

Article

Intergroup Sensitivity and Promoting Sustainable Consumption: Meat Eaters Reject Vegans' Call for a Plant-Based Diet

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Abstract: Reducing meat consumption can make immediate contributions to fighting the climate crisis. A growing minority adheres to meat-free diets and could convince others to follow suit. We argue, however, that recipients' social identification as meat eaters may impede the effectiveness of such calls (i.e., an *intergroup sensitivity effect* based on dietary groups). Indeed, meat eaters in our experiment ($N = 260$) were more likely to reject calls for dietary change from a vegan than from a fellow meat eater. This effect was also evidenced in evaluations of and engagement with an initiative to promote a vegan diet ("Veganuary"), providing some indication for behavioral impact. In contrast, our societal dietary norm manipulation had no consistent effects on observed outcomes. Exploratory moderation analyses show a limited impact of participants' social identification as meat eaters but highlight the role of peoples' general willingness to engage in environmentally friendly behavior. We discuss theoretical and practical implications, including how our results challenge existing approaches to promoting a meat-reduced diet.

Keywords: intergroup sensitivity effect; group criticism; sustainable consumption; vegan diet; vegetarian diet



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1. Introduction

"Vegetarisch akzeptiere ich noch ein bisschen, vegan überhaupt nicht, weil die Leute auf die Dauer nur krank werden. Das Problem ist, die sind ja militant. Wenn du die heute kritisierst, greifen sie dich an."

("I accept vegetarian a little bit, vegan not at all, because those people get sick in the long run. The problem is that they are militants. If you criticize them today, they attack you.")

(Uli Hoeneß, German soccer celebrity, on adhering to a meat-free diet; https://www.eurosport.de/fussball/bundesliga/2021-2022/uli-hoeness-bayern-munchens-ehrenpräsident-schiesst-gegen-veganer-die-sind-ja-militant_sto8591518/story.shtml, accessed on 18 October 2021)

Eating meat is a major contributor to greenhouse gas emissions that cause global warming [1–4], and the reduction of animal source foods will be necessary to achieve the UN Sustainable Development Goals [5,6]. Unlike changes in policy or industrial processes that are largely under the control of a few decision-makers, everyone can decide when and how much meat to consume. Promoting a meat-free or meat-reduced diet is therefore a feasible step towards reaching global sustainability goals [7,8]. In the current article, we investigate effective ways to promote dietary change via public messages. Specifically, we focus on the diet of the message source as a key factor determining the effectiveness of calls for a vegan diet. We argue that peoples' diets are an important indication of group membership and thus part of their social identity. As our opening quote by the German

public figure Uli Hoeneß exemplifies, meat eaters may view vegans and vegetarians as an outgroup. A host of research indicates that outgroup criticism is commonly rejected. We thus assume that calls for dietary change, which could be conceived of as criticism, should be less effective when they come from vegans instead of fellow meat eaters. We additionally test the influence of salient societal norms on this effect.

To this end, we conducted an online experiment. Meat eaters read an article, either describing a societal norm to eat meat or to reduce meat consumption, and a comment critical of meat consumption, attributed to either a fellow meat eater or a vegan. After reading the comment, participants rated the message and the messenger and then watched a video of an initiative promoting a vegan diet. We assessed participants' attitude towards and engagement with the initiative. We expected that outgroup criticism would lead to more negative ratings and less pro-vegan behavior.

Our research makes at least three central contributions. First, we provide a group-processes perspective on convincing people to adopt a sustainable diet. We thereby highlight the need to consider social factors that go beyond message content. Specifically, we pit against each other the social context (norms) and the groups involved in the interaction (commenter identity). Second, our behavioral experiment can clarify the causal direction of observed effects in a highly controlled setting. At the same time, our paradigm resembles common exchanges between societal groups, such as posts in social media, thus providing external validity. Third, we investigate the processes underlying the rejection of calls for dietary change. Such a process view may help tailor convincing messages for different audiences within existing communication channels. Our research thus investigates effective interventions that are scalable.

2. Theoretical Background and Hypotheses

2.1. Message Source Identity and Calls for Dietary Change

Although still in the minority, more and more people choose to reduce or terminate their consumption of animal products e.g., [9]. Many people from the general population would thus be suitable sources for calling for a meat-free diet, for instance, by providing practical experience or by being good role models. Unfortunately, those eating meat may not accept the advice of those not eating meat. Cole and Morgan [10] found that omnivores strategically present veganism as overly difficult, treat it as a curiosity, or misrepresent the motivations of vegans to protect themselves from criticism regarding their meat consumption. Other studies confirm that there is a bias against vegetarians and vegans such that non-vegans socially distance themselves from vegans [11]. Much like environmental activists [12,13], vegans face stigmatization by meat eaters [14,15] and are targets of negative stereotyping [16,17]. Apparently, peoples' diets form an important part of their social identity [18], with strained relationships between the groups.

Research on the intergroup sensitivity effect (ISE) indicates that social identification with different (sub-)groups poses potential problems for constructive debate about the topic of dietary changes. While group members tolerate or even accept criticism from fellow ingroup members, they commonly reject the same criticism from a member of a different outgroup [19–21]. This effect emerges because intragroup criticism is perceived as being more constructive than is intergroup criticism [19]. The most prominent account of the ISE assumes that group members seek to defend their social identity against malicious attacks [22–24]. Supporting this perspective, some studies have observed that participants' reported social identification [23,25], but see [26], and protection of the group identity [27] moderated the ISE such that highly identified members and those who could not affirm their group were more likely to reject outgroup criticism.

Early ISE research almost exclusively focused on inconsequential self-reports, leaving open whether intergroup sensitivity has costly behavioral consequences. One could thus argue that commenter group membership may influence "cheap talk" but has little influence on message effectiveness when it comes to important behaviors, such as reducing meat consumption. However, Thürmer and McCrea [25] observed that group members

were more likely to invest their own money to punish a critical outgroup commenter in comparison to an ingroup commenter. Moreover, group members also used more of their limited time to refute outgroup criticism than ingroup criticism, and consequently had less time to get their work done [27]. Speaking to the robustness of these effects, two recent registered reports using different group memberships, different critical messages, and different designs consistently observed the behavioral ISE [23,28]. Apparently, group members defend against rather than heed intergroup criticism, even if this runs counter to their own benefits. Accordingly, we hypothesize that intergroup sensitivity emerges in the realm of dietary change.

Hypothesis 1 (H1). *Meat eaters reject calls for a plant-based diet from a vegan compared to the same message from a fellow meat eater.*

2.2. Message Norms and Calls for Dietary Change

A second, normative account of the ISE has emerged. This normative account of the ISE assumes that intergroup criticism violates a ubiquitous norm of not saying bad things about another group [29,30]. As a consequence, voicing such intergroup criticism represents a norm violation that observers punish. Supporting this perspective, mere observers who were neither members of the source nor the target group rejected intergroup criticism, and participants indicated that it is counter-normative to voice intergroup criticism [29,30]. The aforementioned registered reports also included bystander conditions and, contrary to predictions, observed a behavioral bystander ISE that was in fact larger (not smaller) than the classic behavioral ISE [23,28]. Social norms and social identity thus both seem to play a role in the ISE, with intergroup criticism violating basic conversational norms.

Social norms are guidelines and standards within a group that indicate appropriate behavior [31], including which products to buy [32] or which environmental behaviors to adopt (e.g., installing rooftop solar panels or reducing household electricity consumption) [33]. Supporting this normative perspective, societal norms have been observed to help promote a number of behaviors, such as avoiding littering [34] or reuse of towels in hotel rooms [35]. Pertinent to the present research, norms have also been observed to influence pro-environmental consumption behavior such as recycling [36], energy conservation [37], organic food consumption [38], and even the reduction of meat consumption [39,40].

Because many different norms may be present in each situation (e.g., to be polite and to speak the truth), these norms may compete (e.g., when your friend asks you whether you like their favorite movie, which you find terrible). In these situations, the norm influencing behavior will be the one that is most salient or focal [41], for instance, because one readily observes a certain behavior that implies a norm. In the context of dietary change, information about the societal norm may influence how people respond to criticism of their diet. When maintaining that meat consumption is perceived as a norm in the general population, one could assume that criticism of meat eaters' diets runs counter to what is "normal" [42]. Accordingly, we would expect a strong rejection of outgroup criticism (i.e., calls for reducing meat consumption by a vegan). In contrast, when reducing meat consumption is perceived as a norm in the general population, one could assume that criticism of meat eaters' diets supports a valued societal goal. Supporting this societal goal could lead to inferring a more positive motive for criticizing peoples' diets, even if the source is an outgroup member. In other words, when a supportive societal norm is salient, group members may prioritize the norm of reducing meat consumption over rejecting intergroup criticism. We thus hypothesize that the meat-eater intergroup sensitivity effect is moderated by the salience of societal norms.

Hypothesis 2 (H2). *Meat-eaters only reject outgroup calls for a plant-based diet when an unfavorable societal norm is salient (i.e., most people eat meat).*

3. Materials and Methods

3.1. Participants and Design

The sample size for the present study was determined a priori by a power analysis using G*power 3.1 [43], assuming a medium effect and setting $1 - \beta = 0.80$ and $\alpha = 0.05$, which resulted in a minimum sample size of $N = 204$ for the ANOVA. We aimed to recruit at least 230 subjects to account for potential dropouts according to the attention checks (see below). We recruited 342 participants (243 female, 96 male, 3 other; age $M = 30.60$, $SD = 11.41$; 176 German, 151 Austrian, 15 other nationality; 163 students, 153 working, 26 other) via the university newsletter, social media, and the website Survey Circle [44] who completed the survey in exchange for partial course credit (our dataset included 170 incomplete entries). We excluded 59 participants because they failed a manipulation check (see below), 21 because they indicated that they never eat meat (which excludes them from the target group for this study), and 2 because they experienced technical difficulties viewing the videos. $N = 260$ participants were included in the analysis (185 female, 73 male, 2 other; age $M = 30.60$, $SD = 11.47$, 128 Austrian, 120 German, 12 other nationality; 122 working, 115 students, 23 other).

3.2. Materials and Procedure

All participants completed a 10-min web-based survey on people's opinions about a sustainable diet. After giving their informed consent, participants were randomly assigned to one of four conditions in a 2 (presented norm: positive vs. negative) \times 2 (comment source: ingroup vs. outgroup) between-subjects design. After subject exclusions, our initial sample ($N = 245$) was unbalanced across conditions. We thus recruited 24 additional participants, nine of whom had to be excluded, and assigned them to the condition with the lowest number of subjects. The description above refers to the final sample including all analyzed cases.

Participants first read a short article designed to manipulate the norm factor. In the positive norm condition, the article indicated that the consumption of meat and animal products in the EU is declining and that there is an increase in demand for vegan and vegetarian meal options. The article stated that this trend is due to increased consumer interest in sustainability. In the negative norm condition, the article indicated that the consumption of meat and animal products in the EU is still high and that the demand for vegan and vegetarian meal options is comparatively low. The article stated that this is due to consumers prioritizing taste over sustainability. Although both articles differed in content, both used parallel wording and were factually correct (i.e., there is a trend towards vegan options but meat consumption is still the majority norm).

Participants then responded to an open-ended question regarding their own opinion about reducing meat consumption to help the environment. Then, participants read a critical comment by an alleged former participant. In fact, we wrote the criticism based on common guidelines to reduce meat consumption to fight climate change [45]. This is where we manipulated the commenter identity: The commenter was either said to be a meat eater (ingroup condition; reference to "we/us/our") or a vegan (outgroup condition; reference to "you/they/their"), and the comments were otherwise identical in both conditions. The comment read (ingroup condition in parentheses): "Our world is literally on fire and (we) meat eaters are doing nothing to change that. They (We) care more about their (our) comfort and are not willing to make sacrifices. Not eating meat is one of the best things you can do on a personal level to help the environment. (We) Meat eaters should be more aware of this and change their (our) diet." Participants indicated whether the comment was written by a vegan, vegetarian, meat eater, or pescatarian, as a manipulation check.

Participants then reported their perception of the comment and the commenter on 7-point Likert scales ranging from 1 (not at all) to 7 (very much), adapted from Hornsey and Imani [19]. The first three items measured message motive and read "How constructive did you find the comment?", "How important is the environment to the author of the comment?" and "To what extent did the author write in the interest of the environment?".

Participants then answered eight items measuring message threat (“To what extent do you think this comment is” with the sentence endings “threatening”, “disappointing”, “irritating”, “offensive”, “insulting”, “hypocritical”, “judgmental”, “arrogant”) and seven items measuring the participant’s opinion of the author of the comment (“To what extent do you think the author of the comment is” with the endings “intelligent”, “trustworthy”, “friendly”, “open”, “likeable”, “respectable” and “interesting”). We then informed participants that we needed their help in evaluating the initiative “Veganuary”, a worldwide initiative promoting a vegan diet during the month of January, and for this purpose they could watch three videos about the initiative. We pointed out that it was not necessary to watch the videos in full length, but that they should have an impression of the initiative. The first video was the official Veganuary 2021 advertising video clip and lasted 41 s. The second video was the official Veganuary 2021 launch video, which lasted 59 s and showed several people talking about reasons to try eating vegan in January [46,47]. The third and final video was a news clip from “WELT Nachrichtensender”, which lasted 1 min and 40 s and showed interviews with a young woman following a vegan diet, pedestrians and a researcher, who talked about their opinions on and information about veganism and “Veganuary” [48]. We recorded participants’ video watch time as an indicator of their interest in and openness about “Veganuary” and veganism. Furthermore, participants were asked to answer four items on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much) (“To what extent do you find Veganuary”: “helpful”, “interesting”, “important”, “worthy of support”) measuring their self-reported perception of “Veganuary”. They were also asked to answer two yes or no questions (“Would you participate in Veganuary?”, “Would you like to have more information about Veganuary?”) and indicate if they had any trouble viewing the videos. In the next section, we measured participants’ self-reported meat, dairy, and egg consumption, using two items on a 7-point Likert scale ranging from 1 (never) to 7 (multiple times per day) that asked, “How often do you eat meat?” and “How often do you eat animal products (eggs and dairy)?”. This was followed by four items on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much) measuring participants’ group identification, i.e., their identification with being a “meat eater” (“Overall, being a meat eater has very little to do with how I feel about myself.”[1], “Being a meat eater is an important reflection of who I am.”, “Being a meat eater is unimportant to my sense of what kind of a person I am.” [reverse coded], “In general, being a meat eater is an important part of my self-image.”) adapted from [49]. We also measured participants’ willingness to refrain from certain behaviors for the sake of the environment using a 5-item-scale [50] (“In principle I am willing to . . . ” with following sentence endings: “use lower dosages of cleaning agents than recommended by the manufacturer (when cleaning the car, doing the dishes, cleaning etc.)”, “save water in the household for environmental reasons (for example have a quick shower instead of a bath).”, “make sure windows and doors are closed in winter to save energy for environmental reasons.”, “dispose of special waste accordingly (such as oils, batteries, medical drugs, etc.)” and “bring reusable materials (paper, glass, aluminum) to the recycling facilities.”) on a 6-point Likert scale ranging from 1 (does not apply) to 6 (applies fully). Finally, we collected demographic data including age, gender, nationality, education, and occupation. Participants were then debriefed and thanked.

4. Results

We averaged the items designed to measure message motive ($\alpha = 0.61$), message threat ($\alpha = 0.88$), author perception ($\alpha = 0.91$), Veganuary perception ($\alpha = 0.94$), meat-eater group identification ($\alpha = 0.58$), and environmental friendliness ($\alpha = 0.74$) to form single indices. We conducted a two-way analysis of variance (ANOVA) with comment source (ingroup vs. outgroup) and presented norm (positive vs. negative) as predictors and the respective dependent variables in turn (i.e., message motive, message threat, and author ratings). When ANOVA assumptions were violated, we used bootstrapping with 3000 samples. Including participant gender as a covariate did not change the results reported below; we consequently report results without covariates.

4.1. Meat-Eater Intergroup Sensitivity

Entering message motive into our model, we observed a significant main effect of group membership of the critic on message motive rating, $F(1, 256) = 35.33, p < .001, \eta^2 = 0.12$. Confirming Hypothesis 1, message motive ratings were significantly higher (i.e., more constructive) when participants believed the commenter to be a fellow meat eater (ingroup source condition, $M = 5.36, SD = 0.09$) than when they believed the commenter to be a vegan (outgroup source condition, $M = 4.58, SD = 0.09$). The main effect of presented norm on message motive rating was non-significant $F(1, 256) = 3.99, p = .054, \eta^2 = 0.01$, as was the interaction effect between group identity of critic and presented norm on message motive rating, $F(1, 256) = 0.02, p = .899, \eta^2 < 0.01$.

We next entered message threat as dependent variable into our model. There was a significant main effect of group membership of the critic on message threat rating, $F(1, 256) = 86.88, p < .001, \eta^2 = 0.25$. Confirming Hypothesis 1, the comment was perceived to be significantly more threatening in the outgroup condition (vegan commenter; $M = 4.63, SD = 0.10$) compared to the ingroup condition (meat-eater commenter; $M = 3.20, SD = 0.11$). Hypothesis 2 was not supported. The main effect of presented norm on message threat perception was not significant $F(1, 256) = 2.13, p = .145, \eta^2 = 0.01$, as was the interaction effect between group identity of critic and presented norm on message threat perception, $F(1, 256) = 0.42, p = .519, \eta^2 < 0.01$.

Finally, we entered commenter rating as dependent variable into our model. There was a significant main effect of group membership of the critic on message author rating, $F(1, 256) = 40.53, p < .001, \eta^2 = 0.14$. Confirming Hypothesis 1, commenter evaluations were more positive in the ingroup condition ($M = 3.86, SD = 1.23$) than the outgroup condition ($M = 2.93, SD = 1.10$). Hypothesis 2 was again not supported. Neither the main effect of presented norm on commenter rating was significant $F(1, 256) = 2.22, p = .138, \eta^2 = 0.01$, nor was the interaction effect between group identity of critic and presented norm on message author perception, $F(1, 256) = 1.92, p = .167, \eta^2 = 0.01$.

To test the behavioral ISE, we included intent to participate, video watch time, and Veganuary evaluations in our model. We first tested participation by coding whether participants indicated actively supporting Veganuary (i.e., requested additional information on and sought to participate; 0: no or mixed; 1: both yes; descriptive patterns were consistent for each item but tests were non-significant, $p = .150$ and $p = .193$). In line with our predictions (Hypothesis 1), participants receiving criticism from a fellow meat eater more often indicated their active engagement (no/mixed: 55%, yes: 45%) than participants receiving the same criticism from a vegan (no/mixed: 68%, yes: 32%), $\chi^2(2, N = 260) = 4.66, p = .031, \phi = 0.134$.

We then calculated each participant's total video watch time and entered this variable into our two-way ANOVA. Some participants had implausibly long video watch times (>414 s), leading us to conclude that they did not complete these final measures in the survey during their initial participation. We thus excluded eight further participants from this analysis. Neither Hypothesis 1 nor Hypothesis 2 were supported. We observed no effects of comment source on video watch time, $F(1, 248) = 0.23, p = .633, \eta^2 < 0.01$, presented norm, $F(1, 248) = 0.26, p = .610, \eta^2 < 0.01$, or interaction effect on video watch time, $F(1, 248) = 0.12, p = .733, \eta^2 < 0.01$.

Entering "Veganuary" ratings as dependent variable showed a significant main effect of group membership of the critic on "Veganuary" rating, $F(1, 256) = 10.74, p = .001, \eta^2 = 0.04$. Supporting Hypothesis 1, ratings were more positive after reading the ingroup comment ($M = 5.38, SD = 0.12$) than the outgroup comment ($M = 4.77, SD = 0.14$). Hypothesis 2 was again not supported. No main effect of presented norm, $F(1, 256) = 0.03, p = .875, \eta^2 < 0.01$, or group identity of critic \times presented norm interaction emerged, $F(1, 256) = 0.57, p = .452, \eta^2 < 0.01$.

4.2. Exploring Moderators

We then conducted Johnson-Neymann analyses to explore whether participants' reported identification with the group of meat eaters or their willingness to engage in environmentally friendly behavior would moderate the observed intergroup sensitivity effect. Reported identification as a meat eater was only correlated with comment author ratings but none of the other dependent measures (Table 1). The commenter group membership \times reported identification interaction was not significant for any of the dependent measures, all $ps > .80$. However, Johnson-Neymann analyses indicated that the ISE on motive, author ratings, and Veganuary evaluations was significant only for those moderately or weakly identified as a meat eater but not for those highly identified: motive below 6.01, author ratings below 5.42, and Veganuary evaluations below 4.06 on our 7-point scale. The ISE effects on threat and requesting additional information did not change across reported identification. In all, identification had no consistent impact on the observed ISE.

Table 1. Correlation table.

	1	2	3	4	5	6	7
1. Message motive	1	-.493 **	.603 **	.282 **	.097	.075	-.009
2. Message threat		1	-.583 **	-.174 **	-.011	-.063	-.083
3. Commenter ratings			1	.349 **	.057	.193 **	-.016
4. Veganuary ratings				1	-.024	.003	.022
5. Video watch times					1	-.029	-.097
6. Group identification						1	-.026
7. Environmental willingness							1

Note: ** $p < .01$ (2-tailed).

Participant willingness to engage in environmentally friendly behaviors was not correlated with any of the dependent measures (Table 1) but moderated intergroup sensitivity, such that only participants reporting moderate-to-high willingness exhibited the ISE. There was a significant interaction effect on author ratings, $p = .04$, but this interaction was not significant for any of the other dependent measures, all $ps > .06$. However, Johnson-Neymann analyses quite consistently indicated that the ISE was significant for those reporting moderate-to-high willingness to engage in environmentally friendly behavior but not significant for those reporting low willingness. On our 7-point scale The ISE was significant for willingness scores above 4.04 for motive, above 2.86 for threat, above 4.29 for author ratings, and above 4.06 for Veganuary evaluations. The ISE effects on requesting additional information were significant for medium-to-high willingness to engage in environmental behavior (5.18, 6.42). In sum, we observed weak but consistent exploratory evidence that only those willing to engage in environmental behavior exhibit the meat-eater ISE.

5. Discussion

Eating meat leads to substantial greenhouse gas emissions and is a behavior that is fully under the control of each individual. Dietary change can thus make substantial and immediate contributions to combating climate change. In the current study, we argued that eating meat represents an important part of peoples' social identity and that calls for reducing meat consumption should thus be more effective from fellow meat eaters than from vegans (i.e., we expected an intergroup sensitivity effect according to peoples' dietary groups). Consistent with this view, Hypothesis 1 was supported. We observed that meat eaters viewed critical messages regarding their diets as more constructive and less threatening when they were voiced by fellow meat eaters than when the same message was from a vegan commenter. This effect was also observed in attitudes towards an NGO promoting dietary change and, somewhat more inconsistently, in behavior. While we

observed a behavioral ISE in requesting further information about the NGO, we did not observe this effect in video watch times.

We observed very limited support for the influence of societal norms as well as the predicted comment source \times societal norms interaction (Hypothesis 2). Exploratory moderation analyses indicated no consistent support for the role of social identification in the ISE but showed that a general willingness to engage in environmentally friendly behavior may *increase* the ISE. Taking into account the message source may thus be particularly important when addressing those who are most likely to change their behavior.

6. Conclusions

6.1. Theoretical Contribution

We provided a group-processes perspective on peoples' sustainable dietary choices. Although nutrition may be considered a highly private matter, social group membership had a pronounced impact on peoples' defensiveness and behavioral support for dietary change. Our work thus confirms that the psychology of sustainability is inherently collective and thus requires taking social identity processes into account [51]. However, while existing accounts highlight the role of social identity processes for behavioral choice, our research considers the communication between members of different groups, see also [52,53]. Environmental behavior often hinges on societal decisions, such as providing infrastructure, and investigating the communication processes between groups is therefore an important contribution.

The ISE has usually been observed with highly salient social groups, such as nationality, college, or religion. In the current research, we demonstrated this effect using a group membership according to a relatively private behavior, eating. Apparently, the ISE is not specific to publicly known group memberships but represents a basic phenomenon related to social categorization. In fact, reported identification as meat eaters was relatively low among our participants. This would indicate that strongly identifying with one's group is a less important precursor of the ISE than previously assumed; it suffices to perceive group boundaries. In line with this statement, recent research has observed behavioral consequences of intergroup sensitivity even among bystanders who are members neither of the source nor the target group of criticism [23,28]. These findings bolster our alarming conclusion that societal debates on reducing meat-consumption elicit defensiveness and rejection even when people are not strongly attached to their position. In fact, our exploratory analyses show that those who are open to environmentally friendly behavior were most likely to show the ISE.

Moreover, past ISE research has largely used broad, abstract criticism such as describing a national group as uneducated or racist. In the current research, the criticism used was quite concrete, that is, a call to reduce meat consumption. Our research thus contradicts the recent finding that the ISE was more pronounced for abstract moral than concrete competence criticism [54]. A key difference could be that the criticism used in our research targeted the behavior foundational to the criticized group, eating meat. This may also explain why social identification, which was quite low in the sample, had a limited impact on the observed effects. Beyond the specifics of the social identities used, nutrition can be considered a very personal matter. Criticizing such personal behavior could thus be viewed as counter-normative in itself, independent of the commenter identity. In all, the ISE seems to be a ubiquitous phenomenon across a range of social situations that hinders a critical exchange of ideas between (sub-) groups within our societies.

6.2. Practical Contribution

The climate crisis is a reality, and humanity has little time left to act [45]. It is therefore key to identify effective interventions that are scalable. We believe that our research can contribute to devising such interventions. We observed that seemingly subtle factors can have a substantial influence on message effects: It is not only important to devise convincing messages in terms of message content to target important individual-level

barriers to changing meat consumption behavior [55]; it is equally important to understand the social groups that underlie the message source and recipients [24].

One approach could be to avoid “maximal demands”, such as calling for widely adapting vegan diets [56]. To blur group boundaries, it may be more effective to call for meat reduction. For instance, the initiative *Halbzeit-Vegetarier* (“halftime vegetarian”) encourages people to find a partner and then eat meat-free on alternating days. Besides blurring the group boundaries, this should also lead people to discuss the issue collaboratively and within-group (i.e., among meat eaters). Our research suggests that such discourse would be highly fruitful.

Although such less ambitious interventions may be more effective in the short run, they may be insufficient in the long run. The key question in convincing people to adopt a vegan diet then becomes how we can break the cycle of criticism and defense. Our research provides process insights to attain this: Public messaging may not need to be less ambitious, as long as the right communicators are chosen. This key take-away from our research can easily be implemented in ongoing media campaigns on a large scale.

6.3. Limitations and Future Research

Our sample provided sufficient power to test our hypotheses but comprised students and working adults who were predominantly female. Past research has observed the ISE using samples more representative of the general population [25], across a range of cultures [26,57,58], and in all genders [23,28]. Past research has observed gender differences in attitudes towards veganism and meat consumption [59]. However, including gender as a covariate in our model did not change the reported effects. We thus assume that the observed results will generalize to populations with a greater gender balance.

Our norm manipulation was adapted from past research but had a limited impact on our dependent measures (i.e., descriptive results were in the expected direction but no significant differences emerged), providing weak support for Hypothesis 2. Potentially, the order of the manipulations decreased the normative impact. Participants viewed the criticism after the norm induction, thus leading to a more immediate impact of criticism on responses. Moreover, our supportive norm manipulation indicated that a growing minority adheres to a meat-free diet. A stronger manipulation indicating that a majority adheres to such a diet could yield larger effects, although such a statement would be factually incorrect and thus would require further deception.

In line with our findings, a number of recent studies did not observe beneficial norm effects [60–62] or even reported that norms may backfire [63]. Apparently, the activation of social norms does not always influence behavior, depending on individual and situational factors. For instance, social norm interventions had a greater effect on people scoring high on agreeableness, extraversion, and conscientiousness and low on openness [64]. Other research found that norms had a greater impact on behavior when phrased as an invitation to work together [65]. Alternatively, the violation of a general norm of not criticizing other groups may trump other normative signals, such as the dietary behavior of other citizens. Two recently registered reports support such a normative account of intergroup sensitivity [23,28], indicating that intergroup criticism violates general conversational norms [29]. Accordingly, future research should investigate the role of the specific content and ordering of norm manipulations, as well as consider people’s individual sensitivity to them.

The observed effects of message source were quite consistent across different measures of message reception as well as behavior. Despite these consistent effects on important measures, a single instance of a critical message may oversimplify the reality of a societal discourse. For instance, targets of criticism likely respond to the allegations. Ascriptions of a constructive motive (e.g., when facing ingroup criticism) likely lead to more accommodating responses, leading to constructive debate. In contrast, ascriptions of an unconstructive motive (e.g., when facing outgroup criticism) likely lead to more hostile responses, potentially escalating into a cycle of defensiveness. Although our measure of requesting

additional information provides tentative support for this speculation, studies observing direct group interaction after voicing criticism are clearly needed. To evoke a lasting change in meat consumption, a combination of information and another intervention is likely needed. When people have the opportunity to discuss the received information, reservations and misconceptions can be addressed straight away [66,67], making behavioral change more likely. Along similar lines of reasoning, our study did not include a direct measure of meat consumption after viewing the criticism. This said, changing attitudes and intentions are important precursors of behavior change, and our research thus indicates that investigating the behavioral impact of public messaging campaigns on actual consumption is a fruitful avenue for future applied research.

Our comments promoted reducing meat consumption only via environmental appeals. This kind of dietary change also has great personal benefits, for instance, by promoting health and decreasing obesity [6]. Including these aspects in comments would play on the societal norms for healthy living [68] and rampant obesity bias [69], making them more “meat-aggressive”. The ISE has been observed for critical but not for neutral or positive messages [25]. We would accordingly assume that more “meat-aggressive” messages would increase the effect size of our comment source manipulation. We also did not distinguish between different types of meat, although the negative effects of meat consumption on the environment and personal health vary greatly [70,71]. For instance, red meat (i.e., beef and veal) has a greater carbon footprint than poultry [72]. The reduction of the consumption of a specific type of meat would therefore be most beneficial. Such an approach may be less effective, however, due to the added complexity level, which may present further hindrances to behavior change. Combining both personal and environmental benefits of reduced meat consumption in one message and referring to the consumption of specific types of meat are thus a fruitful avenue for future research.

In conclusion, although adopting a meat-free or meat-reduced diet is (a) under direct personal control and (b) has an immediate positive impact on managing the climate crisis, this personal behavior occurs in a societal context. As our research shows, this societal context is fraught with group boundaries and tacit communication rules of “who-says-what”. Well-meant advice thus easily elicits defensive rejection rather than facilitating behavior change. The key question in convincing people to adopt a vegan diet then becomes how we can break the cycle of criticism and defense. Our opening example is informative in this regard: Timo Hildebrand, a former soccer player and now owner of a vegan restaurant, invited Uli Hoeneß to come dine with him. Given their common history in football, Hoeneß accepted. Such invitations may help bring people together and facilitate lasting behavior change across group boundaries. After all, we can only resolve the climate crisis together.

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