about facts) or selfish (e.g., they will discredit the author) as our dependent variables. Therefore, our first two hypotheses are:

H_1: Based on participants´ dietary habits, they will self-servingly infer motives from the author of the text. While omnivores will infer more selfish motives, vegans and vegetarians will infer more pro-socially oriented motives.

H_2: Based on participants´ dietary habits, participants will reach self-serving conclusions about the persuasiveness of the arguments presented in the text. Specifically, vegans and vegetarians will find the arguments more persuasive than omnivores.

      Furthermore, we are interested in possible moderators of the relationship between dietary choice and moral disengagement. One such theorized influencing factor is an individual endorsement of hedonistic values. We suspect that participants who value and seek the pleasure derived from meat consumption the most will be the ones who disengage morally the most to preserve their beliefs and values. Since there is a clear link between hedonism and

Piazza and colleagues' (2015) 'niceness' scale, we will use it as our measure of interest. Given the nature of our third hypothesis and that the 'nice' subscale contains items related to meat consumption, we will only include a subgroup of participants who indicate that they follow a meat-based diet to examine this proposition.

H_3: Participants who score high on the 'nice' subscale will exhibit a stronger relationship between the salience of moral implications of meat consumption and moral disengagement than those who score low on the 'nice' subscale.

Methods

Participants

The sample consists of 75 participants (28 male, 45 female, 2 non-binary, and 2 other) who completed the study online. Participants were recruited via Sona Systems (Sona Systems, n.d.) and convenient sampling. Of the 75 participants, 21 were omnivores, 33 were flexitarians, 5 were pescetarians, and 16 followed a plant-based diet (i.e., vegans and vegetarians). The minimum age for participation was 18 years. Participation was voluntary, and all participants signed informed consent forms and were rewarded with 0.4 credits if recruited via Sona Systems. The study was approved by the ethical committee of the Department of Psychology at the University of Groningen (study code: PSY-2324-S-0259).

Materials and Procedure

The study is a cross-sectional survey that focuses on between-subject measurements. Data collection was completed online via the Qualtrics XM platform (Qualtrics, 2024). The questionnaire began with a short explanation of the study, followed by an inquiry to attain participants' informed consent. The participants were then asked to specify their dietary preferences and habits.

Measures of Dietary Choice

Participants were asked to indicate their dietary habits, which serve as the independent variable. The first item asked, "How would you describe your current diet?". Participants could choose between "My meals (almost) always include meat," "I balance meat and vegetarian options," "Fish is my only source of meat," and "Plant-based (mostly vegetarian or vegan)." Those participants that chose either the first or the second option were redirected to the second and third items. The second item asked how many days a week participants consume meat products on a 7-point Likert scale ranging from 1 to 7 days a week. Lastly, we used a 5-point Likert scale to assess the question "Do you make efforts to reduce your meat consumption?" with answer options ranging from 'absolutely no efforts' to 'significant efforts.'

Measures of Cognitive Reflection

Cognitive engagement was measured through a 6-item adaptation of existing cognitive reflection tests (see, e.g., Toplak et al., 2014). All items were designed with the intention that an intuitive but wrong answer would be triggered in the participants, which would actively need to be overwritten. An example item goes as follows:

You are faced with two trays, each filled with white and red jelly beans. You can draw one jelly bean without looking from one of the trays. Tray A contains a total of 10 jelly beans, of which 2 are red. Tray B contains a total of 100 jelly beans, of which 19 are red. From which tray should you draw to maximize your chance of drawing a red jelly bean?

    A: Tray A (correct answer)

    B: Tray B

Participants could score between 0 (no items answered correctly) and 6 (all items answered correctly; $M = 4.94$, $SD = 1.10$).

Measures of Moral Disengagement

Due to methodological difficulties in measuring moral disengagement directly, we inferred moral disengagement by measuring the supposed author's perceived motives by the participants and the convincement of the arguments given in the text. Specifically, participants were presented with a fictitious article with three arguments presenting negative consequences of meat consumption, including ecological, health, and moral implications. The text was neutral in nature, providing some facts while presenting itself as a popular source to enable the possible differences between dietary groups to emerge.

We measured the first dependent variable, the inferred author motives, using a bipolar scale ranging from -3 to +3 with six items, which we adapted from the questions used by Müller et al. (in preparation). Three of those items tested for prosocial motives of the author (e.g., "The author wants to communicate facts to the public"), with a Cronbach's alpha of α = 0.66. The other three items tested for selfish motives (e.g., "The author wants to protect their personal interests"). The Cronbach's alpha for the selfish motives measure was acceptable at α = .71.

The second dependent variable, the perceived convincement of the arguments given in the text, was measured using a six-point Likert-type scale. We measured perceived convincement for environmental concerns ("Plant-based diets are better for the environment"), moral concerns ("Plant-based diets prevent animal suffering"), and health concerns ("Plant-based diets are better for your health"), respectively, each ranging from "Not convincing at all" to "Very convincing." The Cronbach's alpha for this measure was α = 0.6.

Measures of Niceness

The moderator niceness was measured using two items exploring the pleasure derived from meat consumption ("Meat adds so much flavor it does not make sense to leave it out.", "The best tasting food is normally a meat-based dish (e.g., steak, chicken breast, grilled

fish).”). These items were taken from a study by Piazza and colleagues (2015), resulting in a Cronbach's alpha of α = 0.89, reflecting a good internal consistency.

In the final section of the questionnaire, demographic information was collected (gender with the answer options 'male,' 'female,' 'non-binary,' and 'other' and political orientation, with answer options ranging from 'extremely left-wing' to 'extremely right-wing'). A debriefing on the purpose of the study was given in text format.

Results

Data set processing was performed in Excel (Microsoft Corporation, 2024), and statistical analyses were computed using JASP software (JASP Team, 2024). After excluding participants who did not finish the survey ($n = 13$), the final sample size is $N = 75$. All statistical tests were evaluated against a significant level of .05. Normality violation, based on Q-Q and distribution plots, was indicated for the following dependent variables: cognitive reflection, niceness, and convincement. The violation was further supported by the Shapiro-Wilk Test of Normality, which resulted in $p < .001$ for the above-mentioned dependent variables. We decided to proceed with the analyses, nevertheless.

Preliminary Analysis

Table 1 contains Pearson correlations between the study variables. Markedly, convincement and niceness are significantly negatively correlated ($r = -.35$, $p = .002$), indicating that niceness might moderate the relationship between the salience of moral implications and moral disengagement. Similarly, niceness and cognitive reflection yielded a significant negative correlation ($r = -.28$, $p = .02$). In line with expectations, the outcome variables convincement and prosociality were significantly positively correlated ($r = .31$, $p = .008$). However, convincement and selfishness exhibited no significant correlation ($r = -.15$, $p = .21$). Descriptive statistics for dependent variables selfishness, prosociality, and

convincement can be found in Tables and Figures section, Table 2, Table 3, and Table 4, respectively.

Hypotheses Testing

To examine the first hypothesis - that omnivores will infer more selfish motives in the supposed author of the study's text compared to vegans and vegetarians, who will assume more prosocial motives - we performed two one-way ANOVA analyses. The dependent variables were selfishness and prosociality. The independent variable was a dietary choice. Due to the small sample size, specifically for pescatarians, we decided to group omnivores, flexitarians, and pescatarians into one group and compare them to vegans/vegetarians. The custom contrasts for the groups are in Table 5. The ANOVA model for the dependent variable selfishness (Table 6) showed no significant difference between the dietary groups and the extent to which they inferred selfish motives in the author of the text ($F(3, 71) = 0.41$, $p = 0.75$, $\eta_p^2 = 0.02$). Specifically, the post hoc estimation showed no significant difference between omnivores and vegans/vegetarians ($t(71) = -0.45$, $p = 0.65$). The ANOVA for the dependent variable, prosociality (Table 7), showed a similar nonsignificant pattern ($F(3, 71) = 0.26$, $p = 0.86$, $\eta_p^2 = 0.01$). The post hoc estimation did not indicate a significant difference between omnivores and vegans/vegetarians ($t(71) = 0.82$, $p = 0.41$). The results from ANOVA analyses do not support our first hypothesis that while omnivores will infer more selfish motives in the author, vegans/vegetarians will infer more prosocial motives.

To test the second hypothesis that vegans and vegetarians will deem the arguments presented in the text more persuasive than omnivores, we used the same ANOVA model and custom contrasts (Table 2) as for the first hypothesis. The dependent variable was convincement, and the independent variable was the participant´s diet. The ANOVA analysis yielded significant results (Table 8), indicating that there is a difference between dietary groups and the extent to which they were persuaded by the arguments ($F(3, 73) = 13.27$, $p <$

.001, $\eta_p^2 = 0.35$). Specifically, post hoc estimation indicated that vegans and vegetarians were more persuaded by the arguments compared to omnivores ($t(71) = 4.03$, $p < .001$), thus supporting our second hypothesis.

The third hypothesis examined whether niceness will moderate the relationship between the salience of moral implications of meat consumption and moral disengagement. Because the niceness items pertain to meat consumption, we only included omnivores and flexitarians in the analysis. We performed ANCOVA with convincement as the dependent variable, diet as a fixed factor, and niceness as a covariate (Table 9). The ANCOVA revealed significant main effects of diet ($F(1, 50) = 6.14$, $p = 0.02$, $\eta_p^2 = 0.11$) and niceness ($F(1, 50) = 7.77$, $p = 0.007$, $\eta_p^2 = 0.14$) on convincement. Importantly, the ANCOVA showed a significant interaction effect between diet and niceness ($F(1, 50) = 5.05$, $p = 0.03$, $\eta_p^2 = 0.09$), indicating that the relationship between the salience of moral implications and moral disengagement is moderated by scores on niceness (Figure 1). Moreover, the post hoc comparisons indicated a significant difference between the groups, with a higher mean score for flexitarians compared to omnivores ($M_{diff} = -1.02$, $SE = 0.29$, $t = -3.56$, $p_{tukey} < .001$). However, contrary to our hypothesis, the relationship seems to be reversed—those who score high on niceness seem more persuaded by arguments independent of their diet (Figure 1). Furthermore, Figure 1 shows a steeper increase for omnivores than flexitarians, indicating a stronger moderation effect of niceness for omnivores. Therefore, our third hypothesis was not supported.
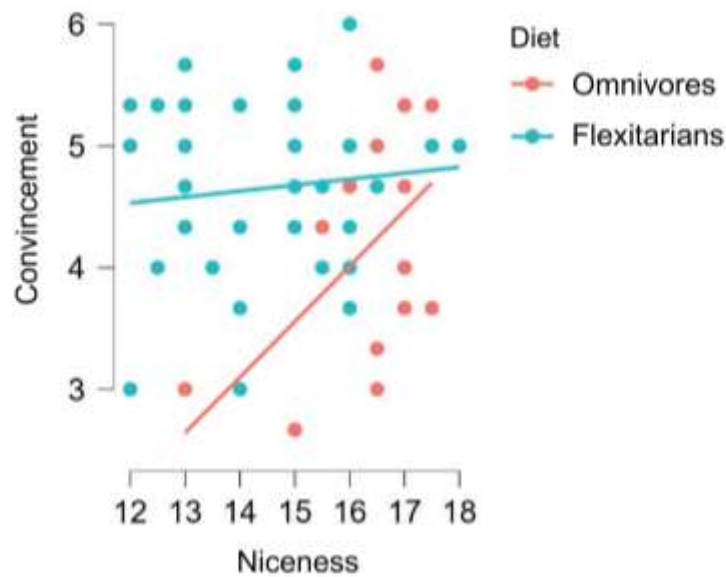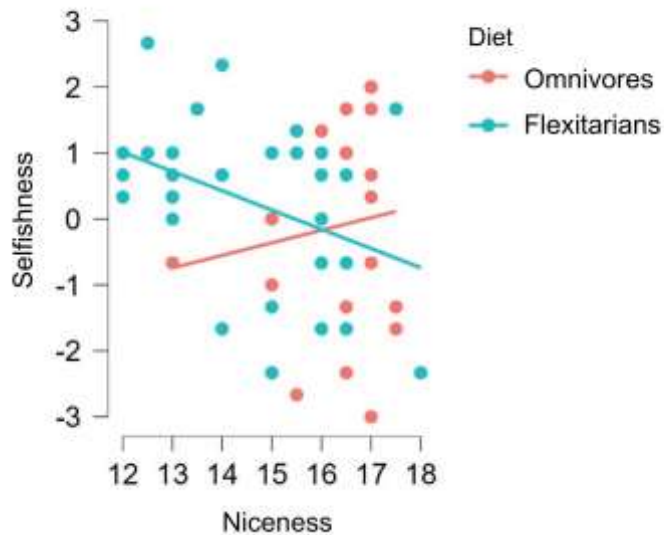
Figure 1. Interaction plot depicting the relationship between niceness and convincement scores,

separated by diet group: The figure presents the interaction between niceness (x-axis) and

convincement (y-axis) for omnivores (orange) and flexitarians (blue). Each dot represents one

participant, with orange indicating an omnivore and blue indicating a flexitarian.

After running the ANCOVA analysis with prosociality and selfishness as the

dependent variables, the results were nonsignificant. The interaction effect between diet and

prosociality (Figure 2) showed a similar pattern as the dependent variable convince, without

being significant. This similarity is also reflected in a significant positive correlation between

the variables (Table 1). The nonsignificant interaction effect between diet and selfishness is

plotted in Figure 3.
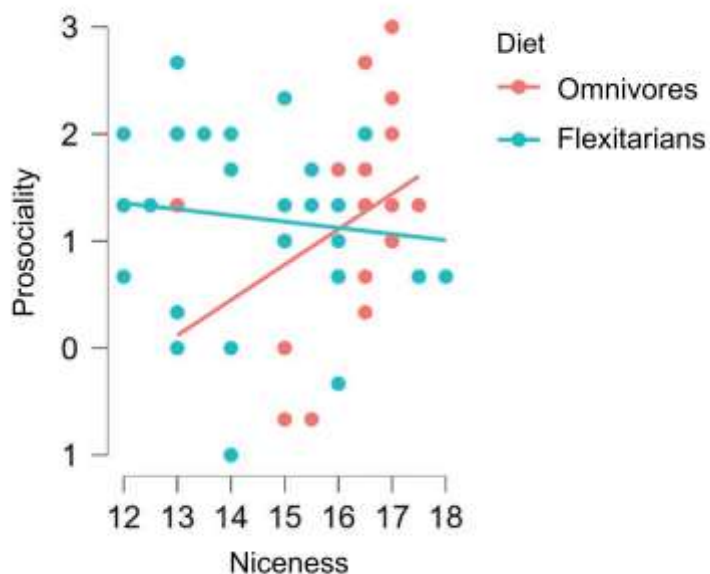
Figure 2. Interaction plot depicting the relationship between niceness and prosociality scores, separated by diet group: The figure presents the interaction between niceness (x-axis) and prosociality (y-axis) for omnivores (orange) and flexitarians (blue). Each dot represents one participant, with orange indicating an omnivore and blue indicating a flexitarian.

Figure 3. Interaction plot depicting the relationship between niceness and selfishness scores, separated by diet group: The figure presents the interaction between niceness (x-axis) and selfishness (y-axis) for

omnivores (orange) and flexitarians (blue). Each dot represents one participant, with orange indicating an omnivore and blue indicating a flexitarian.

Discussion

The present study aimed to explore motivated reasoning applied to dietary habits. Specifically, we examined the phenomenon of the meat paradox. We studied the differences in moral disengagement based on dietary group membership when the moral implications of meat consumption were made salient.

Our first hypothesis studied moral disengagement by examining participants´ perceptions of why the supposed author created the text. We argued that omnivores would perceive more selfish motives, while vegans and vegetarians will infer that the author´s aim was prosocial. The results showed no difference between the groups and the extent to which they inferred either motive in the author. Therefore, the first hypothesis was not supported. Interestingly, the correlation between selfishness and prosociality was statistically significant and moderately positive. In other words, people seem to recognize when someone is "doing the right thing" while simultaneously thinking of them as selfish. One explanation that could possibly account for the nonsignificant results and positive correlation is that dietary habits do not influence human perception of prosociality. Prosociality is often seen as a desirable human trait across various cultures (Feygina & Henry, 2015). As such, even omnivores might have indicated prosocial motives in the author. In the end, informing the public about the negative consequences of a specific behavior could be arguably perceived as a prosocial act. However, since the moral implications have been made salient, it is likely that omnivores still found the text threatening. This might have triggered a state of cognitive dissonance between a belief (the public should be informed about the negative consequences of meat-eating) and the behavior (consuming meat). To deal with the personal threat, they might have indicated that the author is, in reality, selfish. Thus rationalizing their behavior (Piazza et al., 2015) and

resolving the cognitive dissonance. Further research is necessary to find support for this speculation.

The second hypothesis examined moral disengagement by studying how convinced the participants were by the arguments presented in the text. We expected that omnivores would find the arguments less persuasive compared to vegans and vegetarians. Our expectation was supported, with the results indicating a significant difference between the groups. These results further support our main theorizing – although all participants received the same material, they perceived it differently based on their dietary habits. The between-group difference is likely attributable to the combination of motivated reasoning (Kunda, 1990) via the four Ns framework (Piazza et al., 2015) in which omnivores morally disengage from the moral implications of meat consumption in an attempt to deal with the uncomfortable state of dissonance caused by the meat paradox (Buttlar & Walther, 2018). Furthermore, compared to the supposed author´s motive, convincement was predictive of moral disengagement, demonstrating the validity of our materials.

Lastly, our third hypothesis argued that pleasure-seeking tendencies, measured by the concept of niceness (Piazza et al., 2015), will moderate the relationship between the moral implications of meat consumption and moral disengagement, with those who score high on niceness being more morally disengaged. The interaction effect with convincement as a dependent variable yielded significant results. However, contrary to our expectations, those who scored high on niceness were also more convinced by the arguments. In other words, those who find meat consumption the most enjoyable also tend to recognize and agree with arguments that appeal to the negative consequences of meat consumption more. The results were nonsignificant after exchanging the dependent variable for selfishness and prosociality. All in all, our third hypothesis was not supported. To begin with, the interaction with niceness is counterintuitive, at least. A possible explanation might stem from the composition of our

sample. The majority of participants were university students in emerging adulthood, a distinct period commonly characterized by exploration and self-discovery (Arnett, 2000). It is possible that the university setting in which people come into contact with various diverging opinions combined with emerging adulthood causes young adults to face a persistent state of cognitive dissonance. Given that the negative consequences of meat consumption are increasingly highlighted in today´s society (Loughnan et al., 2010), it might be that young adults are still forming their beliefs and attitudes, including those related to dietary habits, causing a discrepancy between their behavior and what they stand for. This could explain the cooccurrence of high agreement with the arguments and high enjoyment derived from meat eating in our sample. Perhaps future studies could explore whether the moderation would behave differently for various age groups. For example, Visser and Krosnick (1998) examined the progress of attitude strength across the lifespan, suggesting that the process is more complex and dynamic than initially thought. Nevertheless, controlling for age might provide valuable insights into how people deal with cognitive dissonance and attitude formation related to meat consumption and motivated reasoning in general.

Implications

The present research provides new evidence for the influence of motivation on human reasoning applied to the context of dietary habits. Namely, we found that people´s diet predicts how they interact with a fictitious text, making meat consumption's moral implications salient. As outlined before, meat consumption bears cultural and social value (Fiddes, 1994). Consequently, the social context also influences the choice of reasoning biases and rationalizations people use to defend their "immoral" behavior in order to resolve the cognitive dissonance. The "four Ns" framework alongside status quo bias, or the need to fit in, are great exemplifications of such social biases and rationalizations (Bryant et al., 2022; Greenebaum, 2012; Piazza et al., 2015). Importantly, all these are driven by various

motivational processes (Kunda, 1990). Even a simple nihilistic pleasure derived from meat consumption can act as a strong motivational force (Piazza et al., 2015). In other words, if one is motivated to arrive at a certain conclusion, one likely will. The study thus challenges and perhaps calls for revision of models that omit motivation from reasoning as an influencing factor (see, e.g., Gützkow et al., submitted).

Perhaps one of the most striking practical implications concerns information communication, such as health and meat reduction-focused campaigns. Kunda (1990) clearly suggests that motivation can lead people to create explanations that match their preferences. Piazza and colleagues (2015) further substantiate this claim by providing a framework listing common reasons omnivores follow to justify their consumption behavior instead of changing their habits (Onwezen & Van Der Weele, 2016). It thus seems that purely providing information will not result in behavioral change because people will always find reasons to continue engaging in their desired behavior. This is also exemplified by the pattern found in the present study, in which omnivores agreed less with the arguments in the text compared to vegans and vegetarians, despite the text being the same for both groups. The question is, then, how effective are campaigns focused on persuading people to change? To take it one step further, is it even possible to convince someone of the opposing view? Apparently, if a person is really motivated to preserve their behavior, they will find ways to justify their position (Kunda, 1990; Piazza et al., 2015). One possibility could be to increase the level of personal threat, for example, by using explicit videos or pictures alongside verbal messages, making the moral implications even more salient so that consumers would find it challenging to justify their behavior. However, a potential problem with using intense threats in persuasive messages is that people tend to exhibit so-called psychological reactance – they react negatively, including responding angrily, not engaging with the message, or showing reduced motivation to act on the message if the perceived threat restricts their autonomy to choose in

which behaviors they engage (Steindl et al., 2015). Future research would first need to determine an acceptable level of threat that would bring about reflection on the topic and possibly a behavioral change instead of triggering psychological reactance. Nevertheless, the message is clear. Research is gathering more evidence for the role of motivation in reasoning, which can help us explain various phenomena, including the meat paradox. The next course of action should include translating these findings into practice by finding ways to reach omnivores through campaigns that do not solely rely on information provision.

Limitations, Strengths, and Future Research

Although the present study provided valuable insight into motivated reasoning behind dietary choice, we must acknowledge its limitations. One major limitation is low power. Unfortunately, we gathered valid data from only 75 participants. Although the results might be used as an indication, they should be interpreted cautiously, and no firm conclusions can be drawn. Furthermore, the assumption of normality was violated for several dependent variables, including niceness, cognitive reflection, and convincement. Despite the violation, we decided to proceed with parametric tests. Although a higher number of participants would likely account for the violation, the analysis should be re-run using nonparametric statistical tests. Additionally, the participants were recruited via Sona Systems (Sona Systems, n.d.) and convenient sampling, which resulted in a sample primarily consisting of university students with comparable ages and educational backgrounds. This likely led to a homogenous sample drawn from the WEIRD population (Henrich et al., 2010), thus constraining the generalizability of the findings. Another limitation is that the study was based online and primarily relied on self-report. We can expect that the involvement with the task and self-awareness will vary among participants, questioning the validity of our data. For a comprehensive overview of challenges related to online-based data collection, see, for

example, Newman and colleagues (2021). A larger sample size could again average out these differences.

On the other hand, the study also presents several strengths. First, related to materials, is the neutrality of the text. We aimed to create a text that balanced facts while appealing to participants´ emotions. Since the analysis with dependent variable convincement showed a significant difference between participants based on their dietary choice despite receiving the same fictitious article, we can be reasonably confident in the validity of the material. Second, although the total number of participants was low, the proportions of participants across dietary groups were divided relatively equally. The only exceptions were pescatarians, with a smaller representation overall. Third, thanks to the study setup, we were able to measure the immediate reaction of participants to a stimulus. In other words, compared to regular online-based questionnaires, which ask participants to report events retrospectively, we instantly measured their reaction to the text. Thus, the survey closely simulated real-world conditions in which people often react quickly and automatically, enhancing the ecological validity of our study.

To expand upon the present study's ideas and findings, manipulating the presented text's emotional valence might be an interesting next step. As discussed, we aimed to create a text balancing facts and emotional valence. However, we might hypothesize whether a text focused primarily on the participants´ emotions could possibly result in a more significant difference between the dietary groups. Put differently, would participants get even more morally disengaged if we manipulate the level of personal threat in the text? This might be especially interesting in the context of our first hypothesis examining the motives inferred from the supposed author of the text. Nevertheless, future research might implement a between-subject design, with a subgroup of participants receiving more emotion-focused text than the rest, to explore whether emotional valence influences the results.

Conclusion

To conclude, the current study provided new evidence for the role of motivation in human reasoning. Despite the limitation of low power, we found significant results indicating that meat eaters get morally disengaged if the moral implications of meat consumption are salient. Similarly, we found evidence that niceness moderates the relationship between the saliency of moral implications and moral disengagement. However, further research is necessary to examine this relationship in more detail.

Tables and Figures

Table 1

Correlations for the Study Variables

Variable	Days	Reduce	Gender	Diet	CogRef	DVself	DVprosoc	DVconv	Niceness
Days	-								
Reduce	-.54**	-							
Gender	.24	-.17	-						
Diet	-.73**	.38**	-.19	-					
CogRef	-.03	.03	.06	.19	-				
DVself	-.10	.03	-.22	.08	-.02	-			
DVprosoc	-.02	.08	-.17	.02	.11	.53**	-		
DVconv	-.24	.30*	-.11	.55**	.26*	-.15	.31**	-	
Niceness	.45**	-.34*	.08	-.74**	-.28*	-.19	-.02	-.35**	-

*$p < .05$ **$p < .01$

Note. The correlation table includes correlations between the following study variables: number of days (Days), meat reduction (Reduce), gender, diet, cognitive reflection (CogRef), selfishness (DVself), prosociality (DVprosoc), convincement (DVconv), and niceness.

Table 2

Descriptive Statistics for Selfishness

Diet	N	Mean	SD	SE	Coefficient of variation
Omnivores	21	-0.032	1.588	0.346	-50.016
Flexitarians	33	0.273	1.234	0.215	4.526
Pescatarians	5	0.533	0.960	0.429	1.801
Vegans/Vegetarians	16	0.083	0.848	0.212	10.172

Table 3

Descriptive Statistics for Prosociality

Diet	N	Mean	SD	SE	Coefficient of variation
Omnivores	21	1.254	0.999	0.218	0.797
Flexitarians	33	1.202	0.812	0.141	0.676
Pescatarians	5	1.133	0.506	0.226	0.446
Vegans/Vegetarians	16	1.396	0.425	0.106	0.305

Table 4

Descriptive Statistics for Convincement

Diet	N	Mean	SD	SE	Coefficient of variation
Omnivores	21	4.206	0.916	0.200	0.218
Flexitarians	34	4.657	0.713	0.122	0.153
Pescatarians	5	5.333	0.527	0.236	0.099
Vegans/Vegetarians	17	5.588	0.364	0.088	0.065

Table 5

Custom Contrasts Coefficients – Diet

Diet	Comparison 1
Omnivores	-1
Flexitarians	-1
Vegans/Vegetarians	3
Pescatarians	-1

Table 6

ANOVA Table for Dependent Variable Selfishness

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Diet	1.98	3	0.66	0.41	.76	.02
Residuals	113.66	71	1.60			

Note. Type III Sum of Squares.

Table 7

ANOVA Table for Dependent Variable Prosociality

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Diet	0.48	3	0.16	0.26	.86	.01
Residuals	44.81	71	0.63			

Note. Type III Sum of Squares.

Table 8

ANOVA Table for Dependent Variable Convincement

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Diet	20.06	3	6.69	13.27	<.001	.35
Residuals	36.78	71	0.50			

Note. Type III Sum of Squares.

Table 9

ANCOVA Table for Dependent Variable Convincement

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Niceness	4.45	1	4.45	7.77	.007	.14
Diet	3.52	1	3.52	6.14	.02	.11
Diet * Niceness	2.89	1	2.89	5.05	.03	.09
Residuals	28.63	50	0.57			

Note. Type III Sum of Squares. The table includes data from only flexitarians and omnivores.

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