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Less Meat Initiatives at Ghent University: Assessing the Support among Students and How to Increase It

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Received: 14 July 2017; Accepted: 26 August 2017; Published: 31 August 2017

Abstract: In this study, we conducted a survey among Business Administration students at Ghent University to assess their support for six less meat initiatives (LMIs) to be implemented in student restaurants. We examined associations between the support and variables related to meat curtailment and additionally examined the effect of providing information about the climate impact of meat on the support for the LMIs. We find that the support is rather limited among the students we surveyed. Students have different appraisals of the different LMIs, which may be due to differences in intervention strength and types of meat curtailment. We found that higher environmental concern is associated with a higher support for all LMIs. Female students and students with lower meat consumption levels indicate a higher support for four of six LMIs. Simply providing information about the climate impact of meat had no remarkable effect on the support. More integrated approaches are recommended to inform students.

Keywords: meat curtailment; less meat initiatives; climate change mitigation; information intervention; student survey

1. Introduction

The global rise of meat consumption in the human diet is increasingly regarded as unsustainable [1–4], compromising the welfare of humans, animals and the environment [5–9]. Many authors therefore highlight the necessity and urgency of a worldwide dietary transition towards meat-reduced diets [2,3,5,7,8]. At the same time, socially innovative projects have been initiated in many Western countries to mobilize consumers to eat less meat. Prominent examples of such less meat initiatives (LMIs; [8]) include the Belgium town of Ghent's pioneering Meatless Thursday and the Meatless Mondays that originated in the US [8,10]. Although there is evidence that these LMIs are replicating and scaling-up, Morris et al. [8] argue that LMIs are not able to translate the idea of eating less meat into mainstream thinking in any significant way, mainly because LMIs are regarded as being too radical. The idea of eating less meat contrasts strongly with the central position of meat in today's Western food culture, which rests on an evolutionary and cultural legacy [11]. Hence, the importance of incremental approaches is often emphasized. An additional reason that may explain the reluctance of consumers to change their meat eating habits, is that they are largely unaware of its environmental damage [12–17]. This is also reflected in the fact that motivations to reduce one's meat consumption rarely include environmental concerns [18,19]. Therefore, several authors emphasize the need to better inform people about the environmental impact of current meat consumption trends [12,16,17].

2. The Present Study

The aim of the present study is threefold: (1) to assess the support for LMIs among Business Administration students at Ghent University (Flanders, Belgium); (2) to examine associations between the support and four variables related to meat curtailment as pro-environmental behavior, and; (3) to examine the effect of providing information about the climate impact of meat on the support for the LMIs. In the following, we will provide background of these aims and elaborate on what we will investigate.

2.1. LMIs at Ghent University: Assessing the Support

Ghent University places sustainability high on its policy agenda [20] and uses incremental approaches to achieve a sustainable university in the year 2030. A transition pathway for sustainable nutrition was developed, and less meat initiatives (LMIs)—here defined as "initiatives that may facilitate a transition towards a more sustainable regime of meat provisioning" [8]—are an integral part of it. Table 1 provides an overview of six LMIs proposed by Ghent University to be implemented in student restaurants over different time frames [21]. In this study, we surveyed Business Administration students at the university to assess their support for these LMIs, but we changed the way the LMIs were formulated in our survey to facilitate a better understanding. As we will frequently refer to the different LMIs, each LMI is given an acronym (see Table 1).

Table 1. The proposed less meat initiatives (LMIs) with corresponding terms, formulations in our survey and acronyms.

LMI (Ghent University)	Term	LMI (Formulation in the Survey)	Acronym
Sustainability barometer	2013	*"Presenting the ecological footprint for every main meal (in the same way as the amounts of calories for every meal is presented now)."*	E
Eating beef once a week at maximum	2014	*"Eating beef or mutton once a week at maximum."*	M
Introducing alternative foods, such as insects	2015	*"Introducing insect-based foods (lower environmental impact than meat)."*	I
Portions of 100 g instead of 120 g meat per meal	2015	*"Reduce your portions of meat per meal (for example, 100 g instead of 120 g)."*	P
50% vegetarian meals and 50% meals with meat or fish (including snacks)	2020	*"Increase the supply of vegetarian main meals up to 50% of the meals."*	V
The contrarian week (four out of five days a week only vegetarian meals)	2030	*"Switching to a 'contrarian week' in student restaurants whereby meals with meat are served one day a week, and vegetarian meals four days a week."*	C

Note: Sustainability barometer (E); Eating beef once a week at maximum (M); Introducing alternative foods, such as insects (I); Portions of 100 g instead of 120 g meat per meal (P); 50% vegetarian meals and 50% meals with meat or fish (including snacks) (V) and; the contrarian week (four out of five days a week only vegetarian meals) (C).

Although all LMIs are considered as strategies for meat curtailment, a distinction can be made between direct and indirect LMIs. Direct LMIs directly pertain to forms of meat curtailment (LMIs M, P, V and C), which differ in terms of quality and quantity. Whereas a small piece of meat is about the quantity consumed (LMI-P), meatless meals (LMIs V and C) or curtailing environmentally burdensome meat types (LMI-M) is more like a qualitative choice [22,23]. As such, we expect to find a different support for the different LMIs. Indirect LMIs aim to promote meat curtailment in a more implicit fashion. The sustainability barometer (LMI-E) presents the ecological footprint of every meal in student restaurants. The goal of presenting the ecological footprint for every meal is to encourage students to think about the environmental impact of their eating habits to inform their decision-making. This is an indirect LMI because meals that include meat will generally have a higher ecological footprint compared to vegetarian meals. The introduction of insect-based foods (LMI-I) is an indirect LMI because insect protein is considered a (more) sustainable substitute for meat [23–25]. However, a high

aversion towards insects is widespread in Western culture [3,26], including Flanders [17,26], which is why we expect a low support for this LMI.

2.2. The Influence of Explanatory Variables

To gain insight in the support for the LMIs among students, we will examine four variables related to meat curtailment as a type of pro-environmental behavior: general environmental concern, knowledge about the impact of meat, sex and meat consumption frequency. These variables are presented in more detail below, including their respective relations to the support for the LMIs and corresponding hypotheses.

General Environmental Concern—Meat consumption is linked to various environmental problems, so meat curtailment can be understood as pro-environmental behavior. Feelings of concern about the environment are an important condition for performing such behavior [27–30]. Because the LMIs are framed as promoting sustainability at the university, we assume that students that are more concerned about environmental problems will be more willing to support the LMIs.

Knowledge about the Negative Impact of Meat (KNIM)—The current consumption of meat is inextricably associated with environmental problems, animal welfare issues, diseases of affluence and inequitable global food distribution [24]. Someone who has no knowledge about the negative impact of meat consumption does not have the ability to act based on this knowledge. Therefore, it is assumed that students who have greater knowledge about the negative impact of meat consumption are more willing to support the LMIs.

Sex—There are several reasons to believe that female students are more willing to support the LMIs. Women generally exhibit a greater concern for environmental and social problems than men do, and research into sustainable consumption shows that women are more likely to consume sustainably [31]. Sex also has an important influence on meat consumption patterns [25,32–34]: women are more often vegetarian than men, eat smaller amounts of meat, eat less red and processed meat and are generally more willing reduce their meat consumption [25,34,35]. Women also report a higher environmental benefit of a more plant-based diet [16].

Meat Consumption Frequency—Higher meat consumption frequencies are linked with increased resistance and perceptual barriers towards the idea of eating less meat [36,37]. The most important barriers include the enjoyment of taste, social and practical convenience (e.g., difficulties in preparing vegetarian foods and breaking habits), perceived healthiness and value for money [9,18,34,38–40], whereas lower meat consumption is related to higher concerns about animal welfare and personal health [18,34,38]. Because of confirmation bias and motivated reasoning, we expect that regular meat eaters may be slower to recognize the importance and effectiveness of LMIs compared to students who already eat less meat [41]. Likewise, the low-cost hypothesis [42] predicts that LMIs impose lower behavioral costs to students who already consume less meat, so they may be more willing to support the LMIs.

2.3. The Influence of Information about the Climate Impact of Meat

We will additionally examine whether the support can be influenced by providing information about the environmental impact of meat. We focus on information as an intervention strategy because research on how information would influence meat eating patterns is very limited in general [12,32,43] and because awareness raising is considered as an important precondition for building acceptance of more invasive interventions [44]. As meat consumption is associated with a plethora of environmental problems [1,2,4], we decided to focus on the urgent issue of climate change. Although the potential of meat curtailment to mitigate climate change has received little attention in the past [45], several scholars argue that by eating less meat, greenhouse gas emissions could be reduced significantly [13,46,47]. For example, Stehfest et al. [47] estimated that a global transition towards a low-meat diet would reduce total mitigation costs by as much as 50% in 2050. Eating less meat is therefore often considered an easy, cheap and effective way to be more climate-friendly [45,48]. However, the question remains:

how does our population of interest—Business Administration students—respond to the option of eating less meat to mitigate climate change? Recent studies among consumers in Northern and Western Europe [12,13,15,41,45] show that, despite a scientific consensus that meat is very burdensome for the environment and the climate in specific, most people are unaware of the environmental impact of meat consumption [12,13,15,17,41]. However, even when presented with scientific evidence linking meat consumption and climate change, consumers may not accept this information as genuine or relevant environmental knowledge to change meat eating patterns [15,41]. Indeed, skepticism towards meat curtailment as a means to mitigate climate change is common among consumers. As the literature on the impact of the providing information about the climate impact of meat (or other impacts) is still in its infancy [12,13,15,41,45], we refrain from formulating a hypothesis about our experiment. To further contribute to this literature, we will additionally explore whether the effect of information differs when we take our four explanatory variables into account: general environmental concern, knowledge about the impact of meat, sex and meat consumption frequency.

3. Materials and Methods

3.1. Preparation and Dissemination

An online survey was constructed using Qualtrics and pretested by more than 10 persons. We distributed the survey using an online platform to a convenience sample of students who are doing a Bachelor of Science in Business Administration. Data were collected in two subsequent years, between mid-February and March 2015 (sample 1) and 2016 (sample 2). A total of 429 students took part in the survey (sample 1: 194 students; sample 2: 235 students; overall response rate: 42.6%).

3.2. Measures

Sex and Meat Consumption Frequency—First, we asked the sex of the students ("Male" coded 0 or "Female" coded 1) and how many days a week they eat meat with their main meal (1, 2, 3, 4, 5, 6 or 7). In sample 2, however, the latter question was rephrased and we asked how many days a week they eat fish or meat with their main meal (1, 2, 3, 4, 5, 6 or 7). Descriptive statistics reveal that the sample is biased to a higher share of females (mean (M) = 0.54, standard deviation (SD) = 0.50). Most students report eating meat (or fish or meat) with their main meal on an almost daily basis (sample 1: M = 5.21, SD = 1.65; sample 2: M = 5.76, SD = 1.79).

General Environmental Concern—Next, we asked students to report how concerned they are in general about environmental problems (−2 = Not concerned at all, −1 = Tend to be not concerned, 0 = Neutral, +1 = Tend to be concerned, +2 = Very concerned). We find that most students appear more concerned than not (M = 0.42, SD = 0.98). Almost half of the students (47.5%) indicate to tend to be concerned about environmental problems, whereas 6.5% report to be very concerned. About one third (31%) appears neutral, while a minority of students tend to be not concerned (12.5%) or not concerned at all (3%).

Knowledge about the Negative Impact of Meat (KNIM)—To assess the respondents' knowledge about the impact of meat consumption, we made a distinction between four themes based on the most prominent arguments that are used in LMIs [7]: the impact of meat consumption on the environment, animal welfare, health and global food distribution. We asked students to indicate how much they know about these themes using 5-point Likert items (−2 = Very little, −1 = Little, 0 = Not little/not much, +1 = Rather much, +2 = Very much). Table 2 provides an overview of the students' self-reported KNIM for the four themes. We find that the students' KNIM on global food distribution is significantly lower than for the other themes (Friedman χ^2 (3) = 98.04; $p < 0.001$ followed by post-hoc pairwise comparisons by using Wilcoxon signed-rank test with Holm-Bonferroni correction). About half of the students (51%) indicates to know little to very little about this impact. Because the knowledge of the students about the four themes show a high internal consistency (Cronbach's α = 0.85), the four Likert

items can be combined. Therefore, the scores of the Likert-items are averaged to include a general measure of KNIM into our data analysis.

Table 2. Students' knowledge about the negative impact of meat (KNIM) for the four themes, including means, standard deviations (*SD*) and percentages.

KNIM (Theme)	Mean ± *SD* (−2, . . . , +2)	Very Little	Little	Not Little/ Not Much	Rather Much	Very Much
Environment	−0.10 ± 1.03	9.79	24.48	36.83	24.24	4.66
Animal welfare	−0.16 ± 0.95	8.39	25.64	43.12	19.11	3.73
Health	−0.18 ± 0.93	8.16	26.81	41.96	20.75	2.33
Global food distribution	−0.49 ± 0.90	12.35	38.46	36.36	11.66	1.17

Information about Climate Impact of Meat—Each respondent had a 50% chance of receiving information about the climate impact of meat before assessing their support for the LMIs. In this way, we could distinguish two independent groups to ascertain whether providing information leads to a higher support. The information consisted of a fact sheet on the impact of meat on the climate, making clear that emissions of greenhouse gases can be reduced by eating less meat and that beef and mutton have significantly higher emissions costs than other meats (see online supplemental material for more details). We used a timer to measure the students' residence time on the page as we expected that the students receiving the information would not be equally motivated to process the information [49,50].

Support LMIs—In the last module, we introduced the LMIs with the following text: "Finally, we want to assess the support for a sustainable meat consumption. We do this based on proposals formulated by Transition UGent. This is a bottom-up movement which aims to turn UGent (i.e., Ghent University) into a sustainable university by 2030. Proposals were formulated for a short term (next 1–2 year), a middle term (5 year) and a long term (proposals for 2030)." We asked the students to what extent they agree or disagree with the six LMIs, as formulated in our survey (see Table 1). The students did not see the terms for each LMI. In order to verify the support for the LMIs, we used 5-point Likert items (−2 = Strongly disagree, −1 = Tend to disagree, 0 = Neutral, +1 = Tend to agree, +2 = Strongly agree). All the questions in the survey were mandatory and different answer options were randomized.

4. Results

4.1. Assessing the Support for LMIs

Figure 1 provides an overview of the appraisal of the LMIs in decreasing order of support. In general, the support for the LMIs proposed is rather limited among the university students we surveyed. The difference in support between the six LMIs is highly significant (Friedman χ^2 (5) = 516; $p < 0.001$), and a post-hoc analysis reveals that the support is significantly different for all pairwise comparisons of the LMIs ($p < 0.01$ for all). Post-hoc analysis was based on Wilcoxon signed-rank tests using the Holm-Bonferroni method to counteract the problem of multiple comparisons.

The LMI to present the ecological footprint for every main meal in student restaurants (LMI-E) and the LMI to reduce the portions of meat per meal (LMI-P) are the most popular ($Q_2 = 1$; $Q_3 - Q_1 = 1$), with a large majority of students who agree (resp. 59% and 58%). However, students are less neutral and more often disagree with LMI-P compared to LMI-E.

Then there is a significant change in the support of the LMIs. The appraisal of the LMI to increase the supply of vegetarian main meals up to 50% of the meals in student restaurants (LMI-V) and the LMI to eat beef or mutton once a week at maximum (LMI-M) show a similar valence pattern ($Q_2 = 0$; $Q_3 - Q_1 = 2$), with a majority of students who disagree (resp. 38% and 46%), and around a third who agree (resp. 34% and 33%). The LMI to introduce insect-based foods (LMI-I) and the contrarian week

(LMI-C) are the least popular ($Q_2 = -1$; $Q_3 - Q_1 = 2$), with a large majority of students who disagree (resp. 54% and 68%). Students are less neutral and less often agree with LMI-C compared to LMI-I.

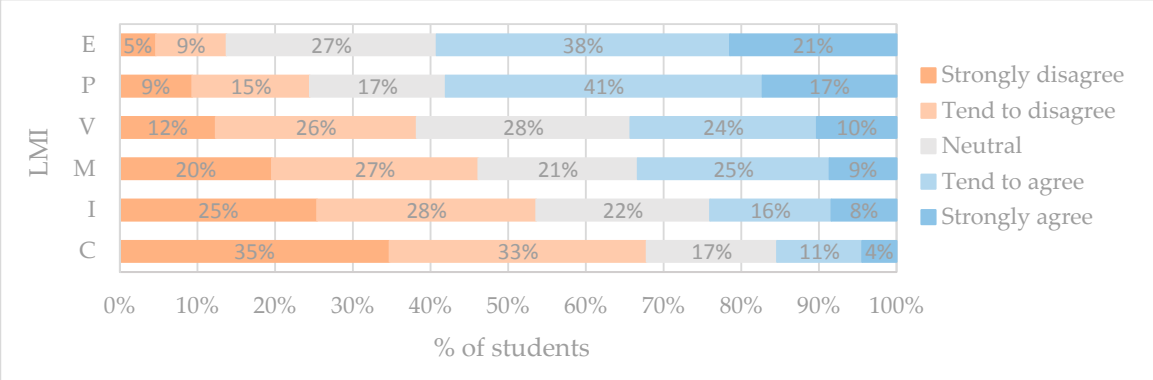

Figure 1. Overview of the appraisal of the LMIs ($N = 429$).

Correlation analysis (Table 3) reveals that all rank correlation coefficients (Spearman) are positive, but differ in size. For LMIs M, P, V and C, correlation coefficients range between 0.38 and 0.58, whereas correlation coefficients for LMI-I never exceed 0.24. For LMI-E, correlation coefficients range between 0.19 and 0.39. These differences in appraisal confirm that the direct strategies for meat curtailment (M, P, V and C) are different from the indirect strategies (E, I).

Table 3. Spearman rank correlations between the appraisals of the different LMIs.

	E	P	V	M	I	C
E	-					
P	0.39	-				
V	0.34	0.52	-			
M	0.27	0.52	0.38	-		
I	0.19	0.17	0.18	0.13	-	
C	0.24	0.38	0.58	0.40	0.24	-

Note: all p-values < 0.001.

4.2. The Influence of Explanatory Variables

Table 4 provides an overview of the relationship between the selected explanatory variables and the appraisal of the LMIs, based on partial Spearman rank correlations (with information about the impact of meat as a dummy variable). The support for the LMIs (or a lack thereof) seems to be most persistently associated with a concern for environmental problems: a higher concern is correlated with more positive appraisals of all the LMIs (each $p < 0.001$). A higher KNIM is also significantly (but less strongly) associated with more positive appraisals of all LMIs, except for LMI-M. When looking at the four components of KNIM individually, associations with knowledge about the impact of meat on the environment are most persistent.

Higher appraisals of the direct strategies for meat curtailment (LMIs M, P, V and C) are highly significantly associated with sex and meat consumption frequencies: female students and students who eat meat (or fish) with their main meals less often are more willing to support these LMIs (in every case $p < 0.001$). On the other hand, the LMI to introduce insect-based foods (LMI-I) is appraised more positively among male students ($p < 0.001$).

Table 4. Partial Spearman rank correlations (N = 429) between explanatory variables and the appraisal of the LMIs controlling for receiving additional information on the climate impact of meat.

Explanatory Variables	E	P	V	M	I	C
Sex (male = 0, female = 1)	−0.01	0.32 ***	0.21 ***	0.23 ***	−0.19 ***	0.16 ***
Meat consumption (sample 1, N = 191)	−0.09	−0.26 ***	−0.30 ***	−0.25 ***	0.02	−0.33 ***
Meat consumption (sample 2, N = 238)	−0.06	−0.24 ***	−0.25 ***	−0.18 **	0.11	−0.23 ***
General environmental concern	0.37 ***	0.38 ***	0.29 ***	0.20 ***	0.20 ***	0.22 ***
KNIM (general)	0.13 **	0.16 ***	0.20 ***	0.04	0.22 ***	0.18 ***
- environment	0.19 ***	0.19 ***	0.21 ***	0.04	0.29 ***	0.18 ***
- animal welfare	0.05	0.15 **	0.12 *	0.05	0.10 *	0.08
- health	0.11 *	0.10 *	0.16 ***	0.05	0.15 **	0.17 ***
- global food distribution	0.07	0.06	0.10	−0.03	0.13 **	0.09

Note: $p < 0.1$; * $p < 0.050$; ** $p < 0.010$; *** $p < 0.001$.

4.3. The Influence of Information about the Climate Impact of Meat

About half of the students (N = 207 vs. N = 222) received information about the climate impact of meat before the support of the LMIs was measured. We found that the information appears to have no effect on the support for the LMIs, except for LMI-C, where there is a significant *negative* effect of information (U = 20,197; p = 0.024). Providing information, however, does not necessarily imply that students are equally motivated to process it. The students' residence times on the page with the fact sheet give an indication of their motivation to seek and process information: the residence times exhibit a large variation (M = 33 s; SD = 30 s), which is skewed to the right (Q_1 = 14 s; Q_2 = 28 s; Q_3 = 43 s). For example, about 12% of the students only spend 4 s or less on the page before submission. Spearman rank correlations reveal that, students with higher residence times are more likely to support the four LMIs that are most popular: LMI-E (ρ_s = 0.36; $p < 0.001$), LMI-M (ρ_s = 0.26; $p < 0.001$), LMI-P (ρ_s = 0.22; p = 0.001) and LMI-V (ρ_s = 0.19; p = 0.006) compared to LMI-I (ρ_s = 0.13; p = 0.070) and LMI-C (ρ_s = 0.07; p = 0.351).

To study the relationship between the effect of information and our four explanatory variables on the appraisal of the LMIs, we performed Scheirer-Ray-Hare tests (non-parametric equivalent of two-factor ANOVA with replication) for each sample (1 and 2) separately. However, as we did not find any significant interactions, we decided not to report any results.

5. Discussion

5.1. Assessing the Support for the LMIs

The support for the proposed LMIs among the sample of Business Administration students we surveyed is rather limited. This result is in line with previous research showing that many consumers do not seem ready to eat less meat [3,7,36]. However, there are important differences in the appraisal of the six LMIs. In order to discuss the support of the LMIs in greater detail, we will make a distinction between the direct LMIs (P, M, V and C) and the indirect LMIs (E and I). The results of our correlation analysis (Table 2) indicate that this distinction is relevant.

Direct LMIs—Students showed different levels of appraisal of the different direct LMIs. The most popular direct LMI was the short-term LMI to reduce the portions of meat per meal (LMI-P). Reducing portions of meat was also found to be a popular sustainable food behavior in previous studies [17,23]. LMI-P is probably more often perceived as an LMI that is not too inconvenient or costly [42]. The short LMI to eat beef or mutton only once a week (LMI-M) was far less popular than the short-term LMI-P and even received less support than the medium-term LMI-V. The predominant negative appraisal of this LMI contradicts findings of Vanhonacker et al. [17] that showed a high willingness among Flemish consumers to switch to meat types that have a lower environmental impact. This was perceived as a good, realistic and acceptable strategy to promote dietary sustainability. This contradictory finding may be due to the impact of framing (see also Section 5.4). The medium-term LMI to increase the offer

of vegetarian in student restaurants up to 50% of the meals (LMI-V), and the long-term LMI to switch to a contrarian week (LMI-C) both promote meat curtailment by consuming meatless meals more often, but differ in intervention strength. Likewise, the appraisal of both LMIs is highly correlated ($\rho_s = 0.58$; $p < 0.001$) and overall negative. Whereas LMI-C is very unpopular among students, the appraisal of LMI-V is better described as ambivalent: more than two thirds of the students oppose to LMI-C compared to 38% in the case of LMI-V. These results are not surprising given the fact that most students eat meat (and/or fish) almost on a daily basis. Based on previous literature, it can also be assumed that vegetarian meals are relatively unknown among students, and that students tend to value meat more than plant-based products [25,51].

Indirect LMIs—Students showed different appraisals of the two indirect LMIs. The initiative to present the ecological footprint for main meals in student restaurants (LMI-E) is the most popular LMI among students. This is unsurprising given the low intervention strength of this LMI. The initiative to introduce insect-based food (LMI-I) is largely opposed by the students. This result is in line with recent studies in Flanders and the Netherlands, where respondents reported a low willingness to consume insects [13,17,26,51]. As we mentioned, a high aversion towards insects is widespread in Western culture [3], including Flanders [17,26], which poses a major barrier to the adoption of insect-based foods [3,26].

5.2. The Influence of Explanatory Variables

General Environmental Concern—Of the four explanatory variables we included in our study, we found that a general concern for environmental problems was most persistently associated with the support of the LMIs. In our study, all the LMIs were framed as supporting a transition towards sustainable meat consumption. This may explain why students who reported higher concern for environmental problems are more willing to support the LMIs. However, despite the fact that most students report to be rather concerned about environmental problems, the support for the LMIs is rather low, suggesting that students experience less environmental concerns pertaining to the LMIs. Therefore, we assume that promoting environmental concern related to the LMIs would increase the willingness to support them—but see Takács-Sánta [52] for a systematic review of the most important barriers hindering the establishment of environmental concern.

KNIM—Correlation analysis showed that the appraisals of all the LMIs (except LMI-M) are positively associated with a higher KNIM, in particular knowledge about the environmental impact. However, when controlling for the other variables using proportional odds regression models, we found that the relationship between KNIM and the appraisal of the LMIs is less strong. This may be because KNIM is weakly correlated with our measure for general environmental concern ($\rho_s = 0.33$; $p < 0.001$). The weakened relationship in the regression models can be understood by the assertion of Ractliffe [29] that without concern, knowledge has no catalyst to act.

Meat Consumption Frequency—We found that meat consumption frequencies were only associated with the appraisals of the direct strategies for meat curtailment (LMIs M, P, V and C): students who already consume less meat are more likely to support these direct LMIs. These students are more likely to experience less perceptual barriers and loss aversion when confronted with these LMIs. Because LMIs E and I are indirect strategies for meat curtailment, they are unlikely to increase resistance because of ideas related to consuming less meat. Therefore, it should not be too surprising that meat consumption frequencies were not associated with the appraisal of these LMIs.

Sex—For the explanatory variable sex, we found similar patterns in the appraisal of the LMIs as for meat consumption frequencies: female students were more willing to support the direct strategies for meat curtailment (LMIs M, P, V and C) but not the indirect strategies. This finding confirms the influence of sex on (ideas about) meat consumption as evidenced by multiple studies that found that females (a) generally exhibit a higher willingness to eat less meat [16,19,25], (b) are more in favor of eating smaller portions, LMI-P [33,51], and (c) have greater aversion to red meat, such as beef and mutton, LMI-M [33,35]. However, we also found that female students are significantly less interested

in LMI-I compared to male students. This finding is in line with several other studies that reported a lower willingness among females to eat insects [26,51,53], probably because females are generally more sensitive to feelings of disgust [54] or because they may have a less adventurous taste orientation compared to males [26,51].

5.3. The Influence of Information about the Climate Impact of Meat

In our study, providing information about the climate impact of meat has no effect on the appraisal of the LMIs, or may even have a negative effect (LMI-C). This result is in line with a number of previous studies, where the idea of eating less meat to mitigate climate change received a lot of resistance [12,13,15], and may even be counterproductive [13]. Perhaps a general reluctance to support LMIs, despite awareness of the climate impact of meat, is not too surprising given the high levels of meat consumption of most students in our sample and the role meat traditions play in Western culture. We did not find differences in the effect of information when controlling for the other explanatory variables: sex, general environmental concern or KNIM was not associated with the effectivity of information on the willingness to support LMIs.

An interesting finding, however, is that the students who received the fact sheet on the climate impact of meat, show a wide range of residence times on that page. When we consider these residence times, we observe that (1) a considerable number of students exhibit very low residence times, and (2) higher residence times are associated with more positive (or less negative) appraisals of the LMIs that are more popular: LMIs E, P, M and—to a lesser extent—V. One way to interpret these residence times is by assuming that they indicate a motivation to process information. Higher residence times may indicate a higher motivation to process information, while very low residence times may indicate information avoidance. Avoidance of information related to meat issues is not uncommon [36,49,50,55]. Many people have conflicting thoughts about meat: they love eating meat, but they also do not like its harmful impact (e.g., on animal welfare, health or the environment). Conversely, students who do not avoid the information and take more time to process it may deal with conflicting thoughts more effectively by adopting more positive attitudes towards LMIs [50]. Since more popular LMIs are expected to cause less perceptual barriers, information in favor of LMIs may override barrier perceptions related to these LMIs more easily, explaining the more positive appraisals of LMIs E, P, M and V. However, the explanation for the association between higher residence times and more positive appraisals of LMIs E, P, M and V may not be as straightforward as other explanations—for example, confounding variables that explain both higher residence times and more positive appraisals of the LMIs—cannot be dismissed. Unfortunately, our study does not allow to confirm one of both explanations as our survey did not include questions on how students appreciated the fact sheet. The only significant association between the students' residence times and any of our explanatory variables was the association between residence times and meat consumption in sample 1—which points, to some extent, in the direction of motivated reasoning and strategic ignorance. In conclusion, it is difficult to establish the impact of providing information on the climate impact of meat on the appraisal of the different LMIs included in this study.

The results of our information intervention are consistent with previous findings [12,13,15], suggesting that more integrated approaches should be considered to change eating habits. Informational strategies may benefit from combining multiple food-related values people can easily identify with, such as their own health, food quality and variety seeking and animal welfare [13,22] and from tailoring this information to the motivations of specific consumer segments [56]. Structural strategies facilitating meat curtailment should help to reach consumers without triggering avoidance mechanisms [13,15,30,36]. Indeed, we expect intervention strategies to be most effective when information strategies are implemented within a situational context where meat curtailment is relatively convenient and not very costly—in terms of money, time, effort and/or social disapproval [30,44]. The sector of sustainable public catering seems especially suitable to satisfy this purpose [57,58], because of its great potential in shaping the conditions for sustainable food consumption [39,58].

By choosing different meals, pricing policies and communication strategies, caterers can influence consumption routines to endorse more sustainable food practices, which may also influence private consumption practices [57].

5.4. Limitations

Our research is prone to a number of limitations that have a potential impact on the quality of our findings. A first limitation is that our study is based on a convenience sample of Business Administration students. Generalization of the findings is therefore limited by the scope of this study, the sampling method and characteristics of the sample. For example, we found that our sample is biased towards a higher preference for right-wing political parties, which is known to be associated with favouring current meat traditions [34], therefore disfavouring LMIs.

When assessing the appraisal of the different LMIs in our study, we must acknowledge the impact of framing—namely, the way the different LMIs were formulated may have influenced the appraisal of the students. For example, the high support for LMI-P may partly be explained by suggestion (anchor point), while the low support for LMI-M, on the other hand, may partly be explained by the clear restriction on consumption LMI-M poses. Next, we made use of single-item variables, which are potentially biased in terms of reliability and validity. Therefore, it is particularly important to be cautious with their interpretation. Nevertheless, this approach is widely used in studies of environmental attitudes (see e.g., [13,16,17,39]). We also recommend to assess knowledge about positive aspects related to meat consumption besides negative ones (KNIM) to provide a more balanced understanding of the relationship between prior knowledge and the appraisal of LMIs.

Finally, we consider two limitations related to the information intervention in our study. First, when exploring the effect of information on the climate impact of meat on the appraisal of LMIs, we did not assess the role of beliefs about climate change. In hindsight, however, we do believe that the possibility of climate skepticism should have been accounted for. Second, while higher residence times may indicate a higher motivation to process information, as we assumed in our discussion, alternative explanations for differences in residence times are possible: distraction, technological influences, prior knowledge, and so forth. Because we are unfamiliar with the circumstances in which the students took the survey, we cannot provide further insights about this issue.

6. Conclusions

We conclude that the support for the proposed LMIs is rather limited among the students we surveyed. Students have different appraisals of the different LMIs, which may be due to differences in intervention strength and types of meat curtailment. Regarding our explanatory variables, our main findings are that higher general environmental concern is associated with a higher support for all LMIs, and that female students and students with lower meat consumption levels indicate a higher level of support for four of six LMIs. These findings may inform intervention strategies to promote LMIs. Although increased efforts are needed to raise awareness about the climate impact of meat, we found that providing information about the meat-climate issue had no remarkable effect on the support of students. More integrated approaches should be explored to promote meat curtailment.

Supplementary Materials: The following are available online at www.mdpi.com/2071-1050/9/9/1550/s1. The online supplementary materials include details on the impact of meat on the climate that was presented to about half of the respondents (Section 3.2).

Acknowledgments: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author Contributions: Benjamin De Groeve and Brent Bleys conceived and designed the experiments; both authors performed the experiments, analyzed the data and contributed analysis tools. Benjamin De Groeve wrote the paper with Brent Bleys providing guidance and suggestions. All authors have read and approved the final manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

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