The Salience of Moral Implications of Meat Consumption in Predicting Moral Disengagement

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Abstract

The process of coming to a decision can often lead to cognitive dissonance when people's actions conflict with their values, prompting the use of self-serving reasoning processes like moral disengagement to resolve this dissonance. In the present study, we investigate how these self-serving processes are employed in the moral context of meat consumption. Specifically, we explored the influence of dietary preferences on moral disengagement, with a focus on the potential moderating effects of moral identity and cognitive engagement. Participants (N = 70) read a text outlining the adverse effects of meat consumption and then completed a questionnaire assessing them on moral identity, cognitive engagement, and their extent of moral disengagement, inferred by measuring their perceived argument persuasiveness and perceived author's motives. Our findings indicate a significant main effect of dietary preference on persuasiveness; that is, individuals following plant-based or vegetarian diets perceived arguments regarding meat consumption as significantly more persuasive than their meat-eating counterparts. However, contrary to our hypotheses, neither moral identity nor cognitive engagement significantly moderated this relationship. The results emphasize the importance of dietary preferences in shaping perceptions of ethical arguments and suggest that tailored messaging should consider these preferences to increase persuasiveness.

Keywords: dietary preference, moral disengagement, cognitive engagement, moral identity

The Salience of Moral Implications of Meat Consumption in Predicting Moral

Disengagement

The choices people make in life are far from arbitrary as they are deeply intertwined with their motivations and desires. Every day, people engage in complex decision-making processes to arrive at these choices. At its core, decision-making involves selecting a course of action from multiple alternatives based on a combination of available information, personal preferences, and situational constraints (Kruglanski et al., 2002). Every decision we make is grounded in some form of motivation (Kunda, 1990), highlighting the strong connection between decision-making and motivation. Furthermore, decision-making is inexorably linked to moral considerations: in most cases, our choices and their moral implications, such as whether one should act altruistically or selfishly, involve complex compromises and value judgments, revealing our moral values and principles. Decision-making is therefore, in a way, an expression of our morals. Many factors influence a single decision, meaning that they are arguably to some extent bound to conflict with each other. For instance, consider the dilemma faced by someone who wants their food to be produced under ethical working conditions but continues to purchase products from brands like Nestlé which have been repeatedly accused of using child labor (Wijesinghe, 2018). In this scenario, the person's values (supporting fair working conditions for all) are at odds with their actions (choosing a brand with problematic labor conditions simply because they prefer its products). We as humans are creatures continuously striving for consistency, but due to so many factors influencing one decision, consistency is not always feasible, ultimately leading to conflict. What happens when factors clash and people face such a conflict, and how do people cope with a conflict of this kind?

When there is inconsistency between a person's belief system and their behavior, that is, there is conflict, they experience *cognitive dissonance* (e.g. Festinger, 1957), a

phenomenon often arising in situations where people are faced with decisions or information that challenge their values or beliefs. It is known that such dissonance can arise, and individuals are often faced with real-world situations that prompt dissonance within themselves. Think again of the person who values fair labor but continues to buy produce from brands that do not adhere to ethical standards. Likely, this person will experience cognitive dissonance because their actions are not in line with their moral values. But how, exactly, do people resolve this cognitive dissonance? How can people seemingly live with the implications of their actions?

One might rationally assume that the logical reaction to such dissonance would be people changing their behavior to match their values but, realistically, this is not what happens. People would rather change their cognitions, that is, their reasoning, than adapt their behavior. A body of work supports the idea that reasoning is fundamentally motivated, and, hence, biased (e.g. Jain & Maheswaran, 2000; Kruglanski et al., 2002; Kunda, 1990). To arrive at their sought-after conclusions, people rely on cognitive processes and representations. At the same time, motivation plays a part in establishing which of these will be employed in a specific event (Kunda, 1990). One can differentiate between two major categories of motivated reasoning, namely reasoning driven by accuracy goals, in which the motive is to reach a certain conclusion, and reasoning driven by directional goals, in which the motive is to reach a conclusion because people want to arrive at that particular conclusion (Kunda, 1990). Kunda (1990) furthermore states that because people want to arrive at a particular conclusion, that is, they want to believe certain things, they come up with a justification for the wanted conclusion, which creates a so-called "illusion of objectivity".

These types of motivated reasoning processes are often *self-serving.* In other words, we do not do what would be the 'right thing' to do, we do what is right for us personally. This partly stems from egoistic reasons, such as, that people want to feel good about themselves.

Nonetheless, they are not able to when they experience cognitive dissonance. This conflicts with people's desire to uphold a positive and coherent image of themselves no matter what (e.g., Chavez et al., 2016; Sherman & Cohen, 2006). Research has frequently shown that they can do that, for instance, by attributing their successes to their abilities, while on the other hand attributing their failures to external factors (e.g. Arkin et al., 1980). Attributions are therefore stained by "a person's own needs or wishes" (Heider, 1958, p.118, as cited by Campbell & Sedikides, 1999), which are anchored in a person's self-concept, such as one's moral identity. It is therefore reasonable to consider self-serving biases a psychological strategy to shield or improve one's self-concept (Campbell & Sedikides, 1999). People may be especially likely to engage in the aforementioned self-serving reasoning processes when they are facing cognitive dissonance. Importantly, those who spend a lot of cognitive effort may be the most likely to arrive at conclusions that are favorable to their self-image. In the context of politicized decision-making, Gützkow and colleagues (submitted) showed that the most cognitively engaged individuals were the most likely to come to conclusions that favor their political viewpoints. This view is further supported by Pennycook et al. (2015), who found that slow and deliberate processing can indeed be influenced by bias through factors such as decoupling, the mental separation of different elements of information to reduce cognitive dissonance or maintain a certain viewpoint.

Another phenomenon people exhibit to be able to uphold a positive image of themselves is *moral disengagement*, a concept introduced by Bandura. It essentially refers to strategies a person consciously or unconsciously employs which allow them to engage in immoral actions whilst preserving their view of themselves as a moral person (Hardy et al., 2015). It is possible that the very cognitive processes that facilitate motivated reasoning and biased decision-making also enable moral disengagement. To summarize, several cognitive processes play an important part in resolving cognitive dissonance. Through the processes

mentioned above of motivated reasoning and moral disengagement, individuals can resolve the experienced dissonance in self-serving ways. The employment of biased cognitive strategies allows them to justify their actions, aligning them with their desired self-image. This enables them to maintain a sense of moral integrity despite behaving in ways that conflict with their values.

The current research will apply these principles to a different context. Building upon the understanding of decision-making processes and motivated reasoning outlined above, this research seeks to explore whether these principles can capture a domain where many people may find conflicts in themselves – the moral implications of meat consumption. Eating is so central to human existence, that most, if not everyone, will have an opinion on whether eating meat is ethical and contemporary with climate change posing a serious threat to our future. Meat consumption, especially meat from factory farming, an omnipresent aspect of numerous peoples' diets, has continuously become subject to scrutiny due to its ethical, environmental, and health-related repercussions (e.g. Godfray et al., 2018; Loughnan et al., 2010; Wolk, 2017). Therefore, when deciding whether to include meat in one's diet or not, one has to reflect on an array of considerations and evaluate them according to their importance to one's moral compass, such as personal taste preference, health concerns, animal welfare, and environmental sustainability, though it can be argued that not everyone cognitively engages with such questions to the same extent. We claim that when the moral implications of one's actions are made salient, this can result in cognitive dissonance. For example, when a strongly convinced meat eater encounters information that does not align with his or her beliefs (e.g. Meat negatively impacts our environment), that person may have to expend a lot of cognitive effort for self-serving reasons, because, despite engaging in behavior that contributes to environmental pollution, people want to keep believing that they are a good person. They might have to expend more cognitive effort than a vegetarian or vegan, whose

views are more in line with the presented information than a meat eater's. People do not want to believe that they are morally liable just because of their dietary habits. Therefore, those who are highly cognitively engaged may be the most adept at morally disengaging through self-serving reasoning.

Based on the above, I predict the following hypotheses:

Hypothesis 1: Meat eaters may be motivated to morally disengage from the moral implications of their meat-eating behavior. This does not apply to vegetarian and plant-based dieters.

Hypothesis 2: Meat eaters who are more cognitively engaged may be more adept at employing self-serving reasoning strategies to morally disengage from the ethical implications of their meat-eating behavior compared to those who are less cognitively engaged.

In addition to dietary preferences, other individual differences may make it more or less likely that people morally disengage. For example, a strong moral identity might make it less likely that people morally disengage. *Moral identity* has been described by Hardy et al. (2015) as "the degree to which being a moral person is important to an individual's identity" (Hardy et al., 2015, p. 1542). Likewise, it can be defined as the extent to which being an individual with moral traits is a salient social identity to one's self-concept (Aquino & Reed, 2002). Based on the concept of moral identity internalization, the more vital the image of oneself as a person with moral traits is to the person's self-concept, the higher the motivation to be a moral person (Hardy et al., 2015). Moral identity moreover is driven by the consistency principle, referring to an individual's desire to behave consistently with their identity (Reynolds & Ceranic, 2007). Research has positively linked moral identity to engagement in prosocial behaviors (Hardy & Carlo, 2011). People place importance on

viewing themselves as a person with moral traits, also referred to as *moral self-relevance* (Hardy et al., 2015). Such moral self-relevance acts as a driver of moral action due to, as stated before, people being naturally impelled to perform consistently with their self-concept (Blasi, 1993). In previous studies, moral identity has thus been shown to exert a moderating effect on individuals' likelihood to morally disengage (Detert et al., 2008; Kavussanu & Ring, 2017). People with a strong moral identity might be less likely to morally disengage when faced with cognitive dissonance, as they consequently have higher moral self-relevance, putting higher value on being a person with moral traits than a person with a less strong moral identity and therefore lower moral self-relevance, which allows them to act in a way that is more in line with their moral compass.

We can therefore reasonably expect moral identity to also affect moral disengagement in the present study, as individuals would be motivated to behave morally; to align their actions to their self-concept in which they see themselves as a moral person. In other words, individuals scoring high on moral identity would be less likely to morally disengage.

Hypothesis 3: Meat-eating individuals with a strong moral identity are less likely to morally disengage from the moral implications of their meat-eating behavior compared to meat-eaters who score low on moral identity.

This study seeks to extend our understanding of motivated reasoning processes in morally charged domains by applying Gützkow and colleagues' (submitted) framework to the specific context of meat consumption and moral decision-making.

Furthermore, our research has certain practical implications for interventions aimed at, for instance, ethical consumption behavior, particularly in the domain of dietary choices. This study can help improve our understanding of how individuals handle moral

contemplations in their dietary choices, which could potentially assist the development of strategies to encourage more sustainable and ethical eating behaviors. Moreover, it aims to provide information on the influence of moral identity in moderating the effect between dietary choice and moral disengagement.

Method

Participants

Prior to data analysis, the dataset was examined for missing values. Cases with missing data on key variables were excluded from the analysis ($n = 18$). Therefore, the final sample consisted of $N = 70$ participants who completed the study online. Participants were recruited via Sona Systems (Sona Systems, n.d.) and convenience sampling. All of them were undergraduate first-year students from the University of Groningen (27 males, 39 females, 2 non-binary, and 2 other). Of the 70 participants, 20 (28.6%) were meat-eaters, 31 (44.3%) were flexitarians, 5 (7.1%) were pescetarians, and 14 (20%) 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 study that focuses on between-subject measurements (see Appendix). For data collection, participants completed the study online via the Qualtrics XM platform, and for data analysis, we employed SPSS statistical software. 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. Afterward, participants were instructed to read a text titled "It is Time to Switch to a Plant-Based Diet – Here is Why", written under the pseudonym "A.

F.", indicating an author to have written the text, who was, in fact, fictional. The text listed three reasons for transitioning to a plant-based diet. First, it outlined the adverse environmental impact of livestock farming, mentioning issues such as greenhouse gas emissions, biodiversity loss, and deforestation. It moreover addressed animal suffering due to factory farming, describing, for instance, the poor conditions under which animals are kept, inhumane slaughter methods, and painful procedures undertaken without anesthesia. Lastly, the text discussed health concerns associated with meat consumption, including the heavy use of antibiotics in livestock and its implications, as well as linking eating meat to poor health outcomes such as different types of cancer and diseases.

Measures of Dietary Choice

Participants were asked to indicate their dietary habits, which serve as the independent variable. The first one 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)". Participants who 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 are consuming meat products, on a 7-point Likert scale ranging from 1 day 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 already existing cognitive reflection tests. All items were designed with the intention in mind that an intuitive but wrong answer gets triggered in the participants which actively needs to be overwritten. An example item goes as follows (De Neys, 2014):

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; ($M = 4.9$, $SD = 1.10$).

Measures of Moral Disengagement

Due to methodological difficulties in measuring moral disengagement directly, we inferred moral disengagement by measuring the perceived motives of the fictional author by the participants as well as the perceived persuasiveness of the arguments given in the text.

We measured the first dependent variable, the motives of the author the participants inferred, by using a bipolar scale ranging from -3 to +3 with the help of six items which we adapted from the questions used by Müller et al. (in preparation). Three of these items tested for prosocial motives in the author (e.g. "The author wants to communicate facts to the public"), while 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 $\alpha = .71$, and the prosocial motives measure demonstrated a Cronbach's alpha of $\alpha = .67$, approaching the acceptable range for internal consistency. The second dependent variable, the perceived persuasiveness of the arguments given in the text, was measured through the use of a 6-point Likert-type scale. We measured perceived persuasiveness 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 = .62, suggesting moderate internal consistency with potential for refinement.

Measures of Moral Identity

Moral identity was measured using 5 items scored on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) (Likert, 1932). The items aimed to measure the importance of being a person with moral traits to the respective participant's identity. An example item goes as follows:

Being someone who makes conscious decisions about animal products is an important part of who I am.

Participants could then indicate on the scale how much they agreed with this statement. This scale resulted in a Cronbach's alpha of α = .74, showing acceptable internal consistency.

In the final section of the questionnaire, basic demographic information was collected (gender with the answer options 'male', 'female', 'non-binary' and 'other' and political orientation, with answer options ranging from 1: 'extremely left-wing' to 9: 'extremely right-wing') and a debriefing on the real purpose of the study was given in text format.

Results

Correlations

The correlation matrix is presented in Table 1. A strong positive correlation was found between moral identity and persuasiveness ($r = 0.5$, $p < .001$), indicating that a higher moral identity is associated with higher perceived persuasiveness of the presented arguments. We also observed a significant positive correlation between prosocial motives and persuasiveness ($r = 0.3$, $p = .01$), implying that higher perceptions of prosocial motives in the fictional author are associated with increased perceived persuasiveness. Cognitive engagement was significantly positively correlated with persuasiveness ($r = 0.29$, $p = .01$), suggesting that

higher cognitive engagement is associated with higher perceived persuasiveness of arguments. Conversely, a significant negative correlation was identified between moral identity and political orientation ($r = -0.34$, $p < .001$), indicating that individuals with a stronger moral identity tend to have a more left-leaning political orientation.

Table 1

Correlations between Dependent, Moderator, and Independent Variables

Correlations

		MoralIdentity	SelfishMotives	ProsocialMotives	Persuasiveness	CognitiveReflection	PoliticalOrientation
MoralIdentity	Pearson Correlation	1	.17	.24*	.50**	.20	-.34**
	Sig. (2-tailed)		.17	.04	<.001	.09	.00
	N	70.00	70	70	70	70	70
SelfishMotives	Pearson Correlation	.17	1	.50**	-.14	-.09	-.04
	Sig. (2-tailed)	.17		<.001	.24	.45	.72
	N	70	70	70	70	70	70
ProsocialMotives	Pearson Correlation	.24*	.50**	1	.30*	.04	.03
	Sig. (2-tailed)	.04	<.001		.01	.77	.79
	N	70	70	70	70	70	70
Persuasiveness	Pearson Correlation	.50**	-.14	.30*	1	.29*	-.36**
	Sig. (2-tailed)	<.001	.24	.01		.01	.00
	N	70	70	70	70	70	70
CognitiveReflection	Pearson Correlation	.20	-.09	.04	.29*	1	-.07
	Sig. (2-tailed)	.09	.45	.77	.01		.58
	N	70	70	70	70	70	70
PoliticalOrientation	Pearson Correlation	-.34**	-.04	.03	-.36**	-.07	1
	Sig. (2-tailed)	.00	.72	.79	.00	.58	
	N	70	70	70	70	70	70

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Linear Regression

A linear regression with two interaction terms was conducted to test all three hypotheses. All assumptions for linear regression were met. A significant main effect of diet on persuasiveness was found ($p = .03$), providing support for H1. Post hoc comparisons employing the Tukey HSD test were conducted during an ANOVA, for which all assumptions were met. Tukey HSD output revealed a significant difference in perceived persuasiveness of the arguments between meat eaters and vegetarians/vegans ($MD = -1.36$,

SE = .26, *p* <.001), as well as between flexitarians and vegetarians/vegans (*MD* = -.86, *SE* = .24, *p* < .05) providing further evidence for H1.

The interaction term between cognitive engagement and dietary preference was non-significant (*p* = .92, *t* = -.10; see Table 2), indicating that the analysis found no significant moderating effect of cognitive engagement on the relationship between dietary preference and the perceived persuasiveness of author's arguments, failing to confirm H2. This hypothesis predicted that meat eaters who are more cognitively engaged would be more adept at employing self-serving reasoning strategies to morally disengage from the ethical implications of their meat-eating behavior compared to those who are less cognitively engaged.

Similarly, the interaction effect between moral identity and dietary preference was non-significant (*p* = .73, *t* = .35; see Table 2), suggesting that moral identity does not moderate the relationship between dietary preference and perceived persuasiveness, although the significant correlation between moral identity and persuasiveness outlined above proposed the opposite. Our findings indicate that such a suggested effect did not hold in the full regression model. H3, which hypothesized that meat eaters with a strong moral identity would be less likely to morally disengage compared to those with a low moral identity, was thus not supported. Inconclusive effects were found for the analyses conducted on the selfish motives measure and the prosocial motives measure. Interaction plots are presented in Figure 1 and Figure 2, respectively.

Table 2

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.11	.27		15.08	<.001
	CogRefCentered	.13	.24	.14	.53	.60
	MoralIdCentered	.22	.32	.21	.69	.50
	Interact_CogRefxDiet	-.01	.13	-.03	-.10	.92
	Interact_MoralIdxDiet	.06	.17	.12	.35	.73
	Diet	.31	.14	.31	2.27	.03

[a.] Dependent Variable: Persuasiveness

Table 3

Multiple Comparisons

Dependent Variable: Persuasiveness

Tukey HSD

(I) Diet	(J) Diet	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Meat Eaters	Flexitarians	-.50	.21	.09	-1.06	.05
	Vegetarians/vegans	-1.36[*]	.26	<.001	-2.04	-.69
	Pescatarians	-1.15[*]	.37	.01	-2.12	-.18
Flexitarians	Meat Eaters	.50	.21	.09	-.05	1.06
	Vegetarians/vegans	-.86[*]	.24	.00	-1.48	-.24
	Pescatarians	-.65	.35	.27	-1.58	.29
Vegetarians/vegans	Meat Eaters	1.36[*]	.26	<.001	.69	2.04
	Flexitarians	.86[*]	.24	.00	.24	1.48
	Pescatarians	.21	.38	.94	-.79	1.22
Pescatarians	Meat Eaters	1.15[*]	.37	.01	.18	2.12
	Flexitarians	.65	.35	.27	-.29	1.58
	Vegetarians/vegans	-.21	.38	.94	-1.22	.79

[*.] The mean difference is significant at the 0.05 level.
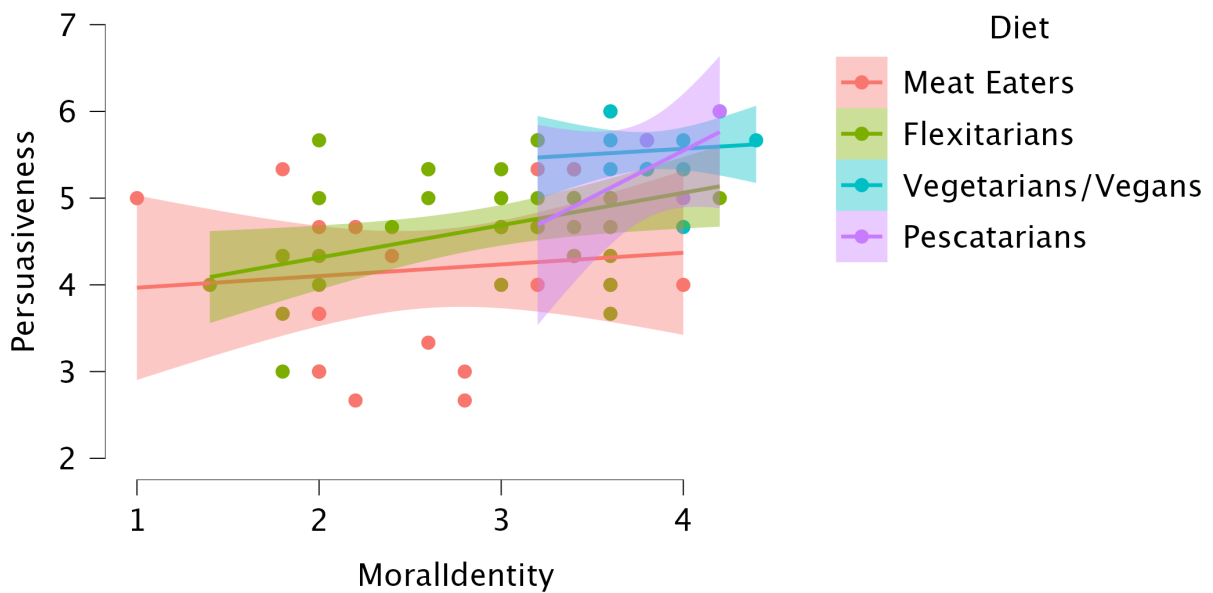
Figure 1

Interaction Between Persuasiveness and Cognitive Reflection
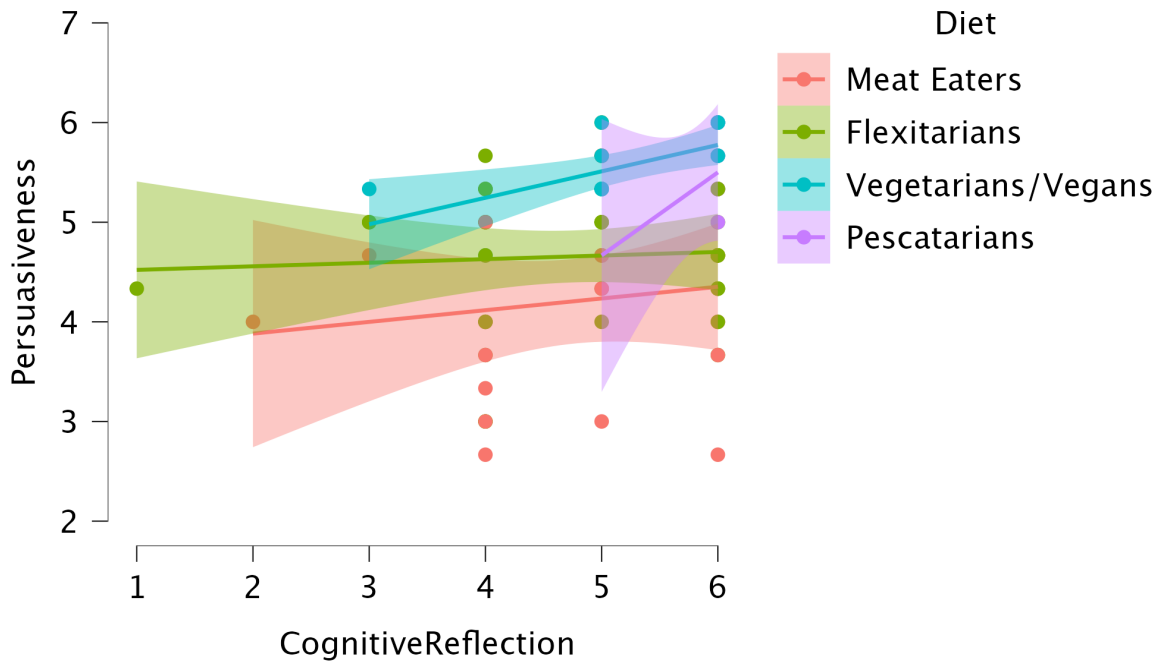
Note. This figure demonstrates how dietary preferences (Diet) influence the persuasiveness of arguments (Persuasiveness), showing the effect of cognitive reflection (CognitiveReflection) on the relationship. Error bars represent a 95% confidence interval.

Figure 2

Interaction Between Persuasiveness and Moral Identity

Note. This figure demonstrates how dietary preferences (Diet) influence the persuasiveness of arguments (Persuasiveness), showing the effect of moral identity (MoralIdentity) on the relationship. Error bars represent a 95% confidence interval.

Discussion

This study aimed to investigate how individuals morally disengage when confronted with the moral implications of their eating behavior, specifically by assessing their perception of the persuasiveness of arguments advocating for plant-based diets. Participants, representing a diverse range of dietary preferences (meat eaters, pescatarians, flexitarians, vegetarians/vegans), were surveyed on their level of moral identity and cognitive engagement and were then instructed to read a text advocating for plant-based diets and detailing adverse effects of meat consumption. We explored whether meat-eaters are more likely to morally disengage than vegetarians/vegans (H1), whether high cognitive engagement moderated participants' tendency to morally disengage (H2), and whether individuals with high moral identity perceived arguments for plant-based diets as more persuasive (H3).

Summary of Findings

In line with the first hypothesis, findings revealed a significant positive effect of dietary preference on one's likelihood to morally disengage. Specifically, being a meat eater tailored one to perceive the presented arguments as significantly less convincing than they appear to a vegetarian or vegan. We found significant differences between flexitarians and vegetarians/vegans regarding their perceived persuasiveness of arguments, as well as between meat eaters and vegetarians/vegans. This suggests that the act of consuming meat, regardless of regularity, influenced the perceived persuasiveness of the arguments. In the cases of both flexitarians and meat eaters, they perceived them as significantly less convincing than vegetarians/vegans. However, the hypothesized moderating effects of cognitive engagement and moral identity on the relationship between dietary preference and perceived argument

persuasiveness were not significant and therefore cannot support the claims of Gützkow and colleagues (submitted) that being highly cognitively engaged renders one more likely to arrive at a specific, sought-after conclusion. However, it may be the case that support for their claim could have been found if our sample size had been larger. Similarly, our results indicating that moral identity did not exert a moderating effect on the probability of morally disengaging do not align with previous research suggesting moral identity's moderating role (Detert et al., 2008; Kavussanu & Ring, 2017). Again, especially considering research indicating an existing moderating effect of moral identity, a significant result in this study would have been more likely with a larger sample size.

Implications

This study provides valuable theoretical contributions by illustrating how individuals perceive the persuasiveness of arguments regarding meat consumption differently and subsequently construct their own reality based on these perceptions, aligning with theories on social constructionism (e.g. Berger & Luckmann, 2016), in which people actively create their own social reality based on their experiences and interactions. Moreover, our study also highlights how individuals interpret the meaning of messages differently (e.g., Brown & Yule, 1983), suggesting that the meaning can vary significantly among different audiences. The study also exemplifies how individuals already supporting ethical eating practices tend to interpret information in a way that confirms their pre-existing beliefs, highlighting the influence of confirmation bias, the inclination to seek out information supporting one's belief while ignoring contradictory evidence (Peters, 2022). For instance, a vegetarian or vegan in our study who agrees with the presented arguments against meat consumption considered these arguments more persuasive, and they potentially also affirm their existing beliefs. The study also adds to the existing body of knowledge on motivated reasoning (Kunda, 1990),

showing that individuals selectively accept or reject information to align with their pre-existing beliefs and desires.

From a practical viewpoint, the study's findings provide valuable insights into real-world behavior. To investigate how individuals who do not already agree with the communicated message can be best persuaded, tailored messaging could be implemented. It can be argued that such messages are more effective in changing the attitudes of individuals whose opinions are not in line with the presented information, as when specific values and beliefs that could resonate with a specific audience are emphasized, arguments are perceived as more persuasive (e.g. Bench-Capon, 2003; Stutman & Newell, 1984). Here, it should be said that finding values and beliefs that resonate with meat eaters to persuade them effectively poses a significant challenge. Unlike other topics where there might be a balance of pros and cons arguments, the consumption of meat has well-documented evidence about negative impacts on the environment and animal welfare (e.g. Godfray et al., 2018; Loughnan et al., 2010). This should be taken into account when searching for arguments that might persuade meat eaters to change their behavior. Tailored messaging should therefore focus on aligning with values that meat eaters might already hold but potentially do not realize in order to support a reduction in meat consumption. For instance, focusing on the personal health benefits of avoiding meat, such as lower risk for heart disease and cancer (Craig, 2009; Dinu et al., 2017), or potential cost savings when reducing meat consumption might be most beneficial. Additionally, promoting the variety of potentially tasty meat-free dishes can expand culinary options and allow for more opportunities for individuals to explore and expand on their eating habits, thereby making the transition more appealing. It might also be most effective to target flexitarians with such messages because it can be argued that this group might be the most receptive to altering their eating habits (Szejda et al., 2020).

Strengths and Limitations

This study had multiple strengths. Despite the low sample size, we found a significant main effect of dietary preference making a difference in how persuasive participants perceived presented arguments. This also speaks for the quality of the text presented. It can be argued that the text portrayed the most important arguments reasonably well to exert the desired effect. Moreover, another strength of our study was that we were able to capture people's immediate reaction to the stimulus (i.e., the text) which was shown in their stated persuasiveness and can be deemed a more realistic scenario than what could have been achieved in an experimental setting in which a specific behavior is meant to be evoked. Under such circumstances, the raw, initial reaction of the participant may not have been elicited in a manner that reflects the natural setting of our study.

However, there were some limitations to our study. First, we used a WEIRD (Western, Educated, Industrialized, Rich, and Democratic) sample that was simultaneously a convenience sample by partially testing the study on first-year psychology students. This can be considered problematic in four ways: first, it limits our study's generalizability to other cultural contexts and its external validity, and second, first-year psychology students can be argued to introduce some amount of bias into the study, as they are more familiar with the nature of psychological research, which could possibly make them more likely to recognize certain demand characteristics. Additionally, first-year students are required to obtain research study credits which could arguably influence their motivation and engagement, furthermore potentially affecting the generalizability of our findings. Finally, our sample being restricted to mostly university students also limits our ability to generalize findings to other age groups. This limitation is particularly important given the existing generational differences in attitudes towards eating meat (e.g. De Backer & Hudders, 2015), which should not be overlooked. Research has found older people to be less inclined to alter their eating

habits compared to younger people (Lea et al., 2006), as well as the fact that vegetarianism tends to be more common among younger people (Allès et al., 2017).

Lastly, as mentioned before, we encountered a limitation due to a low sample size, subsequently reducing our statistical power. This consequently means that any observed effects might not have reached statistical significance, potentially concealing real relationships.

Future Directions

When looking at our research results, we can provide the following recommendations on further research that is needed on this matter. It would be of interest to replicate the study in a different cultural context on a different group of people (more ethnically diverse, less educated, from a non-industrialized nation, older age cohorts) whilst also ensuring a bigger sample size to account for higher power. Furthermore, it could be considered to alter sampling methods by, for example, using simple random sampling. Replicating the study with a text written in a different tone, such as directly addressing and personally criticizing meat eaters about their 'immoral' behavior, could enrich our understanding of how tone and directness in messaging might yield different results in terms of persuasiveness. When people are criticized, a common reaction is to respond defensively (Rösler et al., 2021), which potentially also increases their tendency to morally disengage. Other than replicating the study with a larger sample size to test the moderating effect of moral identity on moral disengagement, distributing exercises to participants could also be considered to make their moral identity salient before filling in the questionnaire. This could be done by confronting participants with moral dilemmas and asking them how they would resolve these based on their moral values. This might serve as a better indicator of how important morality is to one's self-concept than simply asking someone to rank their agreement on certain statements relating to moral identity as this study did. Creating an awareness of their moral identity with

these tasks potentially reinforces a person's commitment to align their behavior with their values, reducing their likelihood to morally disengage, as moral identity has been shown to enhance moral behavior (Hardy & Carlo, 2005), and such behavior is often seen as resulting from both moral judgments and moral identity (Reynolds & Ceranic, 2007).

Conclusion

Overall, our study yielded mixed results. While we did not find significance for the moderating effects of cognitive engagement or moral identity, we did observe a significant main effect of dietary preference on persuasiveness, despite the low sample size. This contributes to the existing knowledge on motivated reasoning in ethically charged domains like meat consumption. The study furthermore underscores the need for tailored communication strategies that consider the diverse beliefs and values individuals from different dietary groups could hold, ultimately adding to the formation of more effective interventions aimed at promoting plant-based diets and ethical consumption practices.

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Appendix

Moral Disengagement: Self-serving Bias in Food Choices

Informed consent

Principal Investigator: Ben Gützkow, University of Groningen

University ethics committee: ecp@rug.nl

Purpose of the research

The purpose of this psychological study is to examine beliefs and attitudes towards food

choices. You will be asked about your perceptions on this issue, as well as about your

personal experiences, preferences, and tendencies. This survey typically takes 10-15 minutes.

You are under no obligation to participate in this study. If you agree to participate, you are

free to stop your participation at any time by closing the browser window. Your data will

then be removed from the data set.

Types of data collected

This is a list of sensitive questions you will encounter in this survey. Note that you can

always skip any question you do not feel comfortable answering.

Personal data (optionally provided by you)

Indirectly identifiable personal data:

    - Gender

Sensitive personal data (a.k.a. special categories of personal data)

    - Political views

How will data be collected and handled

We have specified a full list of steps on how we handle your data and protect your privacy.

Especially your directly identifiable data is protected through a rigorous mechanism. Please

note that research studies like this are never completely anonymous. For participants recruited via the SONA platform, we will need to collect a means for the purpose of assigning credit. For this, we will use your SONA ID. Next to using a participant identification number, we have taken the following steps to protect your privacy:

(1) We will ask you to provide your SONA ID. We cannot link your SONA ID to any personal information you provide in the survey. We will also delete your SONA ID within three months of the project completion or by January 1st, 2025.

(2) We also ask you to optionally provide "sensitive personal data" (i.e., your political beliefs; also see GDPR) as well as some "indirectly identifiable personal data" (i.e., your gender). We collect these data in order to learn more about individual and group differences. However, to minimize access to your sensitive and personal data only a small team of researchers has access to the data. These researchers are:

- Benedikovičová, Ellen

- Friedrich, Sophie

- Gützkow, Ben (b.gutzkow@rug.nl)

- Klink, Yannick

- Leister, Thea

- Ooiman, Lisa

- Wolfgang, Damian

(3) The data from this study will be stored in a secure location in the Department of Psychology at the University of Groningen pursuant to the data management protocol of the Heymans institute and GDPR regulations.

(4) Only members of the research team will have access to the survey data.

(5) If you would like to know more about how exactly your data will be processed feel free to reach out to us (b.gutzkow@rug.nl). The data will be used solely for scientific and educational purposes.

Rights of participants

If you have any questions about your rights, you can contact ecp@rug.nl.

I have read the above information. I agree to participate in this study and to the processing of my personal data as described above. I understand that my participation is entirely voluntary and that I may withdraw at any time by closing the browser window.

Do you agree to participate in this study (and confirm that you are older than 18)?

- Yes, I agree to participate. This consent is valid until January 1st, 2025.

- No, I do not agree.

Do you agree to have any personal data processed in the way outlined above?

- Yes, I agree that personal data will be processed.

- No, I do not agree.

Thanks for participating!

We will start with a few general questions:

Dietary Preference

How would you describe your current diet?

- My meals (almost) always include meat

- I balance meat and vegetarian options

- Fish is my only source of meat (pescetarian)

- Plant-based (mostly vegetarian or vegan)

On how many days per week do you consume meat products?

- On ~1 day per week

- On ~2 days per week

- On ~3 days per week

- On ~4 days per week

- On ~5 days per week

- On ~6 days per week

- Every day

Do you make efforts to reduce your meat consumption?

- Absolutely no efforts

- No significant efforts

- Minimal efforts / only out of convenience

- Some efforts

- Significant efforts

Cognitive Reflection

Please answer the following questions.

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?

- Tray A

- Tray B

Julie has 5 dolls. Julia has 4 more dolls than Angie. How many dolls does Angie have?

A: _____dolls

Does the conclusion follow logically from the premises?

Premises:

- All flowers need water

- Roses need water

Conclusion: Roses are flowers

- The conclusion follows logically

- The conclusion does not follow logically

When playing slot machines, people win something about 1 in 10 times. Julie, however, has just won on her first three plays. What are her chances of winning the next time she plays?

_____

A newspaper and a banana cost 2.45€ in total. The newspaper costs 45c more than the banana. How much does the banana cost?

_____

Imagine that we are tossing a fair coin (a coin has a 50/50 chance of coming up heads or tails) and it has just come up heads 5 times in a row. For the 6th toss do you think that:

- It is more likely that tails will come up than heads.

- It is more likely that heads will come up than tails.

- Heads and tails are equally probable on the sixth toss.

On the following page, you will see an article about the impact of lifestock farming. The author argues that it is time to switch to an all plant-based diet. The article was shortened to only feature the main arguments.

Please read the text carefully. Afterwards you will have the opportunity to give your opinions about it.

It is Time to Switch to a Plant-Based Diet - Here is Why

by A. F.

Reason Number One - Environmental Impact

Livestock farming and overfishing have a vast environmental footprint. They contribute to land and water degradation, biodiversity loss, acid rain, coral reef degeneration, and deforestation. For example, every second, one football field of rainforest is destroyed in order to produce 257 hamburgers. Livestock farming contributes 18% of human-produced greenhouse gas emissions worldwide. Reducing consumption of animal products is essential if we are to meet global greenhouse gas emissions reduction targets. Meat production is also highly inefficient; for example, one kilogram of beef, 25 kilograms of grain—to feed the animal—and roughly 15,000 liters of water are required.

Moreover, feeding grain to livestock increases global demand and drives up grain prices, making it harder for the world's poor to feed themselves. If all grain were fed to humans instead of animals, we could feed an extra 3.5 billion people.

Since food, water, and land are scarce in many parts of the world, this represents an inefficient use of resources. A potentially more resource-efficient application could be alternative foods such as insects or meatreplacements, but there seems to be some resistance to the adoption of these items.

Reason Number Two - Animal Suffering

Industrial livestock farming consequently fails to meet minimal standards of animal welfare and causes unnecessary suffering. The animals are kept alive at the lowest costs possible. Some of these cost-reducing measures include keeping the animals in extreme confinement in cages so small they cannot turn around, operating on the animals without anesthetic, repeatedly employing forceful impregnation while denying mothers the ability to engage with their offspring, debeaking, dehorning, and tail-docking (removal of large parts of the tail) as well as drastically altering the animals' genetic makeup or introducing significant amounts of hormones that promote growth.

Furthermore, most slaughter procedures are naturally very inhumane and cause the animals great distress. For instance, chickens are commonly killed by what's known as the live-shackle slaughter method, which involves them being hung upside down with their legs clamped into metal stirrups, which often results in broken bones. They are then dunked into an electrified bath of water meant to stun them before their throats are slit and their bodies are thrown into boiling water. Many chickens are not effectively stunned, and they end up drowning in the boiling water or dying from blood loss.

Reason Number Three - Health Concerns

At the production level, industrial livestock farming relies heavily on antibiotic use to accelerate weight gain and control infection. This contributes to the growing public health problem of antibiotic resistance.

High meat consumption, typical of most rich industrialized countries, is linked with poor health outcomes, including heart disease, obesity, osteoporosis, gout, gallstones, kidney

stones, stroke, diabetes, and various cancers such as colon cancer, breast cancer, and lung cancer.

On the other hand, a low-fat vegetarian diet, combined with regular exercise, helps reduce blood pressure and can control or even eliminate non-insulin-dependent diabetes. These diseases represent a major portion of the global disease burden, so reducing consumption could offer substantial public health benefits.

Moral Disengagement

On the next screen are questions about your views on the text and its author. Specifically, we ask for your perception on (1) how you perceived it personally, and (2) about what might have motivated the author to write it.

How did you perceive the arguments presented in the text for you personally?

Please indicate how convincing you find each of the arguments:

Plant-based diets are better for the environment.

- Not convincing at all

- Somewhat not convincing

- Slightly not convincing

- Slightly convincing

- Somewhat convincing

- Very convincing

Plant-based diets prevent animal suffering.

- Not convincing at all

- Somewhat not convincing

- Slightly not convincing

- Slightly convincing

- Somewhat convincing

- Very convincing

Plant-based diets are better for your health.

- Not convincing at all

- Somewhat not convincing

- Slightly not convincing

- Slightly convincing

- Somewhat convincing

- Very convincing

What might have motivated the author to write this text?

The author wants…

…to communicate facts to the public.

- -3: Very doubtful

- -2

- -1

- 0: Neutral

- +1

- +2

- +3: Very possible

…to feel important.

- -3: Very doubtful

- -2

- -1

- 0: Neutral

- +1

- +2

- +3: Very possible

…to protect their personal interests.

- -3: Very doubtful

- -2

- -1

- 0: Neutral

- +1

- +2

- +3: Very possible

…to gain recognition.

- -3: Very doubtful

- -2

- -1

- 0: Neutral

- +1

- +2

- +3: Very possible

…to save the planet from climate change.

- -3: Very doubtful

- -2

- -1

- 0: Neutral

- +1

- +2

- +3: Very possible

…to help others make better decisions.

- -3: Very doubtful

- -2

- -1

- 0: Neutral

- +1

- +2

- +3: Very possible

Moral Identity

Many people try to make more conscious decisions about animal products they purchase and/or consume.

Please indicate how much you agree with the following statements about animal products.

It would make me feel good to be a person who makes conscious decision about animal products.

- Strongly disagree

- Somewhat disagree

- Neither agree or disagree

- Somewhat agree

- Strongly agree

Being someone who makes conscious decisions about animal products is an important part of who I am.

- Strongly disagree

- Somewhat disagree

- Neither agree or disagree

- Somewhat agree

- Strongly agree

I would be ashamed to be a person who makes conscious decisions about animal products.

- Strongly disagree

- Somewhat disagree

- Neither agree or disagree

- Somewhat agree

- Strongly agree

Making conscious decisions about animal products is not really important to me.

- Strongly disagree

- Somewhat disagree

- Neither agree or disagree

- Somewhat agree

- Strongly agree

I strongly desire to make more conscious decisions about animal products.

- Strongly disagree

- Somewhat disagree

- Neither agree or disagree

- Somewhat agree

- Strongly agree

Almost done! Thanks already.

Lastly, we ask for some basic demographic information.

Please indiciate your gender

- Male

- Female

- Non-binary

- Other: _____

Please indicate your political orientation

- 1: Extremely left-wing

- 2

- 3

- 4

- 5: Center

- 6

- 7

- 8

- 9: Extremely right-wing

Thank you very much for helping with this study.

Debriefing:

The goal of this study is to examine how people come to construe opinions and beliefs about

food choices and people who advocate for certain choices. We will examine how and why

perceptions of certain food choices differ among people depending on their individual traits and tendencies.

No adverse effects are expected as a result of participating in this study.

The results will be used for scientific and educational purposes only. If you have any questions or concerns about the study or your participation, you are welcome to contact the lead investigator, B. Gützkow (b.gutzkow@rug.nl). You are also welcome to contact our university ethics board at ecp@rug.nl.

Do you have any additional comments? Feel free to leave them below. The research team will look at them during the analysis.

Thank you very much and have a nice day!