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## The effect of meat-shaming on meat eaters' emotions and intentions to adapt behavior

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## ABSTRACT

Eating meat can have detrimental effects on the environment, animal welfare, and a person's health. However, consumers are often reluctant to reduce their meat consumption and public information-based awareness campaigns show little effect. As an alternative, some vegan activists and pressure groups employ emotion-based campaigns using meat-shaming techniques in the hope to change people's meat consumption behavior. By publicly and often drastically criticizing consumers, they try to make them experience negative emotions and ultimately change their behavior. In three experimental studies, we explore whether a confrontational approach of putting meat-shaming messages on products is likely to affect consumer behavior. Specifically, we find that meat-shaming messages trigger shame but also other negative emotions that translate into reduced purchase intentions. The content of the message largely determines the different emotions that are evoked. The messages can activate both restore and protect motivations, either stimulating or hindering behavioral change. Interestingly, it does not seem to matter whether the meat-shaming message stems from a governmental organization, activist group, or private person and whether it is framed with a personal or informational appeal. If the source looks credible, the message influences consumer experience and behavioral intentions.

### 1. Introduction

Eating meat has become a polarized topic: while meat has always been a cornerstone of almost all affluent (especially Western) diets, its detrimental environmental effects have become increasingly well-known. Food production causes greenhouse-gas emissions, acidifying and eutrophying emissions, and contributes to water scarcity (Poore & Nemecek, 2018). Meat has among the greatest environmental effects of all food types because animals' conversion of feed to meat is inefficient (Röös, Sundberg, Tidåker, Strid, & Hansson, 2013). Springmann et al. (2018) forecast the environmental effects of the food system to soon increase beyond planetary boundaries. Moving to a plant-based diet, however, could reduce the emission of greenhouse gases by 29–70 % (Springmann, Godfray, Rayner, & Scarborough, 2016).

Apart from its detrimental effects on the environment, meat production and consumption may also harmfully impact other actors involved. The production of meat often involves the breeding and housing of animals in a way that minimizes their freedom and limits their welfare (e.g., Clonan, Wilson, Swift, Leibovici, & Holdsworth,

2015). Furthermore, the consumption of some types of meat may have a detrimental effect on a person's health (e.g., Godfray et al., 2018; Wolk, 2017). Other objections are that working conditions on farms and slaughterhouses can be harsh and unhygienic and that wages can be low (e.g., Wagner & Hassel, 2016). Thus, reducing meat consumption can have a substantial effect on the environment, animal welfare, and personal wellbeing.

However, changing people's eating habits is difficult: government agencies have long tried to change people's food consumption, mainly to improve their personal health, but nowadays sustainability issues are also considered when formulating these guidelines (e.g. in Denmark and Belgium; Morrison, 2021; Vanhelden, 2021; Willett, 2019). Governmental campaigns have typically tried to inform consumers to raise awareness and present possible practical solutions. Mäkinen and Vainio (2014) found that next to habit, disbelief in the climatic effects of food consumption is the most important barrier to climate-friendly food choices. Better explaining climatic and other detrimental effects of meat consumption could thus be a way to stimulate behavior changes regarding meat consumption (Poore & Nemecek, 2018). However, even

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when people are aware of the climatic consequences of eating meat, this only seems to have limited effect when it comes to their eating behavior (Cheah, Sadat Shimul, Liang, & Phau, 2020; Macdiarmid, Douglas, & Campbell, 2016; even for students of environmental studies: Šedová, Slovák, & Ježková, 2016). Informing customers about the environmental and health effects of eating meat likewise does not seem to reduce their meat consumption (Bianchi, Dorsel, Garnett, Aveyard, & Jebb, 2018; Weingarten, Meraner, Bach, & Hartmann, 2022).

While raising awareness and informing consumers is certainly important, we know that food choices are quite habitual and unconscious (e.g., Köster, 2009). Another way to stimulate behavior change that better suits the unconscious nature of decision-making is by triggering emotions. In a meta-analysis of healthy eating nudges, Cadario and Chandon (2020) found that effect sizes of affect-oriented nudges were twice as large as effect sizes of cognition-oriented nudges. Similarly, a meta-analysis by Mathur et al. (2021) as well as a field experiment by Buttlar, Rothe, Kleinert, Hahn, and Walther (2021) found that emotion-inducing interventions confronting consumers with animal welfare consequences had consistent effects on meat reduction intentions. More specifically, Amatulli, De Angelis, Peluso, Soscia, and Guido (2019) found that negatively framed messages (e.g., “buying the traditional product contributes to the destruction of the environment”) seem to be more effective in stimulating consumers’ pro-environmental behaviors than positively framed ones (e.g., “choosing an alternative product helps the environment”). This effect can be explained by a higher level of anticipated shame associated with negatively framed messages. This is in line with findings from Carrus, Passafaro, and Bonnes (2008), who also demonstrated that consumers’ willingness to engage in pro-environmental behaviors is driven by anticipated negative emotions.

One emotion-based approach used especially by vegan activists and pressure groups is *meat-shaming*. Meat-shaming entails often drastic communication that publicly criticizes consumers for their meat consumption behavior with the goal to make them feel ashamed and ultimately change their behavior. Pressure groups like PETA, Greenpeace, or the World Wildlife Foundation try to moralize the topic by “converting it from a personal preference into an immoral activity” (Rozin, Markwith, & Stoess, 2016, p. 67). At the same time, and unlike politicians, they are more independent of lobbying parties and are not under pressure to be re-elected. Hence, they can afford to be more confrontational than government agencies and target emotional responses directly. In line with this activist approach, even individual citizens have adopted or created their own meat-shaming campaigns, sharing posts on social media, or putting stickers on products in supermarkets (e.g., Independent, 2021).

According to the Cambridge Dictionary, shaming is “the act of publicly criticizing and drawing attention to someone, especially on the internet”. In the case of meat-shaming this concerns the act of consuming animal products. Campaigns from activist groups such as PETA advertise messages such as “Our love for flesh is killing the planet” or “Shut up about the Amazon burning if your mouth is full of meat” that are meant to change people’s behavior by inducing negative emotions. Moreover, independent activists have put stickers on packages of chicken in a Melbourne supermarket with the claim “Warning. This package contains the dead body of someone who wanted to live” (Prema, 2019). Although such campaigns are commonly referred to as ‘meat-shaming’ in lay terms, we do not know if they actually induce the emotion of shame or other negative emotions, or if they succeed in changing people’s meat consumption. While disgust and empathy have been researched extensively in the context of meat consumption (e.g., Becker & Lawrence, 2021; Fessler, Arguello, Mekdara, & Macias, 2003; Kunst & Hohle, 2016; Rothgerber & Mican, 2014), we know little about the effects of emotions like shame.

In this paper, we investigate the phenomenon of meat-shaming as an example of a negative emotion-based communication strategy aimed at reducing consumers’ meat consumption. We empirically test the effect

of shaming messages on products on the extent to which consumers experience shame and other negative emotions, and the extent to which they appear inclined to change their consumption behavior. Specifically, we explore the effect of (1) the content of the message (detrimental effect of eating meat on the environment, animal welfare, personal health), (2) the framing of the message (informational, personal blaming), and (3) its source (government, activist group, private person).

## 2. Hypotheses development

### 2.1. Presence of meat-shaming message

According to appraisal theories of emotions (e.g., Ellsworth & Scherer, 2003), specific emotions arise when humans interpret a change in their core affect. Such a change in core affect can be triggered by all kinds of situations or events. Consumers evaluate such an event on several dimensions, such as who was responsible, how certain the consequences are, or whether they themselves acted morally right or wrong. Shame, for instance, can be characterized as a negative, self-focused, low-arousal emotion that arises when someone feels responsible for a negative situation. According to the meat paradox (see Gradidge, Zawisza, Harvey, & McDermott, 2021 for a recent review article), many consumers like to eat meat but at the same time do not want to make animals suffer. They often try to escape this moral dilemma by dissociating meat from animals (Kunst & Hohle, 2016; Onwezen & van der Weele, 2016) and a meat-shaming message again confronts them with their dilemma. Thus, a meat-shaming message might make the recipient (i.e., a meat eater) feel responsible again for the adverse consequences of eating animal products, leading to the emotion of shame. However, the same trigger can be interpreted differently by different consumers and as such lead to different types of emotions (e.g., Siemer & Reizenzein, 2007). Consequently, and taking into account that emotions often do not arise in isolation but correlate with other emotions (e.g., Richins, 1997), we expect that meat-shaming messages may evoke shame, but also other negative emotions such as guilt, sadness, or anger.

*H1: Meat-shaming messages increase the amount of shame and other negative emotions that meat eaters experience.*

In the following, we focus primarily on the negative emotions of shame and guilt as they are often referred to as ‘moral’ emotions (de Hooge, 2013; Tangney, 1996) and often co-occur (e.g., Smith, Webster, Parrott, & Eyre, 2002). While both shame and guilt are negative emotions that arise when a person holds themselves responsible for a negative situation and its consequences, they also differ in an important way: shame is especially triggered when a message emphasizes that others observed the wrongdoing, while guilt mainly arises when others are framed as suffering from the person’s wrongdoing (Agrawal & Duhachek, 2010). As such, shame is rather self-focused (i.e., worry about own self-image) while guilt is more other-focused (i.e., worry about consequences for others) (e.g., Tangney, 1995; Yang, Yang, & Chiou, 2010). Guilt usually evokes problem-focused coping that leads to approach tendencies so that a person tries to make amends for wrongdoing (Antonetti & Maklan, 2014; Schmader & Lickel, 2006). In contrast, shame is not necessarily a helpful emotion for triggering behavior change (Schmader & Lickel, 2006), as it is associated with emotion-focused rather than problem-focused coping (Antonetti & Maklan, 2014; Duhachek, Agrawal, & Han, 2012).

Shame can trigger both restore and protect motivations. According to de Hooge, Zeelenberg, and Breugelmans (2010), restore motivations are activated when a person experiences a threat to their self-image and wants to restore a positive view of their self. As such, restore motivations are related to approach behaviors that bring the person closer to their desired goal of restoring their self-image. In the case of meat-shaming, the most logical approach behavior would be to eat less meat. Protect motivations, on the other hand, are activated when a person experiences a threat to their self-image and wants to protect their self from further

damage. As such, protect motivations are related to avoidance behaviors that protect the person from a further confrontation with the topic in question. In the case of meat-shaming, avoidance behaviors could include avoiding the company of vegetarians. [de Hooge et al. \(2010\)](#) show that shame can lead to both restore and protect motivations, but their strength depends on the situation: people show approach behavior if it is possible and not too difficult to restore one's self-image. Otherwise protect motivations are activated, which can lead to ignoring the shaming message without a positive effect on behavior. Similarly, [Rothgerber \(2020\)](#) argues that the cognitive dissonance that reminds people that they eat animals causes some consumers to reduce their meat consumption, while others try to justify and might even increase their meat consumption. Therefore, we expect that consumers might show both restore and protect motivations (and related approach and avoidance behaviors) when confronted with a meat-shaming message. According to the mobilization-minimization hypothesis ([Taylor, 1991](#)), negative emotions in general are rather short-lived but tend to evoke strong immediate reactions. Thus, in a purchase situation with the presence of a meat-shaming message, consumers might want to alleviate these negative emotions simply by not buying the meat product in question. Hence, we hypothesize effects of a meat-shaming message on purchase intention, restore and protect motivations.

*H2a: Meat-shaming messages reduce consumers' intention to purchase meat products.*

*H2b: Meat-shaming messages increase consumers' restore motivations.*

*H2c: Meat-shaming messages increase consumers' protect motivations.*

The impact of meat-shaming messages may depend on the amount of meat that people consume. Following [de Hooge et al. \(2010\)](#), heavy meat eaters that are confronted with a meat-shaming message might perceive restoration of their self-image as difficult. As habit is one of the main predictors of peoples' food choices (e.g., [Mäkiniemi & Vainio, 2014](#)), the desired behavior change might be easier for occasional than heavy meat eaters. Consequently, protect rather than restore motivations and behaviors might be activated for heavy meat eaters, while the opposite would occur for occasional meat eaters. For heavy meat eaters shaming messages can lead to avoidance behaviors because they do not want to face their own behavior and elaborate on its consequences. For occasional meat eaters, meat-shaming may be more effective, not only because behavior change seems easier, but also because some of them might have already evaluated their meat consumption behavior more extensively and decided to reduce it. As such, we expect that the amount of meat that people consume moderates the effect of meat-shaming messages on consumers' restore and protect motivations (as hypothesized in H2a, H2b, and H2c):

*H3a: Meat-shaming messages reduce consumers' intention to purchase meat products for occasional meat eaters, more so than for heavy meat eaters.*

*H3b: Meat-shaming messages increase consumers' restore motivations for occasional meat eaters, more so than for heavy meat eaters.*

*H3c: Meat-shaming messages increase consumers' protect motivations for heavy meat eaters, more so than for occasional meat eaters.*

## 2.2. Framing and content of the meat-shaming message

Meat-shaming messages may vary in how directly they criticize the recipient. We can distinguish between messages that emphasize the adverse effects of meat consumption in general terms (i.e., informational appeal) versus messages that address the meat eater directly by pointing out what *their* meat consumption behavior causes (i.e., personal appeal). A personal appeal might cause meat eaters to feel the self-focused emotion of shame as attention is drawn to them personally and make them realize that others may hold them responsible for the adverse consequences of eating meat. Hence, a personal appeal is more likely to activate both changes in restore and protect motivations. A message with an informational appeal, on the other hand, can be experienced as informative and gives the consumer the space to respond with 'I did not know that and I should look into it further', but is less likely to evoke

strong negative emotions and behavior change. Thus, in line with other research stating that emotion-based communication might be more effective than information-based communication (e.g., [Cadario & Chandon, 2020](#); [Mathur et al., 2021](#)), we hypothesize:

*H4a: Personal appeals lead to stronger restore motivations than informational appeals.*

*H4b: Personal appeals lead to stronger protect motivations than informational appeals.*

Meat-shaming messages can emphasize different adverse consequences of eating meat, such as environmental, health, and ethical (animal welfare) consequences ([Souza & O'Dwyer, 2022](#)). Confronting consumers with all these three types of messages can negatively affect their attitudes toward eating meat and can lead to a reduction in meat consumption ([Carfora, Catellani, Caso, & Conner, 2019](#); [Palomo-Vélez, Tybur, & van Vugt, 2018](#)). Depending on the emphasis of the message, different emotions might be triggered. While adverse health consequences mainly affect the meat eater themselves, environmental and animal welfare consequences affect others. As such, an emphasis on health might trigger more self-focused emotions like anxiety due to the fear of becoming ill. Possibly, people will also feel ashamed in this case for not taking good care of their body ([Guassora, Reventlow, & Maltterud, 2014](#)), even though others cannot directly observe such potential long-term health consequences in their physical appearance. On the other hand, messages emphasizing environmental and animal welfare consequences might trigger the other-focused emotion of guilt rather than shame.

*H5: Meat-shaming messages with different emphases activate different emotions. Messages regarding the environment and animal welfare trigger guilt (more than shame), while messages regarding the health consequences of eating meat trigger shame (more than guilt).*

## 2.3. Source of meat-shaming message

People may hear about the potentially negative consequences of eating meat from different sources. When confronted with a message, humans start processing it by evaluating the credibility of its source (see [Wilson & Sherrell, 1993](#) for a meta-analysis of source effects). The credibility of a source is typically determined by its perceived expertise and trustworthiness or reliability. Some may regard information from governmental organizations the most credible, others are more likely to listen to activists and pressure groups. Another source of information may be found on the Internet, where many private initiatives and personal opinions in blogs and vlogs can be found. People are likely to perceive meat-shaming messages differently, depending on the perceived credibility of the source of information. This may affect how they feel when their personal behavior deviates from the desired behavior and their tendency to change their behavior.

*H6a: The more reliable people regard the source of a meat-shaming message, the more likely they are to feel shame and guilt.*

*H6b: The more reliable people regard the source of a meat-shaming message, the greater the effect on purchase intention, restore and protect motivations.*

## 3. Study 1

Study 1 aimed to test whether a meat-shaming message reduces consumers' purchase intention of a meat product, and whether it increases their restore and protect motivations (H2a–H2c). Additionally, we aimed to determine whether meat-shaming messages induce shame or other negative emotions (H1). Therefore, we conducted a two-cell between-participants experimental study manipulating the presence of a meat-shaming sticker on a meat package. All studies obtained ethics approval (approval number 1333) from TU Delft's Human Research Ethics Committee (HREC).

### 3.1. Method

To test the effect of a sticker with a meat-shaming message, we compared responses to a regular supermarket meat package with the responses to a package with a meat-shaming sticker in a between-participants design. The questionnaire was developed with Qualtrics and distributed among participants living in the USA using Amazon MTurk. Only participants who ate meat were invited to respond.

To determine the requested sample size, we conducted an a priori power analysis with the software G\*Power. The results indicated a minimum sample size of 86 per condition to achieve 90 % power for detecting a medium sized effect at  $\alpha = 0.05$ . Therefore, we recruited 90 participants for each condition in all three studies.

Participants were randomly assigned to one of the two package variants using the randomization function in Qualtrics. We deleted responses from participants that were suspected to be unreliable, because they completed the questionnaire very fast ( $\leq 60$  s). The final sample consisted of 161 participants, 80 or 81 per condition. 64.4 % were men, the mean age was 38 (age range 24–71).

We used two images of the same supermarket package for chicken breast meat, of which one contained a sticker with a confronting image of chickens in a battery cage with the text 'Eating meat makes animals suffer' (Fig. 1).

After providing written consent, participants were asked to imagine that they were shopping at their local supermarket, looking for some chicken to make for dinner. Subsequent questions in all studies were rated on 7-point response scales with labelled endpoints, unless indicated otherwise. When questions consisted of multiple items, these items were presented in random order that differed between participants. Participants were then asked to look carefully at one of the images and to indicate whether they would buy this package of chicken on scales with end anchors 'highly unlikely – highly likely' or 'no chance at all – very good chance' (Chandran & Morwitz, 2005). Subsequently, they rated the extent to which they felt several emotions (guilt, shame, sadness, anger, disgust, anxiety, confusion, compassion) when looking at the package with end anchors 'not at all – very much'. Then the participants indicated whether seeing the image was likely to affect their meat consumption on a scale ranging from 'highly unlikely – highly likely': "After seeing this package, I would eat less meat/look for meat replacers in supermarket/dig up vegetarian recipes/avoid people who are opinionated about eating meat/avoid eating with vegetarians/buy the same foods as before/continue to eat as much meat as I have done before". Then they indicated on how many days per week they generally ate meat or meat products (chicken, pork, beef, or game) for breakfast, lunch, dinner, or as a snack. For each of these occasions they supplied a number from 0 to 7 days per week. Finally, they reported gender, their year of birth, and their country of birth.

### 3.2. Results

The dependent variables were the eight emotions that participants perceived and the different behavioral intentions. Responses on the two items that measured meat buying intentions were highly correlated and were averaged ( $\alpha = 0.96$ ). In addition, we averaged the ratings for the three items that involved intentions to change behavior to restore the person's self-image (i.e., approach behaviors as a measure of restore motivations; eat less meat/look for meat replacers in supermarket/dig up vegetarian recipes;  $\alpha = 0.87$ ) and the items that helped protect the self-image without behavior change (i.e., avoidance behaviors as a measure of protect motivations; avoid people who are opinionated about eating meat/avoid eating with vegetarians;  $\alpha = 0.70$ ). In addition, we averaged the responses for the two inertia items that involved no changes at all (buy the same foods as before/continue to eat as much meat as I have done before;  $\alpha = 0.71$ ).

We compared the responses for the package without sticker to the sticker condition. We included an extra between-participants variable

that provided an indication of the amount of meat a person consumed. The frequencies with which respondents ate meat for breakfast, lunch, dinner, and snacks were added as a proxy for the amount of meat consumed by the participants. Subsequently, we did a median split to distinguish heavy meat eaters (17 or more times) from occasional meat eaters (under 17 times per week). This variable was added as independent variable in all analyses of all studies (except for the mediation analyses). In the MANOVA, we report F-tests corresponding to Wilks' Lambda.

To test hypothesis 1, we performed MANOVA for the eight emotional responses with sticker (yes vs no) and level of meat consumption (low vs high) as independent variables. We used an alpha level of 0.05 to determine significance in the statistical tests of all studies. The MANOVA yielded only a main effect for sticker ( $F(8,151) = 4.9, p < .001, \eta^2 = 0.21$ ) on the emotional responses. In line with hypothesis 1, univariate tests showed that the meat-shaming sticker led participants to experience higher levels of all measured emotions: shame ( $M_{sticker} = 3.55, SD = 2.14; M_{no sticker} = 2.22, SD = 1.91$ ), guilt ( $M_{sticker} = 3.78, SD = 2.14; M_{no sticker} = 2.19, SD = 1.85$ ), sadness ( $M_{sticker} = 3.63, SD = 2.00; M_{no sticker} = 2.02, SD = 1.65$ ), anger ( $M_{sticker} = 3.53, SD = 2.28; M_{no sticker} = 2.07, SD = 1.72$ ), disgust ( $M_{sticker} = 3.50, SD = 2.18; M_{no sticker} = 2.15, SD = 1.84$ ), anxiety ( $M_{sticker} = 3.36, SD = 2.11; M_{no sticker} = 2.27, SD = 1.88$ ), confusion ( $M_{sticker} = 3.38, SD = 2.13; M_{no sticker} = 2.19, SD = 1.81$ ), and compassion ( $M_{sticker} = 4.04, SD = 1.91; M_{no sticker} = 3.12, SD = 2.05$ ; all  $p < .01$ , all  $\eta^2 > 0.05$ ).

To test hypotheses 2a to 3c, we performed MANOVA for the four behavioral intentions as dependent variables. We found significant main effects for sticker ( $F(4,154) = 5.0, p = .001, \eta^2 = 0.11$ ) and level of meat consumption ( $F(4,154) = 3.5, p = .009, \eta^2 = 0.08$ ) but not for their interaction ( $F(4,154) = 1.0, p > .20, \eta^2 = 0.03$ ). In accordance with our hypotheses, our study results (Table 1) show that putting a sticker on the package decreases the buying intentions for the product (H2a), increases motivations to restore the self-image (H2b) and motivations to protect the self-image (H2c). The means on the inertia items did not differ significantly. Surprisingly, we did not find an interaction effect of the presence of the meat-shaming sticker and the level of meat consumption, thus rejecting H3a–H3c.<sup>1</sup> However, we did find two main effects of the level of meat consumption: Heavy meat eaters are generally more likely to buy the product than occasional meat eaters and are more likely to keep buying and eating meat than occasional meat eaters.

To test whether the moral emotions of shame and guilt indeed drive the effects of the meat-shaming sticker on restore and protect motivations, we conducted several mediation analyses using the PROCESS macro in SPSS (model 4, unstandardized coefficients; see Fig. 2). In line with our theorizing, we found that the effect on restore motivations correlated with an increased level of shame (indirect effect shame = 0.48, bootstrap standard error (SE) = 0.19, bootstrap 95 % confidence interval [CI]: [0.16, 0.88]) and guilt (indirect effect guilt = 0.35, bootstrap SE = 0.19, bootstrap 95 % CI: [0.02, 0.77]) with no remaining direct effect (direct effect = -0.08, bootstrap SE = 0.23, bootstrap 95 % CI: [-0.53, 0.37]). For protect motivations, we only found a significant mediation effect via shame (indirect effect shame = 0.54, bootstrap SE = 0.19, bootstrap 95 % CI: [0.22, 0.97]), but not guilt (indirect effect guilt = 0.06, bootstrap SE = 0.17, bootstrap 95 % CI: [-0.29, 0.37]), with no remaining direct effect (direct effect = 0.08, bootstrap SE = 0.27, bootstrap 95 % CI: [-0.44, 0.60]). Surprisingly, we did not find a significant mediation effect of both emotions on purchase intention (indirect effect shame = 0.15, bootstrap SE = 0.15, bootstrap 95 % CI: [-0.14, 0.46]; indirect effect guilt = -0.31, bootstrap SE = 0.19, bootstrap 95 % CI: [-0.70, 0.04]; direct effect = -0.46, bootstrap SE =

<sup>1</sup> As a robustness check for our hypothesis test, we performed the moderation analysis with frequency of eating meat as continuous (instead of median-split) variable. This yielded the same results pattern as none of the moderating effects was significant (all  $p > .20$ ).

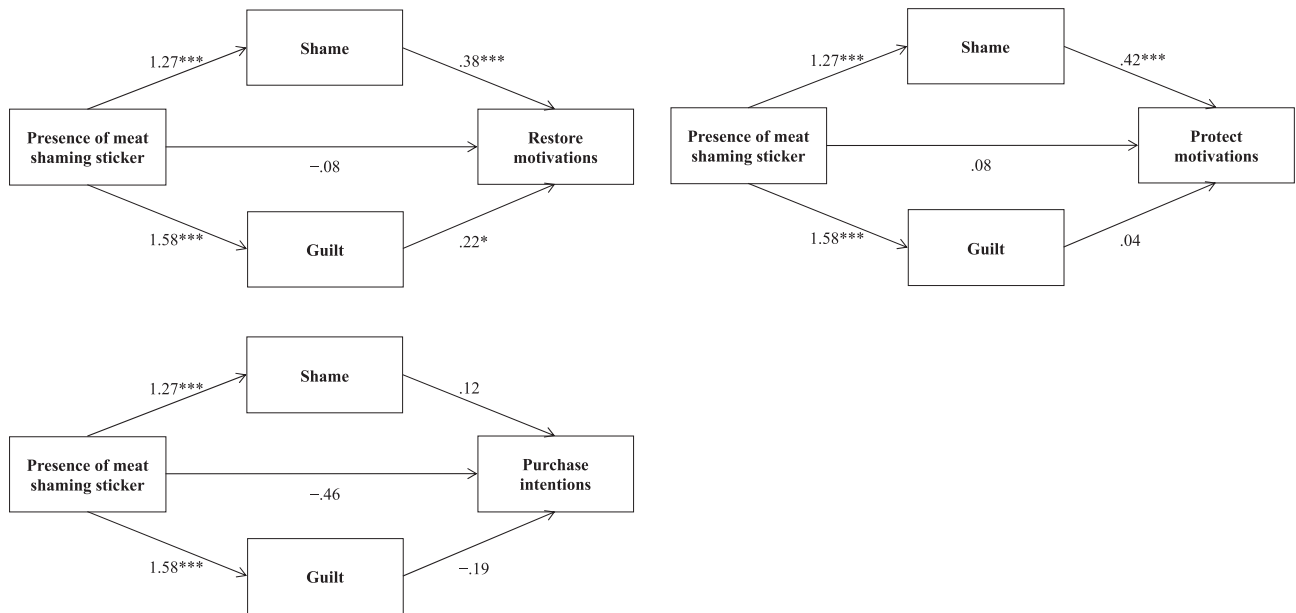


Fig. 1. Chicken breast package without (left) and with sticker (right) (Image credits: Yellow Images for the package of chicken breasts; Adobe Stock for the chicken farm).

Table 1  
Means (and SDs) of the behavioral intention variables for sticker vs no sticker condition and for occasional vs heavy meat eaters in Study 1.

	No sticker (N = 81)	Sticker (N = 80)		$\eta^2$	Occasional meat eater (N = 76)	Heavy meat eater (N = 85)		$\eta^2$
Buying intentions	5.66 (1.38)	5.00 (1.90)	**	0.05	4.97 (1.70)	5.66 (1.61)	**	0.06
Restore motivations	2.81 (1.70)	3.58 (1.85)	**	0.04	3.17 (1.63)	3.21 (1.97)		0.00
Protect motivations	3.10 (1.78)	3.80 (1.87)	*	0.03	3.22 (1.71)	3.65 (1.95)		0.01
Inertia items	5.48 (1.38)	5.28 (1.47)		0.01	5.12 (1.30)	5.61 (1.50)	*	0.04

\*\* p < 0.01.  
\* p < 0.05.



\*\*\*p<0.001, \*\*p<0.01, \*p<0.05

Fig. 2. Mediation analyses of the effects of meat-shaming sticker on restore, protect, and purchase motivations.

0.28, bootstrap 95 % CI: [-1.01, 0.09]).

3.3. Discussion

The results suggest that the presence of a meat-shaming message indeed activates a range of negative emotions in consumers (H1). As

hypothesized (H2a–H2c), the meat-shaming message decreases consumers' purchase intention of the meat product in question. Next to this immediate effect, it also has potential long-term effects as it increases consumers' intentions to *restore* their self-image by eating less meat in the future (i.e., approach behavior). In addition, the meat-shaming message also increases consumers' intentions to *protect* their self-image, for instance by avoiding vegetarians (i.e., avoidance behavior). Thus, in line with the findings of de Hooge et al. (2010), the meat-shaming message leads to both restore and protect motivations.

Surprisingly, these effects did not differ between heavy and occasional meat eaters. This might be explained by the finding that in our dataset, heavy and occasional meat eaters did not differ significantly in the extent to which they experienced shame and guilt after being exposed to the meat-shaming message ( $M_{shame\ heavy\ meat\ eaters} = 3.05$ ,  $SD = 2.25$ ;  $M_{shame\ occasional\ meat\ eaters} = 2.64$ ,  $SD = 1.96$ ;  $t(159) = -1.21$ ,  $p = .230$ ;  $M_{guilt\ heavy\ meat\ eaters} = 3.19$ ,  $SD = 2.31$ ;  $M_{guilt\ occasional\ meat\ eaters} = 2.74$ ,  $SD = 1.94$ ;  $t(158.33) = -1.35$ ,  $p = .180$ ). Regardless of how often people ate meat, if the meat-shaming message triggered an emotional response in them, it influenced their behavioral intentions. Furthermore, and in line with prior research (e.g., Antonetti & Maklan, 2014; Duhaček et al., 2012), our mediation analyses suggest that shame indeed correlated with both restore and protect motivations in consumers, while guilt only led to restore motivations.

#### 4. Study 2

In the second study we investigated how different meat-shaming messages can influence consumers' meat consumption via the activation of negative emotions (i.e., shame and guilt). We varied the messages in terms of the content of the message (H5) and personal versus informational appeal (H4a–H4b).

#### 4.1. Method

In this study we conducted a  $2 \times 3$  between-participants experimental study comparing the two message framing techniques (personal appeal vs informational appeal) and the three different consequences that were emphasized (environmental vs animal welfare vs health). As the method is very similar to the one used in the previous study, we only report the aspects that were different here.

The survey was completed by 483 participants (again we excluded participants that took  $\leq 60$  s), 79–81 for each of the six conditions, 54.9 % were men, the mean age was 41 (age range 19–75).

The stimuli consisted of different labels to be used on meat packages. Each label consisted of a picture and a text addressing three different themes either with a personal or informational appeal: environment (personal appeal: "By eating meat, you destroy the Amazon rainforest!"/ informational appeal: "Eating meat destroys the Amazon rainforest!"), animal welfare (personal appeal: "By eating meat, you make animals suffer!"/ informational appeal: "Eating meat makes animals suffer!"), or personal health (personal appeal: "By eating meat, you increase your risk of heart disease!"/ informational appeal: "Eating meat increases the risk of heart disease!"); Fig. 3).

After providing written consent, participants were asked to look carefully at an image with a short text. Subsequently, they rated the extent to which they felt each of the emotions used in the previous study. Then participants indicated their restore and protect motivations and rated the message they had seen on scales with end anchors 'unbelievable – believable' and 'not credible – credible'. Finally, they indicated how often they generally ate meat or meat products and reported demographic information.

#### 4.2. Results

The dependent variables were the eight emotions that participants perceived and the different behavioral intentions (i.e., restore and

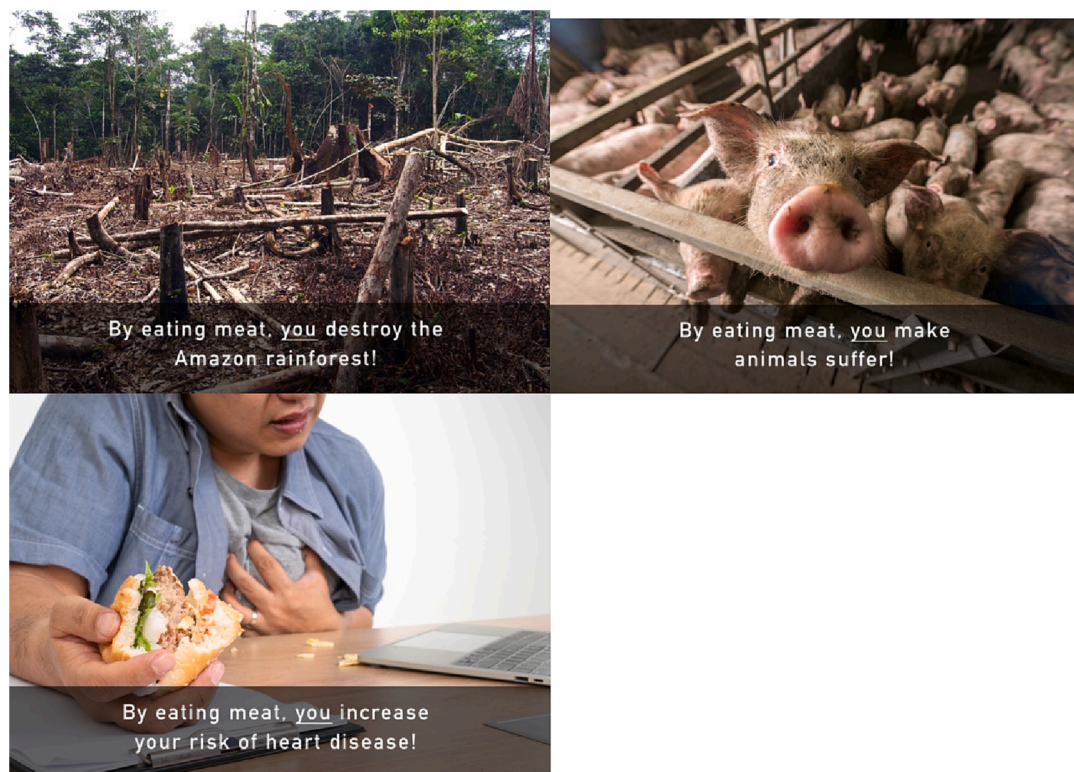


Fig. 3. Images and texts of the three stimuli with personal appeals (Image credits: Matt Zimmerman on Flickr.com for the rainforest picture; Adobe Stock for the pig farm and the heart patient).



protect motivations). We averaged the ratings for the three items that involved intentions to change behavior to restore the person's self-image (eat less meat/look for meat replacers in supermarket/dig up vegetarian recipes;  $\alpha = 0.92$ ). In this study, we only measured one item that helped protect the self-image without behavior change (avoid people who are opinionated about eating meat) and we had one inertia item that involved no changes at all (buy the same foods as before).

To test hypotheses 4a and 4b, we performed MANOVA with restore and protect motivations, as well as inertia as dependent variables, and message framing (personal vs informational appeal) and theme (environment vs animal welfare vs health) as independent variables. Additionally, we controlled for the level of meat consumption variable.<sup>2</sup> Framing, theme, or the interaction between the two variables yielded no significant effects ( $p > .20$ ,  $\eta^2 < 0.01$ ). Hence, hypotheses 4a and 4b were not supported. Only the main effect of the level of meat consumption was significant ( $F(3,469) = 13.6$ ,  $p < .001$ ,  $\eta^2 = 0.08$ ). For this variable, a significant effect was found for all three dependent variables (all  $F(1,472) > 11.1$ ,  $p < .001$ ,  $\eta^2 > 0.02$ ). For the heavy meat eaters restore motivations were lower, while protect motivations and the tendency to leave things unchanged were higher than for occasional meat eaters (see Table 2).

To test hypothesis 5, we performed MANOVA on the eight emotion variables with message framing (personal vs informational appeal) and theme (environment vs health vs animal welfare) as independent variables. In addition, we included the level of meat consumption as control variable. In the multivariate test, the main effect of message framing ( $F(8,464) = 0.9$ ,  $p = .524$ ,  $\eta^2 = 0.02$ ) and the interaction of message framing and theme ( $F(16,928) = 1.1$ ,  $p = .305$ ,  $\eta^2 = 0.02$ ) were not significant. The emotional responses for the three themes, however, differed significantly ( $F(16,928) = 10.3$ ,  $p < .001$ ,  $\eta^2 = 0.15$ ). The main effect of the level of meat consumption was also significant ( $F(8,464) = 2.9$ ,  $p = .003$ ,  $\eta^2 = 0.05$ ), just like the interaction of the level of meat consumption and theme ( $F(16,928) = 1.9$ ,  $p = .021$ ,  $\eta^2 = 0.03$ ).

Inspection of the main effect of theme for the eight separate emotions showed that the three themes differed significantly for guilt, shame, sadness, anger, confusion, and compassion (all  $F(2,472) > 8.5$ ,  $p < .001$ ,  $\eta^2 > 0.04$ ), but not for disgust and anxiety (both  $F(2,472) < 1.4$ ,  $p > .20$ ,  $\eta^2 < 0.01$ ). Overall, inspection of the corresponding means (Table 3) shows that the emotional responses tended to be less intense in the health condition than in the environmental and animal welfare conditions. For the latter two conditions the emotional responses were similar in intensity for sadness, anger, and compassion. However, confusion ratings were higher in the environmental condition than for animal welfare and health.

**Table 2**

Means (and SDs) for behavioral intentions for occasional versus heavy meat eaters in Study 2.

	Occasional meat eater (N = 235)	Heavy meat eater (N = 248)	$\eta^2$
Restore motivations	4.34 (1.83)	3.59 (1.92)	** 0.04
Protect motivations	3.18 (1.93)	3.82 (2.08)	** 0.02
Inertia item	4.48 (1.83)	5.05 (1.77)	** 0.03

\* $p < 0.05$ .  
\*\* $p < 0.01$ .

<sup>2</sup> Like in Study 1, the frequencies with which respondents ate meat for breakfast, lunch, dinner, and snacks were added to have a proxy for the amount of meat consumed by the participants. Subsequently, we did a median split to distinguish heavy meat eaters (14 or more times) from occasional meat eaters (under 14 times). This variable was added as independent in all analyses.

**Table 3**

Means (and SDs) for the different emotions in the conditions with different themes in Study 2.

	Environment (N = 162)	Animals (N = 161)	Health (N = 160)	$\eta^2$
Sadness	4.54 (2.09) <sup>d</sup>	4.54 (2.00) <sup>d</sup>	3.76 (2.12) <sup>a</sup>	** 0.04
Anger	3.77 (2.13) <sup>d</sup>	3.68 (2.12) <sup>d</sup>	2.78 (1.94) <sup>a</sup>	** 0.04
Confusion	4.00 (2.05) <sup>a</sup>	3.08 (2.08) <sup>b</sup>	2.92 (1.97) <sup>b</sup>	** 0.05
Compassion	4.38 (2.03) <sup>d</sup>	4.70 (2.03) <sup>d</sup>	3.74 (1.96) <sup>a</sup>	** 0.05
Anxiety	3.55 (2.05)	3.69 (2.10)	3.66 (1.98)	0.00
Disgust	3.85 (2.07)	3.76 (2.04)	3.53 (1.99)	0.01
Occasional meat eaters (N = 235)				
Guilt	3.20 (1.89) <sup>c</sup>	4.65 (2.01) <sup>a</sup>	3.09 (2.07) <sup>c</sup>	** 0.11
Shame	3.30 (1.99) <sup>c</sup>	4.52 (2.04) <sup>a</sup>	4.52 (1.96) <sup>c</sup>	** 0.14
Heavy meat eaters (N = 248)				
Guilt	3.83 (2.16) <sup>d</sup>	4.05 (2.02) <sup>d</sup>	2.89 (1.85) <sup>a</sup>	** 0.05
Shame	3.78 (2.15) <sup>d</sup>	3.68 (1.97) <sup>d</sup>	2.72 (1.89) <sup>a</sup>	** 0.05

$p < 0.05$ .

\*\*  $p < 0.01$ .

<sup>a</sup> = significantly different from all other conditions ( $p < 0.05$ ).

<sup>b</sup> = significantly different from environment condition ( $p < 0.05$ ).

<sup>c</sup> = significantly different from animal welfare condition ( $p < 0.05$ ).

<sup>d</sup> = significantly different from health condition ( $p < 0.05$ ), results based on Bonferroni post-hoc tests.

To test hypothesis 5, we performed a series of paired samples t-tests that compared the intensity of guilt and shame for the different themes. In line with hypothesis 5, we found that participants experienced significantly more guilt ( $M = 4.31$ ,  $SD = 2.05$ ) than shame ( $M = 4.06$ ,  $SD = 2.05$ ,  $t(161) = 2.86$ ,  $p = .005$ , Cohen's  $d = 0.23$ ) in the animal welfare condition. We found the same pattern for the environmental condition ( $M_{guilt} = 3.00$ ,  $SD = 1.97$ ;  $M_{shame} = 2.68$ ,  $SD = 1.92$ ;  $t(159) = 3.29$ ,  $p = .001$ , Cohen's  $d = 0.26$ ). Against our hypothesis, we did not find a significant difference in the health condition ( $M_{guilt} = 3.56$ ,  $SD = 2.07$ ;  $M_{shame} = 3.57$ ,  $SD = 2.09$ ;  $t(161) = -0.18$ ,  $p = .857$ , Cohen's  $d = -0.01$ ).

The main effect of level of meat consumption was only significant for sadness ( $F(1,472) = 5.6$ ,  $p = .019$ ,  $\eta^2 = 0.01$ ) and for compassion ( $F(1,472) = 13.5$ ,  $p < .001$ ,  $\eta^2 = 0.03$ ). On the sadness and compassion emotions, the occasional meat eaters gave higher mean responses ( $M_{sadness} = 4.48$ ,  $SD = 2.08$ ;  $M_{compassion} = 4.58$ ,  $SD = 1.95$ ) than the heavy meat eaters ( $M_{sadness} = 4.09$ ,  $SD = 2.11$ ;  $M_{compassion} = 3.99$ ,  $SD = 2.08$ ).

The interaction between theme and level of meat consumption was significant for guilt ( $F(2,472) = 3.8$ ,  $p = .024$ ,  $\eta^2 = 0.02$ ) and shame ( $F(2,472) = 4.4$ ,  $p = .013$ ,  $\eta^2 = 0.02$ ). Interestingly, the means showed that occasional meat eaters gave the highest responses for animal welfare issues and low responses for environmental and health issues, whereas the heavy meat eaters were most responsive to both the environmental and animal welfare impact of eating meat, with low responses to the health effects (Table 3).

The two items that measured the believability and credibility of the messages on the sticker labels were highly correlated and we averaged them to create a single variable ( $\alpha = 0.93$ ). Univariate ANOVA with the credibility of the message as dependent variable and all three independent variables yielded significant main effects for theme ( $F(2,471) = 20.4$ ,  $p < .001$ ,  $\eta^2 = 0.08$ ) and level of meat consumption ( $F(1,471) = 6.8$ ,  $p = .010$ ,  $\eta^2 = 0.01$ ). Apparently, respondents found it more believable that eating meat makes animals suffer ( $M = 5.67$ ,  $SD = 1.46$ ),

rather than increasing the risk of heart disease ( $M = 5.16$ ,  $SD = 1.56$ ) or destroying the Amazon rainforest ( $M = 4.48$ ,  $SD = 1.99$ ). All these differences were significant in paired comparison tests with Bonferroni correction ( $p < .01$ ). Furthermore, occasional meat eaters thought the messages were more believable than heavy meat eaters ( $M_{heavy\ meat\ eaters} = 4.88$ ,  $SD = 1.87$ ;  $M_{occasional\ meat\ eaters} = 5.34$ ,  $SD = 1.60$ ).

#### 4.3. Discussion

Our results suggest that for the behavioral implications it does not matter which consequences of eating meat are emphasized in a message. The restore and protect motivations of consumers were the same regardless of whether they were confronted with a meat-shaming message about the detrimental consequences for the environment, animal welfare, or their own health. However, we did find differences in the emotions that the meat-shaming messages triggered. Overall, the health message seemed to trigger less intense negative emotions than the other two. In line with our theorizing, we found that both in the environmental and animal welfare conditions, consumers experienced higher levels of guilt than shame, suggesting that the term ‘meat-shaming’ might not be accurate. Unexpectedly, people did not seem to be frightened by the health-related message. These findings are consistent with the study by Cordts, Nitzko, and Spiller (2014), which showed that a newspaper article about the negative impact of meat consumption on animal welfare has a stronger effect on consumers than an article about the negative health impact. The authors explained this finding by suggesting that consequences for animal welfare are concrete and easy to imagine, while health consequences are rather abstract and long-term. As such, they may not produce equally strong reactions. Since environmental consequences are also quite concrete, the effect might be comparable to the animal welfare consequences. However, the different emotion patterns did not translate into differences in restore and protect motivations.

The differences in emotional responses and the deviation from our hypothesis did not seem to be related to differences in credibility of the different claims: Although the perceived credibility of the health claim was lower than for the animal welfare claim, it was higher than for the environmental claim. Interestingly, we did not find any evidence that framing the message as a personal appeal or a general message affected the recipients differently. This might be due to the fact that the framing of the messages did not affect the intensity of participants’ emotions. Thus, the personal appeal was not perceived as more affect-oriented than the supposedly more cognitively oriented informational message, which was the rationale behind our hypothesized effect (e.g., Cadario & Chandon, 2020; Mathur et al., 2021).

### 5. Study 3

In the third study, we investigated whether the source of the meat-shaming message and its credibility alters its effects on emotions and restore and protect motivations (H6a–H6b).

#### 5.1. Method

In this study we conducted a  $3 \times 2$  between-participants experimental study comparing three different sources of the meat-shaming message (governmental organization vs activist group vs private initiative) and whether additional information about the source was present (yes vs no). We included the latter manipulation, because some sources might be more familiar than others, and even for the familiar sources people might not know exactly what they stand for. Hence, providing accurate information might change their responses. Additionally, we included a control condition without a meat-shaming message. Again, many aspects of this study were similar to Study 1 and only differences are described here in detail.

The survey was completed by 563 participants (again we excluded

participants that took  $\leq 60$  s), 79–82 for each of the seven conditions, 54.9 % were men, the mean age was 37 (age range 19–83).

The stimuli consisted of different labels presented on meat packages with the same picture and text but varying sources (and levels of information about the sources). To vary the reliability of the sources of information, we selected a large-scale organization related to the government (United Nations), an activist group (Greenpeace), and an initiative from a private person (Greeneatz). These sources differed in expertise level, their focus on reducing meat consumption for sustainability purposes and additional objectives they might have, and the degree to which they were known in the population. The picture and message used were identical in all conditions (an image of a destroyed forest with the text “Eating meat destroys the Amazon rainforest!”). A professional designer used the sources’ logos and house styles that we found on their websites as inspiration for creating professional looking stickers. These stickers were displayed on the packages of chicken filet used earlier (see Fig. 4). We also tested a control condition without any sticker (see Fig. 1).

In half of the experimental conditions, we only presented an image of a package with a sticker. In the other half of the conditions, we added a short description of the alleged source of the sticker. This consisted of excerpts from texts found on the sources’ websites on their view on the relationship between meat consumption, sustainability, and the possible effects on the environment. In addition, it contained a small description of the organization behind the sticker, also derived from their websites (for the excerpts see Table 4).

Participants were asked to imagine that they were in a supermarket looking for some chicken to make for dinner. They were instructed to look carefully at an image of a package of boneless chicken breasts with or without a short text. Subsequently, we measured participants’ purchase intention for the product package ( $\alpha = 0.84$ ) and the extent to which they felt the emotions also measured in the previous studies. Subsequently, we measured participants’ restore ( $\alpha = 0.84$ ) and protect motivations ( $\alpha = 0.69$ ), as well as inertia ( $\alpha = 0.72$ ) with the same items as in Study 1. In the experimental conditions they then answered questions regarding the organization (X = the United Nations/Greenpeace/Greeneatz) mentioned on the label: “how familiar are you with X (not at all – very familiar)/do you trust X (not at all – very much)”. They also indicated their agreement with the following statements (not at all – very much): “I am fed up with people from governmental organizations like The United Nations/from pressure groups like Greenpeace/like the founder of Greeneatz telling me what to choose and eat/I don’t need other people to make my food choices/I am likely to follow the advice of X/I find people from X reliable/people from X know what they are talking about”. All ratings were given on 7-point scales. The final set of questions were answered by all participants: They indicated how often they generally ate meat or meat products and reported demographic information. The questionnaire ended with a thank you note and a disclaimer indicating that the materials they reviewed were developed specifically for this study, were not endorsed as such by the respective organizations, and might not reflect their current views.

#### 5.2. Results

##### 5.2.1. Comparing the six packages with a sticker to the one without sticker

First, we did a MANOVA on the eight emotions to check whether having a sticker increased responses on the negative emotions. The independent variables were the presence of a sticker (yes vs no) and the level of meat consumption (occasional vs heavy)<sup>3</sup> as control variable.

<sup>3</sup> Like in Study 1 and 2, the frequencies with which respondents ate meat for breakfast, lunch, dinner, and snacks were added to have an estimate of the amount of meat consumed by the participants. Subsequently, we did a median split to distinguish heavy meat eaters (15 or more times) from occasional meat eaters (under 15 times). This variable was added as independent in all analyses.



Fig. 4. Chicken breast package with stickers from different sources (Image credits: Yellow Images for the package of chicken breasts; Matt Zimmerman on Flickr.com for the rainforest picture. Logos have been blurred for copyright reasons. Original images are available from the authors).

Although the multivariate tests for all effects did not satisfy common significance levels (all  $p > .10$ ,  $\eta^2 < 0.02$ ), several univariate tests were significant. In fact, the sticker main effect was significant for all 8 emotions (all  $p < .05$ ,  $\eta^2 > 0.01$ ), where all emotions were perceived as more intense in the group with the stickers (shame:  $M_{sticker} = 3.47$ ,  $SD = 2.08$ ;  $M_{no\ sticker} = 2.71$ ,  $SD = 2.08$ ; guilt:  $M_{sticker} = 3.59$ ,  $SD = 2.11$ ;  $M_{no\ sticker} = 2.86$ ,  $SD = 2.07$ ; sadness:  $M_{sticker} = 3.45$ ,  $SD = 2.09$ ;  $M_{no\ sticker} = 2.71$ ,  $SD = 2.07$ ; anger:  $M_{sticker} = 3.43$ ,  $SD = 2.05$ ;  $M_{no\ sticker} = 2.80$ ,  $SD = 2.17$ ; disgust:  $M_{sticker} = 3.49$ ,  $SD = 2.08$ ;  $M_{no\ sticker} = 2.84$ ,  $SD = 2.10$ ; anxiety:  $M_{sticker} = 3.49$ ,  $SD = 2.09$ ;  $M_{no\ sticker} = 2.80$ ,  $SD = 2.06$ ; confusion:  $M_{sticker} = 3.70$ ,  $SD = 2.03$ ;  $M_{no\ sticker} = 2.90$ ,  $SD = 2.07$ ; and compassion:  $M_{sticker} = 3.86$ ,  $SD = 1.96$ ;  $M_{no\ sticker} = 3.28$ ,  $SD = 2.21$ ). The meat eater main effect was significant only for compassion ( $p = .027$ ,  $\eta^2 = 0.01$ ), where ratings were higher for occasional meat eaters ( $M = 3.94$ ,  $SD = 1.98$ ) than for heavy meat eaters ( $M = 3.60$ ,  $SD = 2.02$ ). The two-way interactions were not significant ( $p > .20$ ,  $\eta^2 < 0.00$ ).

MANOVA with the four intention variables as dependent variables yielded a significant main effect of sticker (yes vs no) ( $F(4,555) = 5.0$ ,  $p < .001$ ,  $\eta^2 = 0.04$ ) and a significant main effect of level of meat consumption (low vs high) ( $F(4,555) = 3.2$ ,  $p = .014$ ,  $\eta^2 = 0.02$ ). The two-way interaction was not significant ( $F(4,555) = 0.3$ ,  $p = .868$ ,  $\eta^2 = 0.00$ ). The sticker had a significant negative effect for the buying intention ( $p = .002$ ,  $\eta^2 = 0.02$ ) and a significant positive effect for restore

motivations ( $p = .007$ ,  $\eta^2 = 0.01$ ), while the effects of the level of meat consumption were significant for the buying intentions ( $p < .005$ ,  $\eta^2 = 0.01$ ) and inertia items ( $p = .018$ ,  $\eta^2 = 0.01$ ) with higher mean values for heavy meat eaters (Table 5).

### 5.2.2. Comparing the six packages with stickers

Subsequently, we analyzed the data of the six experimental conditions of the  $3 \times 2$  design. When we performed MANOVA of the eight emotions with the independent variables source (UN vs Greenpeace vs Greeneatz), description (yes vs no), and level of meat consumption (high vs low), only the main effect for presence of a description reached marginal significance ( $F(8,464) = 1.9$ ,  $p = .060$ ,  $\eta^2 = 0.03$ ), but none of the univariate tests for this variable reached significance. Among all the other 48 univariate tests performed, only one had a p-value below 0.05. Given the large number of tests, we concluded that none of these variables had a convincing effect for the eight emotional reactions.

When we did a similar MANOVA with the four behavioral intentions as dependent variables, we found a significant main effect for the level of meat consumption ( $F(4,467) = 6.9$ ,  $p < .001$ ,  $\eta^2 = 0.06$ ), which corresponded to main effects for buying intention and the inertia items (both  $p < .001$ ,  $\eta^2 > 0.03$ ). As the dataset for this analysis is largely the same as the one used for Table 5, the outcomes are equivalent. Furthermore, we found a significant effect for the presence of a description ( $F(4,467) =$

**Table 4**  
Excerpts of texts used to describe the alleged sources providing the information on the package labels.

Meat-shaming source	Description source	Description source's view on sustainability
United Nations	The United Nations is an international organization currently made up of 193 Member States that remains the one place on Earth where all the world's nations can gather together, discuss common problems, and find shared solutions that benefit all of humanity. Source: <a href="https://www.un.org/en/about-us">https://www.un.org/en/about-us</a>	The rearing of livestock generates 14 per cent of all carbon emissions, similar to the amount generated by all transport put together. Currently, farmed animals occupy nearly 30 per cent of the ice-free land on Earth. The livestock sector generates a seventh of global greenhouse gas emissions and consumes roughly one-third of all freshwater on earth. Indeed, a report published in Science in 2018 revealed that meat and dairy provide just 18 per cent of calories consumed but use 83 per cent of global farmland and are responsible for 60 per cent of agriculture's greenhouse gas emissions. Source: <a href="https://unfccc.int/blog/we-need-to-talk-about-meat">https://unfccc.int/blog/we-need-to-talk-about-meat</a>
Greenpeace	Greenpeace is a global network of independent campaigning organizations that use peaceful protest and creative communication to expose global environmental problems and promote solutions that are essential to a green and peaceful future. Source: <a href="https://www.greenpeace.org/usa/">https://www.greenpeace.org/usa/</a>	Intensive meat and dairy production is destroying our forests, polluting our water, and warming our planet. It is causing deforestation on a massive scale, with over a quarter of the Earth's landmass currently being used for livestock grazing! It is driving global warming: greenhouse gas emissions from livestock are equal to all emissions from cars, trucks, and airplanes. And while many places are experiencing water shortages and droughts, livestock are the single largest consumer and polluter of water on the planet. Source: <a href="https://www.greenpeace.org/usa/celebrate-world-meat-free-week-for-a-healthy-planet-and-a-healthy-you/">https://www.greenpeace.org/usa/celebrate-world-meat-free-week-for-a-healthy-planet-and-a-healthy-you/</a>
Greeneatz	Jane Richards, who is the woman behind the Greeneatz label, qualified as a nutritionist in 2009, with a Diploma of Higher Education from the Thames Valley University in London, UK. Jane believes that good nutrition leads to a healthy mind and body and is dedicated to sharing her knowledge with one and all. She has been a passionate advocate for sustainability for many years, and has recently graduated with distinction with a Sustainability Certificate from UCLA Extension. Source: Adapted from <a href="https://www.greeneatz.com/about-us.html">https://www.greeneatz.com/about-us.html</a>	In the US, each household produces 48 tons of greenhouse gases. Transport, housing and food have the three largest carbon footprints. Food produces about 8 tons of emissions per household, or about 17 % of the total. Worldwide, new reports suggest that livestock agriculture produces around a half of all man-made emissions. Changing the foods that you eat can have a big impact on your carbon footprint. And reduce pollution, preserve the environment and slow global warming. Many of these changes will also save you money, improve your health and even keep you fit! Source: <a href="https://www.greeneatz.com/foods-carbon-footprint.html">https://www.greeneatz.com/foods-carbon-footprint.html</a>

**Table 5**  
Means (and SDs) of the behavioral intentions variables for sticker vs no sticker condition and for occasional vs heavy meat eaters in Study 3.

	No sticker (N = 80)	Sticker (N = 483)		$\eta^2$	Occasional meat eater (N = 281)	Heavy meat eater (N = 282)		$\eta^2$
Buying intentions	5.98 (0.97)	5.49 (1.36)	**	0.02	5.30 (1.35)	5.81 (1.24)	**	0.01
Restore motivations	3.49 (1.89)	4.05 (1.69)	**	0.01	4.04 (1.61)	3.91 (1.84)		0.00
Protect motivations	3.88 (1.76)	4.14 (1.72)		0.00	4.05 (1.63)	4.16 (1.81)		0.00
Inertia items	5.18 (1.46)	5.03 (1.49)		0.00	4.81 (1.48)	5.28 (1.45)	*	0.01

\*\* p < 0.01.

\* p < 0.05.

2.6,  $p = .038$ ,  $\eta^2 = 0.02$ ), which was driven by a negative effect on inertia ( $p = .006$ ,  $\eta^2 = 0.02$ ), such that inertia is lower when a description is present ( $M_{description} = 4.85$ ,  $SD = 1.47$ ;  $M_{no\ description} = 5.21$ ,  $SD = 1.48$ ).

We performed a PCA with varimax rotation on the five items measuring responses to the people in the organizations together with the item measuring the trust in the organizations. This analysis yielded two factors explaining 46 % and 21 % of total variance, respectively. The first factor consisted of the four positively framed items and the second factor contained the two negatively framed items. For the four positive items we calculated a reliability sum scale by calculating the mean of the four items ( $\alpha = 0.85$ ). For the two negative items the value of Cronbach's  $\alpha$  was very low ( $\alpha = 0.39$ ) and we did not analyze these further.

We performed a univariate analysis for the reliability scale with source, description, and level of meat consumption as independent variables. This yielded significant effects for the main effects of source ( $F(2,470) = 7.1$ ,  $p < .001$ ,  $\eta^2 = 0.03$ ), description ( $F(1,470) = 4.4$ ,  $p = .037$ ,  $\eta^2 = 0.01$ ), level of meat consumption ( $F(1,470) = 10.0$ ,  $p = .002$ ,  $\eta^2 = 0.02$ ), and the interaction between description and level of meat consumption ( $F(1,470) = 4.9$ ,  $p = .028$ ,  $\eta^2 = 0.01$ ). The United Nations were perceived as more reliable than Greeneatz ( $M_{UN} = 5.14$ ,  $SD = 1.20$ ;  $M_{Greeneatz} = 4.58$ ,  $SD = 1.43$ ;  $p > .001$ ), while all other pairwise comparisons between sources were not significant. Apparently, having a description of the source of information makes respondents perceive them as more reliable ( $M_{description} = 4.90$ ,  $SD = 1.36$ ;  $M_{no\ description} = 4.64$ ,

$SD = 1.38$ ). Interestingly, heavy meat eaters perceived the sources as more reliable than occasional meat eaters ( $M_{heavy\ meat\ eaters} = 5.06$ ,  $SD = 1.36$ ;  $M_{occasional\ meat\ eaters} = 4.66$ ,  $SD = 1.21$ ). Regarding the interaction, planned contrasts revealed that occasional meat eaters perceived the source as more reliable when a description was present ( $M_{description} = 4.91$ ,  $SD = 1.09$ ;  $M_{no\ description} = 4.41$ ,  $SD = 1.27$ ,  $F(1,470) = 9.2$ ,  $p = .003$ ,  $\eta^2 = 0.02$ ), while this difference was non-significant for the heavy meat eaters ( $M_{description} = 5.04$ ,  $SD = 1.41$ ;  $M_{no\ description} = 5.07$ ,  $SD = 1.32$ ,  $F(1,470) = 0.0$ ,  $p = .936$ ,  $\eta^2 = 0.00$ ).

To test hypotheses H6a and H6b, we performed a series of linear regression analyses with the perceived reliability of the source (as well as the level of meat consumption) as independent variables and the behavioral intentions and emotions of guilt and shame as dependent variables. Regression analyses showed that the perceived reliability of the source correlated with participants' higher level of shame ( $\beta = 0.30$ ,  $t(479) = 6.81$ ,  $p < .001$ ,  $R^2 = 0.09$ ) as well as guilt ( $\beta = 0.31$ ,  $t(479) = 6.97$ ,  $p < .001$ ,  $R^2 = 0.09$ ), thus confirming H6a. In line with H6b, we also found that the more reliable participants perceived the source of the message, the higher their restore ( $\beta = 0.61$ ,  $t(479) = 16.41$ ,  $p < .001$ ,  $R^2 = 0.36$ ) and protect motivations ( $\beta = 0.45$ ,  $t(479) = 10.74$ ,  $p < .001$ ,  $R^2 = 0.20$ ). Surprisingly, higher reliability perceptions also correlated with higher purchase intentions of the package ( $\beta = 0.30$ ,  $t(479) = 7.06$ ,  $p < .001$ ,  $R^2 = 0.13$ ). We found a marginally significant effect of reliability on inertia ( $\beta = 0.09$ ,  $t(479) = 1.90$ ,  $p = .058$ ,  $R^2 = 0.03$ ).

To analyze whether the effects of perceived reliability of the source

on the behavioral intentions are indeed driven by consumers experiencing stronger levels of shame and guilt when being confronted with a meat-shaming message from a more reliable source, we conducted mediation analyses using the PROCESS macro in SPSS (model 4, unstandardized coefficients). We indeed found that restore motivations correlated with higher levels of shame and guilt (indirect effect shame = 0.10, bootstrap SE = 0.02, bootstrap 95 % CI: [0.06, 0.15]; indirect effect guilt = 0.11, bootstrap SE = 0.02, bootstrap 95 % CI: [0.06, 0.16]), while purchase intentions only correlated with guilt, but not shame (indirect effect shame = 0.02, bootstrap SE = 0.02, bootstrap 95 % CI: [-0.02, 0.06]; indirect effect guilt = -0.08, bootstrap SE = 0.02, bootstrap 95 % CI: [-0.13, -0.04]). Increased protect motivations after seeing the message correlated with shame, more so than with guilt levels (indirect effect shame = 0.09, bootstrap SE = 0.03, bootstrap 95 % CI: [0.05, 0.15]; indirect effect guilt = 0.05, bootstrap SE = 0.02, bootstrap 95 % CI: [0.00, 0.10]; see Fig. 5). In all mediation analyses, we also found a large direct effect of source reliability on behavioral intentions.

5.3. Discussion

In Study 3 we investigated whether the source of the meat-shaming message matters. Surprisingly, the effectiveness of the messages did not differ significantly between the different sources. Although we found a considerable level of variability in reliability ratings ( $SD = 1.37$ ), we only found one structural difference in reliability perceptions across the three different sources (the United Nations were perceived as more reliable than Greeneatz). In line with our theorizing, we found that if a consumer perceived a source as reliable, the meat-shaming message had a stronger positive effect on their restore and protect motivations. In line with our Study 1 results and prior research (e.g., Antonetti & Maklan, 2014; Duhachek et al., 2012) we found again that shame correlates with both restore and protect motivations, while guilt has stronger effects on restore motivations. The positive effect of reliability on purchase intentions was driven by increased levels of guilt, but not shame. While the indirect effect via guilt was negative as expected, we also found a positive direct effect of reliability perceptions. In line with the findings of Lanero, Vázquez, and Sahelices-Pinto (2021), this might be explainable by consumers simply using the logo of an organization they deem reliable as a peripheral cue, without properly processing the content of the message. In that case, the organization’s label may unintentionally have a halo effect and function as an endorsement rather than a warning sign.

6. General discussion

We found that adding a sticker with a shaming message increased emotional responses (H1). In Study 3 we largely replicated the results from Study 1 with a meat-shaming message that emphasized a different detrimental effect (environmental impact versus animal welfare). All emotions were rated higher for a package with a sticker than one without a sticker (Studies 1 and 3). Adding the sticker leads to lower intentions to purchase meat (H2a) and higher restore motivations implying an intention to buy and use more vegetarian products (H2b). Hence, our analyses show that adding a sticker to a meat package, warning potential customers about the negative consequences of their purchase, may be an effective way to influence buyers’ behavior. On the other hand, we also see that the stickers may positively affect protect motivations implying the intention to avoid vegetarians, which may limit their exposure to critical comments about meat consumption (H2c). In fact, lower purchase intentions for the product in the study could represent both avoidance and approach behaviors, as they might have been triggered by the consumers’ wishes to protect themselves from a confrontation with the shaming message or as an indication of an actual behavior change triggered by a motivation to restore their self-image. In the first case, the lower purchase intention would be specific for meat products with a sticker, while restore motivations would affect purchases for meat products in general.

In addition to the fact that different messages can evoke different emotions in a person, activating different motivations on different occasions, it is also possible that a specific situation simultaneously activates restore and protection motivations (for example, when shame is experienced). Therefore, we calculated the Pearson correlation coefficient between restore and protect motivations across the respondents in the three studies. This yielded positive correlation coefficients in each study, although the coefficients were considerably larger in Study 1 ( $r = 0.56, N = 161$ ) and Study 3 ( $r = 0.61, N = 563$ ) than in Study 2 ( $r = 0.21, N = 483$ ) (all  $p < .001$ ). These inter-study differences persisted when coefficients were calculated by condition or low versus high level of meat consumption. These findings suggest that when the sticker was presented on a meat package, both motivations were more likely to be activated, while when the sticker was presented as a separate piece of information, participants were more likely to follow a single strategy. Possibly the confrontation with a concrete purchase and use context created a sense of urgency, which led the respondents to look for

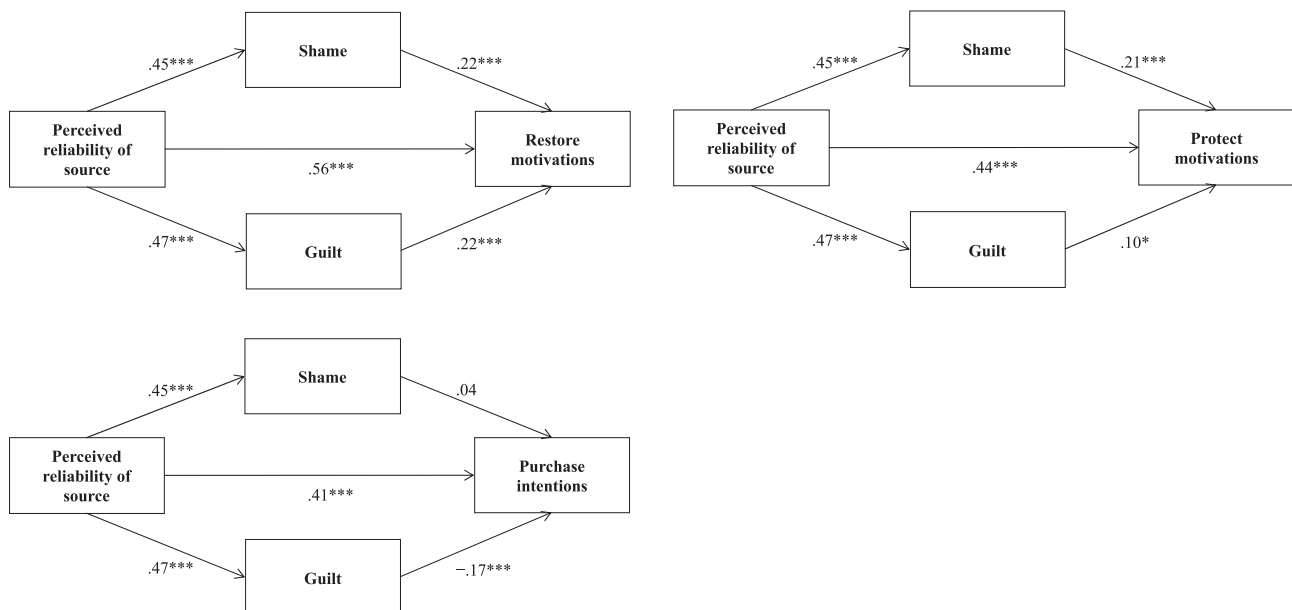


Fig. 5. Mediation analyses of the effects of perceived reliability of the source on restore, protect, and purchase motivations.

multiple ways to deal with the confrontational situation.

Consistent with previous studies (e.g., de Hooge et al., 2010), we find that the emotion of shame can lead to both restore and protect motivations, evoking both approach and avoidance behaviors. The latter can interfere with the goals of a meat-reducing campaign as they hinder the development of any changes in behavior. To make campaigns more effective, they might want to focus more on emotions like guilt and pride, since these are more likely to lead to behavior change (Antonetti & Maklan, 2014). Also in our studies, guilt seemed to be the more promising emotion as it correlated with restore motivations, and not (Study 1) or at least to a lesser degree (Study 3) with protect motivations. In this regard, it may be interesting to further explore the role of guilt in buying meat with labels that can alleviate feelings of guilt because they activate narratives with ethical or environmental attributes, such as ‘organic’, ‘eco-friendly’, or ‘animal-friendly’ (e.g., Haynes & Podobsky, 2016). Furthermore, the mediation analysis in Study 3 suggests that consumers could interpret a label with an organization’s logo as an endorsement rather than a warning signal. Therefore, it remains to be determined whether shaming messages with organizational logos activate behavioral intentions that indeed result in behavior change and whether such effects are sustained in the long term. Nonetheless, our results seem to indicate that the use of stickers could be an interesting strategy to influence people’s behavior.

Regarding the characteristics of the stickers, we see that the content of their message is the main determinant of how they are experienced (Study 2) as we found different emotional profiles for the different messages in the stickers (Table 3). However, participants do not seem to make clear distinctions between shame and guilt in their responses; these emotions tend to show similar patterns. In line with results of a recent study by Souza and O’Dwyer (2022) that investigated which arguments are most effective in changing consumers’ meat attitudes, shame and guilt responses tend to be highest for labels addressing animal welfare and lowest for those addressing personal health. Accordingly, these authors found that animal welfare and environmental arguments had larger effects on consumer beliefs and attitudes than arguments related to the health effects of eating meat.

We would like to note that responses for some emotions may not only reflect the degree to which the information on the sticker elicited the specific emotions. For instance, some participants may have wondered why a sticker was shown on the package, who put it there, or what the motivations were behind the study, which may have led to some degree of confusion. In that case the study context would be responsible for some of the emotional responses. As a matter of fact, in Study 3 participants who indicated that they were more aware of the effect of eating meat on the environment also showed higher levels of confusion ( $r = 0.117$ ,  $p = .010$ ). It may also be that some participants reported lower levels of meat-eating intentions because they may have realized that our stimuli were designed to increase their negative feelings towards meat. As such, it would be helpful for future research to analyze actual meat-eating behavior or at least embed the studies in broader tasks. Because we generally based our conclusions on comparisons between conditions and over participants, such effects were likely to be averaged out and would not affect our main conclusions, but nonetheless the effects of the experimental context should be carefully considered. Please also note that since the stickers in Study 2 were not displayed on meat packages, participants may have perceived the context of the three studies somewhat differently, as the images could also have been used as public advertisements or posters that were part of a meat reduction campaign. However, since the questionnaire items clearly focused on intentions and motivations related to meat purchase and consumption, the association with meat products should nevertheless be clear.

Formulating the appeal on the sticker with a personal or informational appeal (Study 2) did not affect the outcomes (H4). We also did not find any significant differences in the emotions that these two types of shaming stickers triggered. This is somewhat surprising as we expected the personal appeal to trigger stronger emotions than the informational

appeal and thus, in line with prior research, also stronger reactions (e.g., Cadario & Chandon, 2020; Mathur et al., 2021). Our finding might be explainable by the sticker itself being highly confrontational. When the consumer is exposed to the meat-shaming sticker, the personal appeal in the message itself might be secondary, as the picture and the information in the meat-shaming sticker already trigger strong emotional reactions. Also, the source of the appeal (Study 3) seemed to have little effect per se. However, as hypothesized, the reliability of the source affected the extent to which people felt emotions and were willing to change their behavior (Study 3; H6a and H6b). It is nevertheless somewhat worrisome to discover that the source of the stickers does not seem to be a major determinant of the effect. We had expected that well-known sources such as Greenpeace and the United Nations would be perceived as more reliable and that their messages would be more effective than the less known private initiative Greeneatz.

In line with prior research (e.g., Mäkinen & Vainio, 2014), the amount of meat consumers currently eat seems to be a major determinant of whether consumers are likely to change. Heavy meat eaters are more likely to buy meat and keep on buying it in the future than occasional meat eaters (Studies 1 and 3). Study 2 suggests that occasional meat eaters are more likely to reduce meat consumption and try vegetarian alternatives, while heavy meat eaters may be more likely to avoid interacting with vegetarians to protect their self-image, but this was not confirmed in Studies 1 and 3. Interestingly, these effects were all found as main effects and not as two-way interactions in the MANOVAs, which indicated that these intentions were not affected by the presence or type of stickers used in the studies (H3a-c not confirmed). Thus, in general we do not find that meat-shaming messages are more or less effective for heavy or occasional meat eaters. An interesting difference between occasional and heavy meat eaters that we observed is that for occasional meat eaters shaming messages concerning animal welfare correlate with higher levels of shame and guilt than messages concerning the environment. For heavy meat eaters, the two themes evoke similar degrees of shame and guilt (Study 2). Possibly the direct and easily imaginable consequences for animal welfare trigger emotional responses in everyone, regardless of how much meat they eat. The consequences for the environment, on the other hand, are more abstract and long-term. Occasional meat eaters might think their meat consumption is “not that bad” and therefore relate their own behavior less to abstract environmental consequences than to obvious animal welfare consequences.

Although we have studied messages with different contents, from different sources, and with different types of message framing, all the messages we used were still quite educational and factual. Therefore, they may have reflected mainly the types of messages that an official government institution would provide, rather than those of an activist or pressure group. The latter messages tend to be more provocative and seem to aim for maximum emotional impact, while our messages were more neutral. This may be the case, because we looked for a single format that could convey messages with multiple types of content. Furthermore, as we operated within ethical boundaries of research, our images were not as drastic and shocking as images that some activists use. Hence, it would be interesting to see whether messages with texts or images from actual activist campaigns (e.g., materials from a PETA campaign like an image of a woman on a barbecue with “Meat is murder. Try vegan” or an image of a cow’s head with “I’m ME, not MEAT. See the individual. Go vegan”) would evoke more intense emotional responses and would lead to stronger intentions to change behavior. Furthermore, the ecological validity of future studies would increase if they could record actual changes in behavior rather than only behavioral intentions. Future studies should also include a control condition with an unusual label and a neutral text, to check whether it is the content of the meat-shaming message that influences consumer emotions and behavior or just being presented with an unusual message. Hopefully, this future work will provide more insights in the mechanisms behind the effects of confrontational messages on consumer products.

## CRediT authorship contribution statement

**Anne-Madeleine Kranzbühler:** Conceptualization, Methodology, Formal analysis, Investigation. **Hendrik N.J. Schifferstein:** Conceptualization, Methodology, Formal analysis, Investigation.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

All study materials and datasets are publicly available at doi: 10.4121/21814983

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## References

- Agrawal, N., & Duhachek, A. (2010). Emotional compatibility and the effectiveness of antidrinking messages: A defensive processing perspective on shame and guilt. *Journal of Marketing Research*, 47(2), 263–273. <https://doi.org/10.1509/jmkr.47.2.263>
- Amatulli, C., De Angelis, M., Peluso, A. M., Soscia, I., & Guido, G. (2019). The effect of negative message framing on green consumption: An investigation of the role of shame. *Journal of Business Ethics*, 157(4), 1111–1132. <https://doi.org/10.1007/s10551-017-3644-x>
- Antonetti, P., & Maklan, S. (2014). Feelings that make a difference: How guilt and pride convince consumers of the effectiveness of sustainable consumption choices. *Journal of Business Ethics*, 124(1), 117–134. <https://doi.org/10.1007/s10551-013-1841-9>
- Becker, E., & Lawrence, N. S. (2021). Meat disgust is negatively associated with meat intake - Evidence from a cross-sectional and longitudinal study. *Appetite*, 164, Article 105299. <https://doi.org/10.1016/j.appet.2021.105299>
- Bianchi, F., Dorsel, C., Garnett, E., Aveyard, P., & Jebb, S. A. (2018). Interventions targeting conscious determinants of human behaviour to reduce the demand for meat: A systematic review with qualitative comparative analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 15, 102. <https://doi.org/10.1186/s12966-018-0729-6>
- Buttler, B., Rothe, A., Kleinert, S., Hahn, L., & Walther, E. (2021). Food for thought: Investigating communication strategies to counteract moral disengagement regarding meat consumption. *Environmental Communication*, 15(1), 55–68. [https://doi.org/10.1080/17524032.2020.1791207/SUPPL\\_FILE/RENC\\_A\\_1791207\\_SM2541.PDF](https://doi.org/10.1080/17524032.2020.1791207/SUPPL_FILE/RENC_A_1791207_SM2541.PDF)
- Cadario, R., & Chandon, P. (2020). Which healthy eating nudges work best? A meta-analysis of field experiments. *Marketing Science*, 39(3), 465–486. <https://doi.org/10.1287/mksc.2018.1128>
- Carfora, V., Catellani, P., Caso, D., & Conner, M. (2019). How to reduce red and processed meat consumption by daily text messages targeting environment or health benefits. *Journal of Environmental Psychology*, 65(June 2018), Article 101319. <https://doi.org/10.1016/j.jenvp.2019.101319>
- Carrus, G., Passafaro, P., & Bonnes, M. (2008). Emotions, habits and rational choices in ecological behaviours: The case of recycling and use of public transportation. *Journal of Environmental Psychology*, 28(1), 51–62. <https://doi.org/10.1016/j.jenvp.2007.09.003>
- Chandran, S., & Morwitz, V. G. (2005). Effects of participative pricing on consumers' cognitions and actions: A goal theoretic perspective. *Journal of Consumer Research*, 32(2), 249–259. <https://doi.org/10.1086/432234>
- Cheah, I., Sadat Shimul, A., Liang, J., & Phau, I. (2020). Drivers and barriers toward reducing meat consumption. *Appetite*, 149(February), Article 104636. <https://doi.org/10.1016/j.appet.2020.104636>
- Clonan, A., Wilson, P., Swift, J. A., Leibovici, D. G., & Holdsworth, M. (2015). Red and processed meat consumption and purchasing behaviours and attitudes: Impacts for human health, animal welfare and environmental sustainability. *Public Health Nutrition*, 18(13), 2446–2456. <https://doi.org/10.1017/S1368980015000567>
- Cordts, A., Nitzko, S., & Spiller, A. (2014). Consumer response to negative information on meat consumption in Germany. *International Food and Agribusiness Management Review*, 17(1030–2016-82984), 83–106. <https://doi.org/10.22004/ag.econ.164599>
- de Hooge, I. E., Zeelenberg, M., & Breugelmans, S. M. (2010). Restore and protect motivations following shame. *Cognition and Emotion*, 24(1), 111–127. <https://doi.org/10.1080/02699930802584466>
- de Hooge, I. E. (2013). Moral emotions and prosocial behaviour: It may be time to change our view of shame and guilt. *Handbook of psychology of emotions: Recent theoretical perspectives and novel empirical findings* (Vol. 2, pp. 255–275).
- Duhachek, A., Agrawal, N., & Han, D. (2012). Guilt versus shame: Coping, fluency, and framing in the effectiveness of responsible drinking messages. *Journal of Marketing Research*, 49(6), 928–941. <https://doi.org/10.1509/jmr.10.0244>
- Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson (Ed.), *Handbook of Affective Sciences* (pp. 572–595). Oxford, GB: Oxford University Press.
- Fessler, D. M. T., Arguello, A. P., Mekdara, J. M., & Macias, R. (2003). Disgust sensitivity and meat consumption: A test of an emotivist account of moral vegetarianism. *Appetite*, 41(1), 31–41. [https://doi.org/10.1016/S0195-6663\(03\)00037-0](https://doi.org/10.1016/S0195-6663(03)00037-0)
- Godfray, H. C. J., Aveyard, P., Garnett, T., Hall, J. W., Key, T. J., Lorimer, J., et al. (2018). Meat consumption, health, and the environment. *Science*, 361(6399), eaam5324. <https://doi.org/10.1126/science.aam5324>
- Gradidge, S., Zawisza, M., Harvey, A. J., & McDermott, D. T. (2021). A structured literature review of the meat paradox. *Social Psychological Bulletin*, 16(3), 1–26. <https://doi.org/10.32872/SPB.5953>
- Guassora, A. D., Reventlow, S., & Malterud, K. (2014). Shame, honor and responsibility in clinical dialog about lifestyle issues: A qualitative study about patients' presentations of self. *Patient Education and Counseling*, 97(2), 195–199. <https://doi.org/10.1016/j.pec.2014.08.003>
- Haynes, P., & Podobsky, S. (2016). Guilt-free food consumption: One of your five ideologies a day. *Journal of Consumer Marketing*, 33(3), 202–212. <https://doi.org/10.1108/JCM-05-2014-0967>
- Independent. (2021). Many meat eaters feel pressured into giving it up, poll reveals. Retrieved from <https://www.independent.co.uk/life-style/food-and-drink/meat-eating-giving-up-pressure-poll-b1792741.html>.
- Köster, E. P. (2009). Diversity in the determinants of food choice: A psychological perspective. *Food Quality and Preference*, 20(2), 70–82. <https://doi.org/10.1016/j.foodqual.2007.11.002>
- Kunst, J. R., & Hohle, S. M. (2016). Meat eaters by dissociation: How we present, prepare and talk about meat increases willingness to eat meat by reducing empathy and disgust. *Appetite*, 105, 758–774. <https://doi.org/10.1016/j.appet.2016.07.009>
- Lanero, A., Vázquez, J. L., & Sahelices-Pinto, C. (2021). Halo effect and source credibility in the evaluation of food products identified by third-party certified eco-labels: Can information prevent biased inferences? *Foods*, 10(11), 2512. <https://doi.org/10.3390/foods10112512>
- Macdiarmid, J. I., Douglas, F., & Campbell, J. (2016). Eating like there's no tomorrow: Public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet. *Appetite*, 96, 487–493. <https://doi.org/10.1016/j.appet.2015.10.011>
- Mäkinieniemi, J. P., & Vainio, A. (2014). Barriers to climate-friendly food choices among young adults in Finland. *Appetite*, 74, 12–19. <https://doi.org/10.1016/j.appet.2013.11.016>
- Mathur, M. B., Peacock, J., Reichling, D. B., Nadler, J., Bain, P. A., Gardner, C. D., et al. (2021). Interventions to reduce meat consumption by appealing to animal welfare: Meta-analysis and evidence-based recommendations. *Appetite*, 164, Article 105277. <https://doi.org/10.1016/j.appet.2021.105277>
- Morrison, O. (2021). Danish official dietary guidelines include CO2 emissions for first time. Retrieved from <https://www.foodnavigator.com/Article/2021/01/12/Danish-official-dietary-guidelines-include-CO2-emissions-for-first-time#>.
- Onwezen, M. C., & van der Weele, C. N. (2016). When indifference is ambivalence: Strategic ignorance about meat consumption. *Food Quality and Preference*, 52, 96–105. <https://doi.org/10.1016/j.foodqual.2016.04.001>
- Palomo-Vélez, G., Tybur, J. M., & van Vugt, M. (2018). Unsustainable, unhealthy, or disgusting? Comparing different persuasive messages against meat consumption. *Journal of Environmental Psychology*, 58(January), 63–71. <https://doi.org/10.1016/j.jenvp.2018.08.002>
- Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987–992. <https://doi.org/10.1126/science.aaq0216>
- Prema, S. (2019). Hardline vegans try to shame meat eaters by slapping stickers on sliced chicken slices - calling them "the dead body of someone who wanted to live." Retrieved from <https://www.dailymail.co.uk/news/article-6990915/Vegan-activists-shame-meat-eaters-slapping-stickers-chicken-claiming-dead-body.html>.
- Richins, M. L. (1997). Measuring emotions in the consumption experience. *Journal of Consumer Research*, 24, 127–146.
- Röös, E., Sundberg, C., Tidåker, P., Strid, I., & Hansson, P. A. (2013). Can carbon footprint serve as an indicator of the environmental impact of meat production? *Ecological Indicators*, 24, 573–581. <https://doi.org/10.1016/j.ecolind.2012.08.004>
- Rothgerber, H. (2020). Meat-related cognitive dissonance: A conceptual framework for understanding how meat eaters reduce negative arousal from eating animals. *Appetite*, 146, Article 104511. <https://doi.org/10.1016/j.appet.2019.104511>
- Rothgerber, H., & Mican, F. (2014). Childhood pet ownership, attachment to pets, and subsequent meat avoidance. The mediating role of empathy toward animals. *Appetite*, 79, 11–17. <https://doi.org/10.1016/j.appet.2014.03.032>
- Rozin, P., Markwith, M., & Stoess, C. (2016). Moralization and becoming a vegetarian: The transformation of preferences into values and the recruitment of disgust. *Psychological Science*, 8(2), 67–73. <https://doi.org/10.1111/1.1467-9280.1997.TB00685.X>
- Schmader, T., & Lickel, B. (2006). The approach and avoidance function of guilt and shame emotions: Comparing reactions to self-caused and other-caused wrongdoing. *Motivation and Emotion*, 30(1), 42–55. <https://doi.org/10.1007/s11031-006-9006-0>

- Sedová, I., Slovák, L., & Ježková, I. (2016). Coping with unpleasant knowledge: Meat eating among students of environmental studies. *Appetite*, *107*, 415–424. <https://doi.org/10.1016/j.appet.2016.08.102>
- Siemer, M., & Reisenzein, R. (2007). Emotions and appraisals: Can you have one without the other? *Emotion*, *7*(1), 26–29. <https://doi.org/10.1037/1528-3542.7.1.26>
- Smith, R. H., Webster, J. M., Parrott, W. G., & Eyre, H. L. (2002). The role of public exposure in moral and nonmoral shame and guilt. *Journal of Personality and Social Psychology*, *83*(1), 138–159. <https://doi.org/10.1037/0022-3514.83.1.138>
- Souza, L. G. S., & O'Dwyer, E. (2022). Animal rights, environment, or health? Effects of argument type and dissonance on the attitudes toward the consumption of animals. *Appetite*, *176*, Article 106129. <https://doi.org/10.1016/j.appet.2022.106129>
- Springmann, M., Clark, M., Mason-D'Croz, D., Wiebe, K., Bodirsky, B. L., Lassaletta, L., et al. (2018). Options for keeping the food system within environmental limits. *Nature*, *562*(7728), 519–525. <https://doi.org/10.1038/s41586-018-0594-0>
- Springmann, M., Godfray, H. C. J., Rayner, M., & Scarborough, P. (2016). Analysis and valuation of the health and climate change cobenefits of dietary change. *Proceedings of the National Academy of Sciences of the United States of America*, *113*(15), 4146–4151. doi: 10.1073/pnas.1523119113.
- Tangney, J. P. (1995). Recent advances in the empirical study of shame and guilt. *American Behavioral Scientist*, *38*(8), 1132–1145. <https://doi.org/10.1177/0002764295038008008>
- Tangney, J. P. (1996). Conceptual and methodological issues in the assessment of shame and guilt. *Behaviour Research and Therapy*, *34*(9), 741–754. [https://doi.org/10.1016/0005-7967\(96\)00034-4](https://doi.org/10.1016/0005-7967(96)00034-4)
- Taylor, S. E. (1991). Asymmetrical effects of positive and negative events: The mobilization-minimization hypothesis. *Psychological Bulletin*, *110*(1), 67–85. <https://doi.org/10.1037//0033-2909.110.1.67>
- Vanhelden, V. (2021). Hoe eet je gezond én milieuverantwoord? Diëtist Michaël Sels belicht nieuwe tips voedingsdriehoek. Retrieved from <https://www.vrt.be/vrtnws/nl/2021/05/04/vrt-nws-live-gezond-en-duurzaam-eten/>.
- Wagner, B., & Hassel, A. (2016). Posting, subcontracting and low-wage employment in the German meat industry. *Transfer*, *22*(2), 163–178. <https://doi.org/10.1177/1024258916636012>
- Weingarten, N., Meraner, M., Bach, L., & Hartmann, M. (2022). Can information influence meat consumption behaviour? An experimental field study in the university canteen. *Food Quality and Preference*, *97*, Article 104498. <https://doi.org/10.1016/J.FOODQUAL.2021.104498>
- Willett, W., et al. (2019). Food in the Anthropocene: The EAT-Lancet Commission on healthy diets from sustainable food systems. *The Lancet*, *393*(10170), 447–492.
- Wilson, E. J., & Sherrell, D. L. (1993). Source effects in communication and persuasion research: A meta-analysis of effect size. *Journal of the Academy of Marketing Science*, *21*(2), 101–112. <https://doi.org/10.1007/BF02894421>
- Wolk, A. (2017). Potential health hazards of eating red meat. *Journal of Internal Medicine*, *281*(2), 106–122. <https://doi.org/10.1111/joim.12543>
- Yang, M. L., Yang, C. C., & Chiou, W. B. (2010). When guilt leads to other orientation and shame leads to egocentric self-focus: Effects of differential priming of negative affects on perspective taking. *Social Behavior and Personality*, *38*(5), 605–614. <https://doi.org/10.2224/sbp.2010.38.5.605>