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Green light for climate-friendly food transitions? Communicating legal innovation increases consumer support for meat curtailment policies

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Abstract

In light of increasing calls for environmental policies that reduce meat consumption and promote more plant-based diets (i.e., Meat Curtailment Policies, MCPs), this study aimed to increase knowledge on how consumers may react to these policies. Participants (N=784) were randomly presented with a small real news piece about an actual law approval referring to a MCP, or assigned to a no-information control condition. The study measured a set of ideological and consumption variables, and support for MCPs. Participants with increased pro-environmental ideology were more positive toward MCPs, whereas participants who endorsed human supremacy beliefs, and who were more attached to meat consumption, were less supportive of MCPs. Despite these associations, reading about the law approval increased participants' support for MCPs irrespectively of individual differences in ideology and consumption. This suggests that communicating legal innovation on the topic may be used to increase support for policies that promote more plant-based diets.

Keywords: Meat consumption, plant-based diets, environmental policy, consumer support, sustainable consumption.

1 INTRODUCTION

Food systems are increasingly identified as raising key challenges and opportunities for the achievement of the UN Sustainable Development Goals (IFPRI, 2016; UN, 2015). Although these systems feed and support human life on Earth, they are also responsible for 25%-33% of global greenhouse gas emissions (GHG) and critical drivers of biodiversity loss, destruction of hydric resources, deforestation and land degradation, which comprise of serious threats to the safe operating space of “planetary boundaries” (Clark & Tilman, 2017; Garnett, 2016; Rockstrom et al., 2009; Springmann, Godfray, Rayner, & Scarborough, 2016). This inefficiency extends beyond the environmental domain, as these systems are also identified as feeding structural inequalities and global problems in Noncommunicable Diseases (NCDs), which are depicted as one of the key health and development challenges of the 21st century for causing major social, economic and public health impacts (Sabaté & Soret, 2014; Tilman & Clark, 2014; WHO, 2014).

Against this backdrop, there is growing scientific evidence that particular dietary changes across the globe can have multiple health, environmental, and economic benefits (Poore & Nemecek, 2018; Sabaté, Harwatt, & Soret, 2016; Shepon, Eshel, Noor, & Milo, 2018; Tilman & Clark, 2014). A critical feature of these changes is to aim toward reduced consumption of animal-based products and increased consumption of plant-based foods, particularly in more economically developed countries (Clark & Tilman, 2017; Schepers & Annemans, 2018; Shepon et al., 2018; Springmann et al., 2016; Stoll-Kleemann & Schmidt, 2017; Willett et al., 2019). It is expected that both production (e.g., higher crop yields) and consumption-based approaches (e.g., reducing meat consumption) will be required for such changes to occur (Hartmann & Siegrist, 2017; Neff et al., 2018; Poore & Nemecek, 2018; Röss et al., 2017). However, changing

the food practices of consumers will likely be a challenging task for several reasons. First, such practices are highly complex and determined by numerous interrelating factors that are difficult to address in isolation (Contento, 2011; Köster, 2009; Warde, 2016). Second, variables that may trigger significant reductions in meat consumption have only recently started to be systematically addressed and remain relatively unknown (de Boer & Aiking, 2017; Graça, Godinho, & Truninger, 2019; Hartmann & Siegrist, 2017). Third, several barriers to adopting more plant-based diets have been identified, such as lack of awareness (benign or deliberate), the cultural significance of meat, enjoyment of eating meat, lack of information, lack of options (e.g., when eating out), unwillingness and/or lack of perceived responsibility to change, among others (Corrin & Papadopoulos, 2017; Graça, Truninger, Junqueira, & Schmidt, 2019; Hoek et al., 2017; Lea, Crawford, & Worsley, 2006; MacDiarmid, Doulgas, & Campbell, 2016; Onwezen & van der Weele, 2016; Schösler et al., 2015; Vainio, Irz, & Hartikainen, 2018; Whitley et al., 2018; Zur & Klöckner, 2014).

In light of these challenges, there have been calls for designing and implementing public policies to reduce meat consumption and promote more plant-based diets (i.e., Meat Curtailment Policies; MCPs), which may help trigger large-scale changes toward healthier and more sustainable eating patterns (Aiking & de Boer, 2018; Clark & Tilman, 2017; de Boer & Aiking, 2017, 2018; Graça, Godinho, et al., 2019; Godfray et al., 2018; Neff et al., 2018; Raphaely & Marinova, 2014; Van Loo, Hoefkens, Verbeke, 2017). Such policies may include, for instance, using institutional pledges and proposals, legislation, and taxes and subsidies to help shape and regulate the production and consumption of animal-sourced and plant-based foods (e.g., Vinnari & Vinnari, 2014; Whitley et al., 2018). It is expected that meat curtailment policies will require concerted efforts by governing bodies, civil society and market actors to be

successfully developed and implemented (Godfray et al., 2018). However, there have been concerns that such policies may be met with resistance and be accused of questioning consumers individual right to consume what they want, given the central place of meat in Western and Westernized social representations of food and meal (de Boer, Schösler, & Boersema, 2013; Graça et al., 2015; Laestadius, Neff, Barry, & Frattaroli, 2014; Rothgerber, 2020). These concerns are important, as implementing and sustaining policy measures largely depends on the reaction and acceptance of the people who may be affected by such measures (Batel & Devine-Wright, 2015; Doucet et al., 2007; Whitley et al., 2018). Yet, to our knowledge, until now only one study has directly addressed this topic. In short, the study found that presenting different frames for policies that promote plant-based diets had limited influence on policy support from consumers (Whitley et al., 2018). Instead, the findings highlighted the role of psychosocial variables like personal values (e.g., endorsing altruistic and pro-environmental beliefs) in shaping consumer support for such policies (Whitley et al., 2018). Further research is thus needed, which focuses on how psychosocial and consumption variables may predict support for meat curtailment policies, and how consumers with different characteristics may react to such policies.

To help address this need, we propose to integrate previously fragmented evidence on public support for environmental policies and on meat consumption/substitution. Relevant evidence on attitudes toward environmental policies shows that consumers may generally approve a goal or idea that is being promoted by laws and has a normative character, while rejecting it when it is materialized into concrete actions, contexts or relations (Batel & Devine-Wright, 2015; Castro, 2012). Thus, we suggest that it may be important to empirically address both support for meat curtailment policies in general (i.e., in principle), and support for specific meat

curtailment policies (i.e., the principle put into practice). Furthermore, evidence on meat consumption and substitution shows that psychosocial and consumption variables are key predictors of willingness to change eating habits (de Boer & Aiking, 2017; Graça, Godinho, et al., 2019; Graham & Abrahamse, 2017; Loughnan, Bastian, & Haslam, 2014; Piazza et al., 2015; Rosenfeld, 2018). Endorsing pro-environmental ideologies is associated with higher willingness to reduce or avoid meat consumption (Hartmann & Siegrist, 2017; Rosenfeld, 2018), whereas endorsing ideologies of human dominance over animals and the natural environment is associated with higher meat consumption and unwillingness to change (Dhont & Hodson, 2014; Hodson & Earle, 2018; Monteiro et al., 2017). In addition, meat eating habits and meat attachment have been identified as key consumption variables in consumer willingness to adopt a more plant-based diet (Dowsett et al., 2018; Graça, Godinho, et al., 2019; MacDiarmid et al., 2016; Zur & Klöckner, 2014), and there have been concerns that efforts to promote reduced meat consumption may trigger reactance and loss-aversion especially with consumers who are strongly attached to meat consumption (Graça et al., 2015, 2016). The following section presents an overview of the aim and objectives of the current study, which offers a first step toward applying these variables and ideas to understand how consumers evaluate (and may react to) meat curtailment policies.

1.1 Current study – Aim and objectives

Current and projected health and sustainability challenges in contemporary food practices call for public policies to reduce meat consumption and promote more plant-based diets – i.e., Meat Curtailment Policies (MCPs). There have been concerns that consumers may react defensively to such policies, but to our knowledge, there is still no

direct evidence on this matter. The present study aims to address this gap and has two specific objectives.

The first objective is to increase knowledge on the determinants of consumer support for MCPs (i.e., support for MCPs in principle; support for MCPs in practice). We hypothesize that a set of ideological (i.e., new ecological paradigm; human supremacy beliefs) and consumption variables (i.e., meat eating habits; meat attachment) will predict support for MCPs (Figure 1). The new ecological paradigm is originally defined as an ecocentric (vs anthropocentric) system of beliefs in which humans are seen as being part of (vs superior to) natural systems (Dunlap & Van Liere, 1984), and was identified as a particularly reliable predictor of support for MCPs in the recent study by Whitley and colleagues (2018). Human supremacy beliefs refer to a dominance ideology in which humans are seen as inherently superior to non-humans, and has also been shown to be relevant for meat consumption and (resistance to) plant-based eating (Dhont & Hodson, 2014; Leite, Dhont, & Hodson, 2019). Additionally, meat-eating habits (i.e., high frequency of meat consumption) and meat attachment (i.e., positive bond toward meat consumption) have been identified as key potential barriers for a transition to increased plant-based eating in a recent systematic review on the topic (Graça, Godinho, et al., 2019). In light of these previous findings, we expect that endorsement of the new ecological paradigm will show positive associations with support for MCPs, whereas endorsement of human supremacy beliefs, higher meat-eating habits, and higher attachment to meat consumption will show negative associations with support for MCPs (Figure 1). We also anticipate that these associations will be stronger with regard to support for MCPs in practice than support for MCPs in principle, given that the principle has a mostly normative and proclamatory character, whereas actual measures have a binding character.

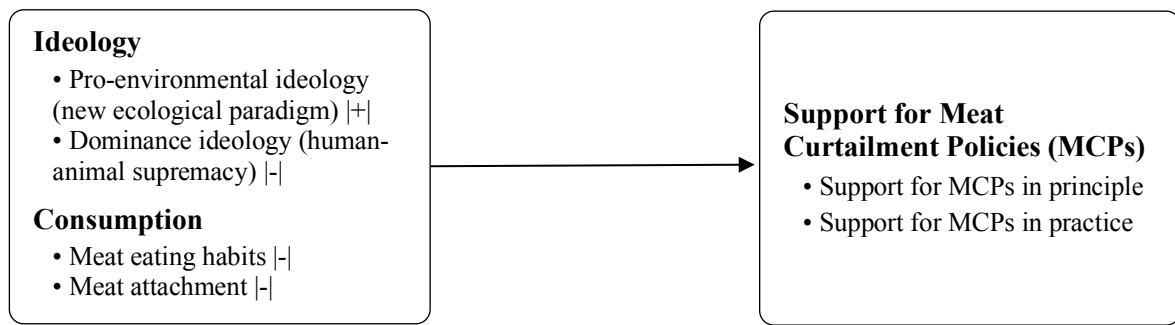


Figure 1. Testing the role of ideological and consumption variables in support for Meat Curtailment Policies (MCPs). Symbols between parallel lines indicate expected valence/direction of the associations.

The second objective of this study is to assess how consumers react to an actual case of legal innovation in MCPs. We will present Portuguese consumers with a small real news piece about the parliamentary approval of a law that binds public canteens in Portugal into including a plant-based option (further details are provided in the methods section, under “participants and procedure”). This is a unique and original contribution in that it draws on a case of real-world innovation and communication in MCPs, instead of using fabricated or decontextualized scenarios with limited ecological validity. We hypothesize that exposure to legal innovation in MCPs may affect consumer support for MCPs in different ways, depending on individual differences in ideology and consumption variables (Figure 2). Specifically, we expect that consumers who are less environmentally conscious, more prone to endorse human supremacy beliefs, who eat meat more often, or are more attached to meat consumption, can become more reactive to MCPs upon being exposed to the approval of an actual MCP. In turn, we expect that consumers who are more environmentally conscious, less prone to endorse human supremacy beliefs, who eat meat less often, or are less attached to meat consumption,

will not change their levels of support for MCPs upon being exposed to the approval of an actual MCP.

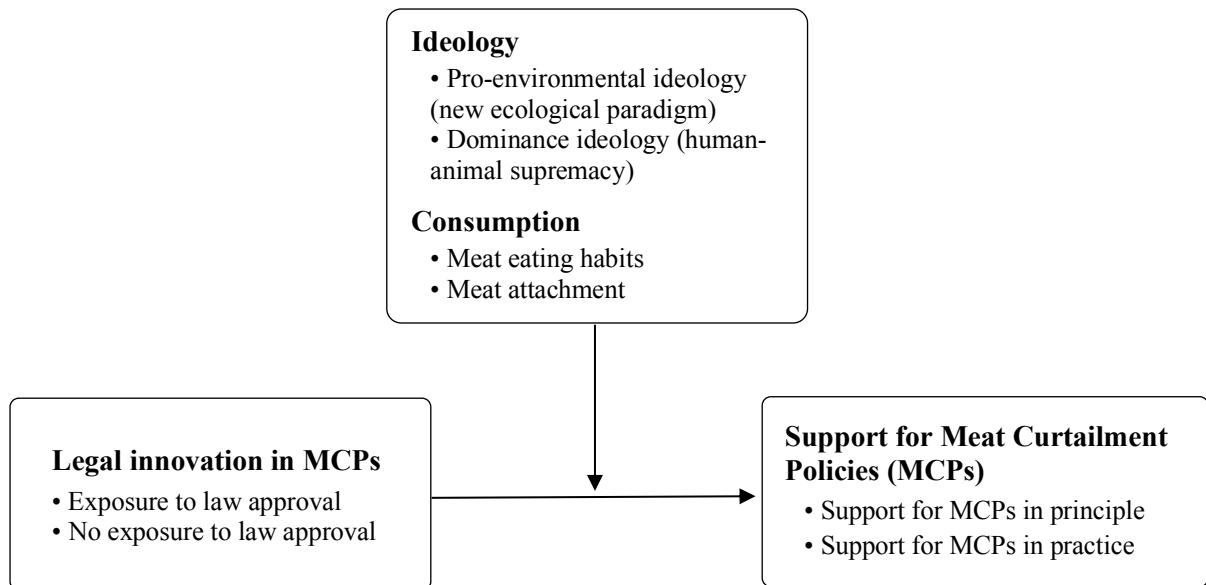


Figure 2. Testing how consumers react to a real case of legal innovation in MCPs, considering individual differences in ideological and consumption variables.

2 METHODS

2.1. Participants and procedure

In order to increase knowledge on consumer support for MCPs and assess how consumers may react to legislative action on MCPs, we hosted an online survey on Qualtrics.com and recruited participants via ads in social media. A short recruitment notice invited users from Portugal to participate in a study on “people’s opinions about several issues such as the environment and eating habits”. Participation was rewarded with the choice of registering in a draw to win a 50€ gift card. In the survey, participants filled the questionnaires and were randomized into two different conditions before being asked about their support for MCPs (see Measures below). In one condition (exposure to MCP), participants were presented with a short text extracted (with the original layout) from a real news piece about the approval of a law that binds public canteens in

Portugal into including a plant-based option: “Public canteens and cafeterias are obliged to offer at least one daily vegetarian meal option in their menus. According to the law that was published this Monday and comes into effect in June, this rule is applicable to canteens and cafeterias of sovereign bodies and public services, particularly in units from the health care system, residential care units and day centers, primary and secondary schools, universities, prisons, education centers and social services”. In the other condition (no exposure to MCP), participants were not presented with the text. We chose this MCP and this news piece in order to take on the opportunity to test how consumers would react to an actual innovation and communication in MCPs, instead of using fabricated or decontextualized scenarios with limited ecological validity.

The online survey was open for around one month between August 24th and September 28th 2017. During this period, 978 people clicked on the cover page to participate and 784 participants completed the survey (534 female, 68,1%; $M_{age} = 28.8$, $SD_{age} = 9$, range: 18 - 69; most with secondary – 25.1% – or tertiary education – 67.6%). Completion rate was quite high (i.e. around 80%) and there was no observable particular stage in which participants dropped out after beginning to fill the survey. To minimize self-selection bias, no references were made in the advertisements and cover page to the specific goals of the study. Before beginning the survey, participants were informed about the study’s procedures and assured that no individual answers would be analyzed or reported. They were also informed that participation was entirely anonymous and voluntary. Participants provided their consent and were debriefed in the end of the study.

2.2 Measures

New Ecological Paradigm. Endorsement of pro-environmental ideology was measured with the 15 items (e.g., “Humans have the right to modify the natural environment to suit their needs”, reverse-scored) from the New Ecological Paradigm scale (NEP; Dunlap et al., 2000), using a 5 point Likert-type scale (1 = totally disagree to 5 = totally agree). In the current sample, internal consistency was adequate ($\alpha = .76$).

Human Supremacy. Beliefs about human supremacy as a dominance ideology relevant to meat consumption and substitution were measured with a six-item scale (e.g., “Animals are inferior to humans”) taken from Dhont & Hodson (2014), using a 5 point Likert-type scale (1 = totally disagree to 5 = totally agree). In the current sample, internal consistency was high ($\alpha = .90$).

Meat eating habits. Participant’s usual consumption of red and white meat was measured using the following answer categories for the frequency of meat consumption in a regular week: never, less than once per week, once or twice per week, three or four times per week, five times or more per week. An aggregate measure of meat eating habits was computed by averaging participants’ responses on red and white meat consumption.

Meat attachment. Meat attachment was measured with a 16-item questionnaire (e.g., “If I was forced to stop eating meat I would feel sad”) referring to a positive bond toward meat consumption (Graça et al., 2015). Participants provided their responses for each sentence using a 5 point Likert-type scale (1 = totally disagree to 5 = totally agree). In the current sample, internal consistency was high ($\alpha = .96$).

Support for meat curtailment policies (MCPs). We measured support for MCPs in principle and support for MCPs in practice with items adapted from Whitley et al. (2018). Support for MCPs in principle was measured with the item “What is your

opinion about policy options that encourage less consumption of meat and more reliance on a plant-based diet in Portugal?”. Support for MCPs in practice was measured with the following items: “Please tell us your opinion about the following specific policy options: (a) Creating a tax on meat products to support the production of plant-based foods; (b) Creating a tax on animal production units that release significant greenhouse gases; (c) Shifting government subsidies away from animal production to the production of plant-based foods; (d) Requiring public canteens to serve plant-based meals”. Participants provided their responses for each sentence using a 5 point Likert-type scale (1 = totally disagree to 5 = totally agree). In the current sample, internal consistency for the aggregate measure of support for MCPs in practice was adequate ($\alpha = .76$).

3 RESULTS

3.1 First objective: examining associations between ideology, consumption, and support for MCPs.

Descriptives and associations between the variables under study are presented in Table 1. Both the two ideology variables (i.e., new ecological paradigm, human supremacy) and the two consumption variables (i.e., meat eating habits; meat attachment) showed statistically significant correlations with support for MCPs in principle and support for MCPs in practice. Meat attachment yielded the stronger associations (-.37 to -.69), with consumers who were more attached to meat consumption also showing lower levels of support for MCPs. Meat eating habits followed in second, with associations with support for MCPs ranging from -.31 to -.55. In turn, endorsement of human supremacy beliefs and the new ecological paradigm showed associations with support for MCPs ranging from -.24 to -.49, and .26 to .43,

respectively. The associations seemed to be slightly stronger for support for MCPs in practice than support for MCPs in principle, but the overall pattern of associations was identical for both measures of support for MCPs. Additionally, the consumption variables seemed to be stronger candidates for explaining a greater amount of variance in support for MCPs.

Table 1. Descriptive statistics and correlations among measures.

Variables	<i>M</i>	<i>SD</i>	1. NEP	2. HS	3. MH	4. MA	5. SPrin
1. New ecological paradigm [NEP]	3.84	.44	-				
2. Human supremacy [HS]	2.23	.87	-.53 [-.58, -.47]	-			
3. Meat eating habits [MH]	2.98	1	-.36 [-.42, -.30]	.45 [.39, .50]	-		
4. Meat attachment [MA]	3	.95	-.41 [-.47, -.34]	.54 [.49, .59]	.77 [.74, .80]	-	
5. Support for MCPs in principle [SPrin]	3.73	1.18	.34 [.27, .41]	-.40 [-.47, -.34]	-.44 [-.49, -.39]	-.63 [-.66, -.59]	-
6. Support for MCPs in practice [SPrac]	3.66	.81	.43 [.37, .50]	-.49 [-.55, -.42]	-.55 [-.60, -.50]	-.69 [-.72, -.64]	.68 [.64, .72]

Note. Numbers in brackets are 95% confidence intervals based on bias-corrected accelerated bootstrapping with 10,000 re-samples in SPSS. All correlations are statistically significant at $p < .001$.

A set of linear regressions were performed to compare the predictive ability of ideology and consumption variables in support for MCPs. We tested three models (Table 2): ideology variables (new ecological paradigm, human supremacy), consumption variables (meat eating habits, meat attachment), and ideology and consumption variables together (new ecological paradigm, human supremacy, meat eating habits, meat attachment). We also controlled for gender, age, education, and

condition in all models. Support for MCPs in principle and support for MCPs in practice were entered respectively as dependent variables. No problems of multicollinearity were detected in the regression analyses (VIF range: 1.01 to 2.85).

Overall, the findings supported the hypothesis that both ideology and consumption predict support for MCPs in principle and MCPs in practice (R squared ranging from .22 to .43 with regard to support for MCPs in principle, and .30 to .51 with regard to support for MCPs in practice; see Table 2). Overall, the most reliable predictors of MCPs in principle and MPCs in practice were endorsement of the new ecological paradigm (i.e., higher pro-environmentalism was consistently associated with increased support for MCPs in principle and MCPs in practice), and meat attachment (i.e., higher attachment to meat consumption was consistently associated with decreased support for MCPs in principle and MCPs in practice). Nevertheless, the models that included the consumption variables emerged as particularly strong predictors of support for MCPs in principle and MCPs in practice, with meat attachment showing by far the greatest explanatory capacity in all models in which it was included (see Table 2).

3.2 Second objective: examining consumer reactions to legal innovation in MCPs.

We tested if exposure to an actual case of legal innovation in MCPs would affect consumer support for MCPs in different ways, depending on differences in ideology and consumption variables. Path coefficients for a set of moderation analyses were estimated by using ordinary least squares regressions, and 95% confidence intervals were determined by bootstrapping (based on 10,000 draws). In each analysis, condition (exposure vs. no exposure) was entered as independent variable, and each ideology and consumption variable was entered as moderator. Support for MCPs in principle and support for MCPs in practice were entered respectively as dependent variables. We

controlled for gender, age and education in all models. The analyses were performed with IBM SPSS Statistics for Windows using the PROCESS macro by Hayes (2012, 2013).

There was a significant effect of condition (exposure vs. no exposure) on support for MCPs in principle in all models (β ranging from $-.30$ to $-.27$, SE $.07$ to $.18$, $p < .001$; Table 3). There were no effects of condition (exposure vs. no exposure) on support for MCPs in practice (β ranging from $.01$ to $.04$, SE $.04$ to $.05$, ns; Table 3). Furthermore, there were no interaction effects on support for MCPs in principle and support for MCPs in practice in any of the models tested (Table 3). This means that exposure to the law approval increased support for MCPs in principle irrespectively of individual differences in ideology and consumption variables. A test for equality of means provided further support for these findings: participants who read the short piece about the law approval showed higher support for MCPs in principle ($M=3.90$, $SD=1.12$) than participants who did not read the piece ($M=3.56$, $SD=1.20$; $t(777)=4.04$, $p < .001$). In addition, reading about the law did not yield significant differences in support for MCPs in practice (exposure: $M=3.66$, $SD=.78$; no exposure: $M=3.65$, $SD=.84$; $t(780)=.22$, ns).

Table 2. Linear regressions for predictive ability of ideology and consumption variables on support for MCPs.

Variables	B	SE	β	R^2	F	dfs
<i>SUPPORT FOR MCPs IN PRINCIPLE</i>						
Model 1 – Ideology				.22***	33.84	6, 739
New ecological paradigm	.46	.10	.17***			
Human supremacy	-.40	.05	.30***			
Model 2 – Consumption				.41***	86.24	6, 747
Meat eating habits	.10	.05	.08			
Meat attachment	-.85	.06	-.68***			
Model 3 – Ideology and Consumption				.43***	67.98	8, 737
New ecological paradigm	.25	.09	.09**			
Human supremacy	-.09	.05	-.07			
Meat eating habits	.12	.05	.10*			
Meat attachment	-.78	.06	-.62***			
<i>SUPPORT FOR MCPs IN PRACTICE</i>						
Model 1 – Ideology				.30***	51.81	6, 743
New ecological paradigm	.47	.07	.25***			
Human supremacy	-.33	.03	-.35***			
Model 2 – Consumption				.47***	109.60	6, 751
Meat eating habits	-.04	.03	-.05			
Meat attachment	-.55	.04	-.64***			
Model 3 – Ideology and Consumption				.51***	95.68	8, 741
New ecological paradigm	.31	.06	.16***			
Human supremacy	-.10	.03	-.11**			
Meat eating habits	-.02	.03	-.03			
Meat attachment	-.47	.04	-.54***			

Note: Gender, age, education and condition (law/no law) were entered as covariates in all models.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 3. Effect of condition (law exposure vs. no exposure) on support for MCPs, considering ideology and consumption variables as moderators.

Variables	β	SE	R ² [LLCI, ULCI]	F	dfs
<i>SUPPORT FOR MCPs IN PRINCIPLE</i>					
Model 1 – Condition x NEP			.15*	22.41	6, 751
Condition	-.30*	.08	[-.46, -.15]		
New ecological paradigm	.85*	.09	[.67, 1.03]		
Condition x NEP	-.01	.18	[-.36, .35]		
Model 2 – Condition x Human sup.			.20*	30.58	6, 739
Condition	-.27*	.08	[-.43, -.12]		
Human supremacy	-.52*	.05	[-.61, -.43]		
Condition x Human Sup.	.05	.08	[-.13, .22]		
Model 3 – Condition x Eating habits			.24*	39.35	6, 751
Condition	-.29*	.07	[-.44, -.14]		
Meat eating habits	-.52*	.04	[-.60, -.44]		
Condition x Meat eating habits	-.04	.08	[-.19, .11]		
Model 4 – Condition x Meat attach.			.42*	88.53	6, 747
Condition	-.28*	.07	[-.41, -.15]		
Meat attachment	-.78*	.04	[-.85, -.70]		
Condition x Meat attachment	-.09	.07	[-.23, .05]		
<i>SUPPORT FOR MCPs IN PRACTICE</i>					
Model 1 – Condition x NEP			.21*	34.36	6, 755
Condition	.01	.05	[-.09, .12]		
New ecological paradigm	.79*	.06	[.67, .91]		
Condition x NEP	-.10	.12	[-.34, .13]		
Model 2 – Condition x Human sup.			.26*	43.00	6, 743
Condition	.04	.05	[-.06, .15]		
Human supremacy	-.45*	.03	[-.51, -.39]		
Condition x Human Sup.	.01	.06	[-.11, .13]		
Model 3 – Condition x Eating habits			.33*	60.83	6, 755
Condition	.02	.05	[-.7, .12]		
Meat eating habits	-.45*	.03	[-.50, -.40]		
Condition x Meat eating habits	.01	.05	[-.07, .12]		
Model 4 – Condition x Meat attach.			.48*	115.55	6, 751
Condition	.03	.04	[-.05, .12]		
Meat attachment	-.60*	.02	[-.64, -.55]		
Condition x Meat attachment	-.03	.05	[-.12, .06]		

Note: Gender, age and education were entered as covariates in all models. Numbers in brackets are 95% confidence intervals based on bias-corrected accelerated bootstrapping with 10,000 re-samples in SPSS.

* $p < .001$.

4 DISCUSSION

There is growing consensus that particular dietary changes across the globe can have multiple health, environmental, and economic benefits (Clark & Tilman, 2017; Godfray et al., 2018; Poore & Nemecek, 2018; Springmann et al., 2016; Tilman & Clark, 2014; Willett et al., 2019). A transition from animal-based to more plant-based diets may help achieve these benefits, but there are concerns that consumers may react defensively to public policies that promote such a transition (de Boer et al., 2013; Graça et al., 2015; Laestadius et al., 2014; Rothgerber, 2020). Food practices can be viewed as an intrinsic part of ones' identity (Beardsworth & Keil, 2002; Rosenfeld & Burrow, 2018), thus consumers may see policies that regulate food consumption (and meat consumption in particular) as intrusive and as limiting individual choice. The present work adds three main contributions to address this discussion, which refer to: (1) the role of ideological and consumption variables in support for MCPs; (2) consumers' reaction to legal innovation in MCPs; and (3) anticipating different reactions to different policy options.

4.1 Ideology, consumption, and support for meat curtailment policies

Overall, this study found that participants with increased pro-environmental ideology tended to be more positive toward MCPs, whereas participants who endorsed human supremacy beliefs, and who were more attached to meat consumption, tended to show a lower support for MCPs. Past research has shown that the effects of perceived costs (to self) on environmental behavior generally outweigh those of pro-environmental values (e.g., Diekmann & Preisendörfer, 2003; Tobler et al., 2012), which may partly help in understanding why the attitude-behavior gap occurs in the environmental domain. In the current study, the fact that meat attachment emerged as a

particularly strong (negative) predictor of support for MCPs - above and beyond the other consumption and ideology variables -, reinforces the notion that perceived cost (to self) may be a critical feature not only for engaging in pro-environmental behavior, but also for supporting pro-environmental policies (Tobler et al., 2012). It also reinforces the idea that consumers may be prone to engage in self-serving motivated reasoning processes to justify and defend practices that are environmentally harmful but personally and socially cherished, such as meat consumption (e.g., Bastian, 2019; Bandura, 2007; Graça et al., 2016; Rothgerber, 2020).

Following from this idea, one practical implication is that besides highlighting environmental benefits, communication on pro-environmental policies may benefit from being strategically informed from the outset by the principle of reducing consumers' perceptions of personal costs and inconveniences. Thus, future studies could explore how to frame the communication of such policies in ways that help reduce or bypass perceived personal costs and inconveniences, for instance by making use of known heuristics and cognitive biases (Lichtenstein & Slovic, 2006) and/or drawing on propositions from choice architecture (Thaler & Sunstein, 2008).

4.2 Consumers' reaction to legal innovation in meat curtailment policies

We expected that exposure to a real news piece on legal innovation in MCPs could affect consumer support for MCPs in different ways (depending on individual differences in ideological and consumption variables). For instance, we hypothesized that consumers who were more attached to meat consumption would become less supportive of MCPs, given the possibility of reactive processes being triggered by exposure to a parliamentary approval of an actual MCP. However, these expectations were not confirmed. Instead, reading the piece about the law approval increased

participants' support for MCPs irrespectively of individual differences in ideology and consumption.

One tentative explanation for this finding is that perhaps reading about the law approval affected participants' perceived injunctive norm with regard to support for MCPs. Broadly speaking, injunctive norms refer to perceptions of what others approve of, whereas descriptive norms refer to perceptions of what others do (Schultz et al., 2007). It is plausible to consider that the parliamentary approval signaled institutional endorsement of the relevance of promoting transitions to more plant-based diets, which may have conveyed a clear direction to participants in terms of perceived injunctive norm, thus increasing their levels of support for MCPs. However, there is evidence that perceived injunctive norms in isolation often do not have strong or consistent effects on specific target behaviors (Robinson, 2015), and this may help explain why the current manipulation produced differences on support for MCPs in principle, but not on support for specific MCPs in practice. One promising direction for future studies on this topic is thus to test if perceived injunctive norm mediates the effect of exposure to a law approval on personal support for MCPs in principle. It could also prove fruitful to assess if communication signaling successful implementation of MCPs could increase personal support for specific MCPs in practice. These hypotheses are especially relevant in light of recent findings that norms-based approaches may be particularly effective for promoting reduced meat consumption (Eker, Reese, & Obersteiner, 2019; Sparkman & Walton, 2017; Stea & Pickering, 2019). In other words, it is plausible that reconfiguring perceived norms with regard to meat consumption and plant-based eating may be effective not only to help shape eating habits, but also to shape attitudes toward MCPs.

The current findings also inform future studies in reinforcing the relevance of empirically distinguishing between support for policies in principle and support for

policies in practice. Supporting a given policy (or set of policies) does not necessarily mean acting individually in accordance with the supported policy. Likewise, people might support (or not reject) the general purpose and agenda of a given policy framework, while not supporting (or actively rejecting) specific operations within that same framework (as discussed in Batel & Devine-Wright, 2015).

4.3 Anticipating different reactions to different meat curtailment policies

In light of the proposition that perceived cost (to self) may be a critical feature for supporting or rejecting pro-environmental policies in general, and MCPs in particular, it is noteworthy to highlight and discuss the nature of the law that was used as a case of MCP in the current study. Previous classifications of pro-environmental behaviors have distinguished between direct and indirect behaviors (e.g., changing personal habits to help mitigate climate change vs. signing a petition for government action), and high- and low-cost behaviors (e.g., buying organic products vs. recycling) (Tobler et al., 2012). If we used a similar classification scheme for pro-environmental policies, the law approval that was used as a case of MPC in the present study would likely be included in the indirect/low cost category, which can arguably be seen as presenting lower potential for triggering defensive reactions and self-serving motivated reasoning processes. As further policies will continue to be approved and implemented in the future, it will be interesting to explore if initiatives that may be included in more direct/high-cost categories will yield the moderation effects that we had anticipated for the current study (i.e., increased reactance or support based on individual differences in ideology and consumption variables). Framing the current findings against this backdrop also raises the hypothesis that “softer” (indirect/low-cost) policies may be useful for setting the stage and increasing general support for MCPs in principle, and

perhaps minimize potential for reactance in later stages of approval and implementation of “harder” (direct/high-cost) policies (i.e., foot-in-the-door approach).

These distinctions between “softer” (indirect/low-cost) and “harder” (direct/high-cost) policies are relevant also for further studies seeking to measure support for MCPs in practice. Both the present study and the recent work by Whitley and colleagues (2018) focused mostly on policies that are relatively “soft” when compared to “harder” options such as rationing meat consumption or banning specific types of meat. Future studies on consumer support for MCPs should ensure that a wider range of both “soft” and “hard” policies is measured and considered. Furthermore, it may be worthwhile to identify differences on how (and why) different consumers and stakeholders may endorse (or reject) distinct types of policies, and explore how to frame and communicate these policies to account for these differences (i.e., tailored communication).

4.4 Limitations

Some limitations of this study should be identified and discussed so that future studies can address them and strengthen confidence in the present findings. One limitation is that we did not include a manipulation check to confirm that participants in the “exposure to a MCP” condition did pay attention to the text. However, the text was particularly short (i.e., two sentences) thus the motivation to skip to the next page without reading was arguably minimal. Another limitation is that the sample is not representative of the general population due to a bias in the demographic characteristics (i.e., gender, age and education). Studies that use non-representative samples have limited external validity, which is the ability to draw conclusions outside the context of the study (e.g., generalizing the findings to the general population). In the present study,

the scores for all items covered the entire response spectrum (i.e., ranging from 1 to 5) and all variables showed an acceptable distribution (i.e., skewness and kurtosis levels ranging from $-.74$ to $.45$), showing that diversity in individual responses was nevertheless well represented in our sample. In addition, we followed Hartmann & Siegrist's (2017) recommendations on overestimation effects in biased samples and included gender, age and education as covariates in the regression models. Drawing on a real news piece with an actual case of MCP also helped reinforce the ecological validity of the findings, but given that we did not use a representative sample we do not advise using the present results directly to inform policy efforts on meat curtailment. Rather, the findings and propositions that were advanced in this study should be used first to inform further research on the topic, preferably with representative samples and robust (longitudinal) designs.

4.5 Conclusion

This study aimed to increase knowledge on the determinants of consumer support for Meat Curtailment Policies (MCPs), and to test consumers' reaction to an actual case of legal innovation in MCPs. The findings showed that a set of ideological and consumption variables were associated with support for MCPs, but exposure to an actual case of legal innovation in MCPs increased participants' support for MCPs irrespective of individual differences in ideology and consumption. This suggests that communicating legal innovation may be used to increase consumer support for policies aimed at reducing meat consumption and promoting more plant-based diets. Looking forward, these findings offer inputs to further studies that may ultimately inform policy makers on the risks, benefits and trade-offs of different meat curtailment policy options, in terms of consumer support for these policies. This is important for two main reasons.

One is that the success of policy measures arguably depends on the people's responses to such measures (Batel & Devine-Wright, 2015; Doucet et al., 2007; Whitley et al., 2018). The other reason is that consumers often see producers and governmental entities (rather than consumers themselves) as having the responsibility for tackling current sustainability challenges of meat production and consumption (Onwezen & van der Weele, 2016). Thus, it is useful to investigate how consumers may react to different policy options, why they react the way they do, and how to increase the potential for public support for these policies.

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