



Understanding political differences in meat reduction and replacement intentions: the role of awareness of consequences

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Abstract

Extensive evidence shows that high meat consumption is associated with negative environmental and health consequences. Yet right-wing and conservative individuals consistently report higher meat consumption and lower willingness to reduce it. While ideological differences in dietary choices are well documented, less is known about the psychological mechanisms underlying these differences.

We propose that political differences in meat-reduction intentions may partly stem from differences in awareness of the environmental and health consequences of meat consumption. Using a nationally representative sample of 4,066 Italian adults, we examined whether awareness of these consequences mediates the association between political orientation and ideology and intentions to reduce or replace meat consumption.

Results showed that conservatives and right-wing individuals reported lower environmental and health awareness of the consequences of meat consumption, which in turn was associated with weaker intentions to reduce or replace meat. Awareness consistently mediated the relationship between political variables and dietary intentions, with health-related awareness showing particularly strong associations.

These findings suggest that ideological differences in meat consumption could be partly explained by modifiable psychological factors related to consequence awareness. By identifying concrete and malleable mechanisms, this study provides actionable insights for the design of public health and environmental communication strategies aimed at reducing meat consumption across the political spectrum.

Keywords Meat reduction · Meat replacement · Political ideology · Political orientation · Health awareness · Environmental awareness

Meat consumption today stands out as a particularly relevant topic both for global environmental sustainability and for public health, as emphasized in the United Nations' 2030 Agenda for Sustainable Development. Per capita meat consumption is projected to increase by 0–0.5% annually (Henchion et al., 2021), while the global population is expected to grow by about 1% per year (UNDESA, 2022).

As a result, total meat consumption by 2050 is estimated to be at least 50% higher than current levels (FAO, 2018), an unsustainable trajectory that underscores the urgency of reducing meat intake. Although this represents a meaningful and timely objective, changing dietary habits is notoriously difficult.

Indeed, a substantial body of classic and contemporary literature has shown that food is not merely a biological necessity, but also a symbolic resource deeply intertwined with identity and social positioning (e.g., Rozin, 1996). Already in the 19th century, Feuerbach famously argued that “*man is what he eats*” (Cherno, 1963), underscoring the intimate relationship between diet, self, and worldview. In line with this perspective, certain foods acquire strong symbolic meanings and function as markers of group membership and ideological identity. Meat has long been associated

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with culturally loaded concepts, making it especially salient in political and ideological divides (e.g., Nezek & Forstell, 2019). Previous research suggested that political orientation is a key predictor of dietary patterns (e.g., Dhont & Hodson, 2014), and thus understanding the psychological mechanisms underlying these differences is crucial. We argue that one likely mechanism could be represented by the lower awareness, among conservatives and right-wing people, of the negative environmental and health consequences of meat consumption. The present study examines these mechanisms in a nationally representative sample of Italian adults.

Ideological differences in meat consumption

A substantial body of research has already shown that political orientation reliably predicts meat consumption, with conservatives reporting higher meat intake (Dhont & Hodson, 2014; Wiesli, 2025), whereas liberals are comparatively more oriented toward plant-based diets (Milfont et al., 2021; Petersen et al., 2024) and, more generally, other forms of sustainable food choices (see Carraro et al., 2025). Several theoretical frameworks help explain these differences. For instance, two ideological predispositions, Right-Wing Authoritarianism (RWA; Altemeyer, 1981) and Social Dominance Orientation (SDO; Pratto et al., 1994), play a central explanatory role of the ideological differences across several domains. Recent research has also demonstrated that these constructs are particularly relevant for understanding attitudes toward animals and meat consumption (e.g., Dhont et al., 2016; Hodson et al., 2020). Specifically, RWA reflects a preference for social order, conformity, and the preservation of traditional norms; because meat consumption is widely perceived as a traditional and culturally normative practice, individuals high in RWA may view dietary change as a symbolic threat to established norms (Dhont & Hodson, 2014). SDO, in contrast, captures support for hierarchical social relations and human dominance over nature and animals (Duckitt & Sibley, 2007). High-SDO individuals are therefore more likely to justify resource exploitation, endorse human-supremacy beliefs, and evaluate meat positively as a status-enhancing food (Becker et al., 2019; Dhont & Hodson, 2014). Consistent with this, Dhont and Hodson (2014) showed that right-wing ideologies predict commitment to animal product consumption through perceived veget(ari)anism threat (for both SDO and RWA) and human supremacy beliefs (for SDO). Interestingly, more recent research suggests that the role of RWA and SDO extends also beyond meat consumption to a broader range of animal products, including dairy, eggs, and fish (Ioannidou et al., 2026). Overall, these ideological motives help explain why

conservatives tend to attribute more positive meanings to meat and evaluate meat reduction as “more harmful, bad, unpleasant, pointless” (Choma et al., 2024, p.7).

Additional contributions come from research on personal values. According to Schwartz’s value theory (Schwartz, 1992), individuals who prioritize self-transcendence and openness to change (values typically endorsed more strongly by progressives) report lower meat consumption, whereas those who endorse self-enhancement and conservation values (more typical of conservatives and right-wing people) tend to view meat more positively and consume it more frequently (Allen & Ng, 2003; Lehto et al., 2023).

A further and complementary interpretative lens emerges from the perspective of political ideology as *motivated social cognition* (Jost, 2017), according to which conservatism is partly driven by three core psychological motives: epistemic, existential, and relational. These motives make conservatives more inclined to prefer stable, familiar, and culturally accepted practices, such as traditional meat-based diets, while being more resistant to dietary changes that may be perceived as uncertain, threatening, or socially disruptive.

However, because RWA, SDO, value orientations, and motivated social-cognitive motives are relatively stable factors, difficult to modify directly, it becomes crucial to identify more malleable psychological variables, such as awareness of the negative environmental and health consequences of meat consumption, that may help explain ideological differences in meat reduction and replacement intentions. Investigating such mediators could be particularly valuable, as they may constitute more feasible and effective leverage points for designing interventions aimed at promoting meat-reduction and meat-replacement behaviours across the ideological spectrum.

Negative consequences of meat consumption and the role of awareness

From an environmental standpoint, meat production is a major contributor to greenhouse gas (GHG) emissions, particularly through enteric fermentation, manure management, feed production, and energy use, as detailed in FAO’s GLEAM model (Gerber et al., 2013). Red meat production is especially impactful (González et al., 2020), and diets with relatively higher levels of meat consumption, such as the Western diet, consistently exhibit higher carbon footprints than plant-based alternatives (Kalmpourtzidou et al., 2025), although what constitutes high levels of meat consumption may vary across cultural contexts. In addition, extensive evidence demonstrates the negative health effects of high meat consumption. Research has documented associations between red and processed meat consumption and

colorectal cancer (e.g., Bouvard et al., 2015), as well as various chronic diseases (e.g., Giromini & Givens, 2022; Godfray et al., 2018). At the same time, it is important to recognize that shifting toward plant-based options does not automatically translate into healthier dietary patterns, as some alternative products are highly processed and may offer limited nutritional benefits. Indeed, reducing meat consumption may, in some cases, lead to less healthy dietary choices depending on how such changes are implemented (Harguess et al., 2020; Kwasny et al., 2022). Nevertheless, the literature consistently shows that high levels of meat consumption are associated with negative health outcomes. For this reason, the present study distinguishes between two related but conceptually distinct outcomes: intentions to reduce meat consumption, which are generally associated with health benefits, and intentions to replace it.

Although abundant scientific information about the negative consequences of meat consumption is available, the mere presence of information does not guarantee that individuals meaningfully process, accept, and internalize it. Whereas information refers to the basic recognition of factual content, awareness involves deeper cognitive elaboration, personal relevance, and emotional engagement, reflecting a more active psychological processing of information. For instance, environmental awareness has been defined as “the attention, concern (mindful or heedful), and sensitivity of the respondents to environmental problems” (Sudarmadi et al., 2001, p. 172), highlighting that awareness requires an active psychological stance rather than a passive exposure to facts. Consistent with this view, interventions and policy frameworks aimed at promoting sustainable behaviour increasingly identify awareness as a key element for fostering health- and environment-oriented choices (Akerlof, 2017; Sola, 2014). Indeed, Sola (2014) argues that environmental education programs must be complemented with campaigns explicitly designed to raise environmental awareness, as knowledge alone is insufficient to motivate behavioural change.

A substantial body of evidence has shown that public awareness of the environmental and health consequences of meat consumption is generally low. People underestimate livestock’s contribution to GHG emissions (Hartmann & Siegrist, 2017; Macdiarmid et al., 2016), and many are unaware of the documented health risks of high meat intake (Hoek et al., 2004). This lack of awareness may be explained in several ways. For instance, limited awareness could be shaped by cultural and economic narratives portraying meat as natural and necessary (Clapp & Scrinis, 2017), but also by some psychological mechanisms. Meat-eaters often experience anticipated negative emotions (such as guilt and discomfort) when confronted with information that threatens their habits, and these emotions could lead

them to avoid or downplay such information (e.g., Gaspar et al., 2016). Conversely, anticipated positive emotions can motivate openness to dietary change (Pompili et al., 2025). In addition, confirmation bias plays a critical role in this context: people tend to selectively attend to evidence that aligns with their existing beliefs and to discount or discredit information that contradicts them (e.g., Bryant et al., 2022; Nickerson, 1998). Such selective exposure might contribute to ideological asymmetries in the reception of information about meat’s negative consequences, thereby hindering the translation of mere information into awareness.

These dynamics could be further reinforced by ideological differences in trust in science. Compared to liberals, conservatives express systematically lower trust in scientific institutions, particularly in politicized domains such as environmental science and public health (Gauchat, 2012; Lewandowsky et al., 2013). Lower trust in scientific expertise makes it less likely that conservatives will internalize scientific messages about the environmental or health harms of meat consumption, even when they are directly exposed to such information. Taken together, these considerations suggest that awareness of the negative consequences of meat consumption is not a simple function of information availability but reflects a more complex process. As such, awareness represents a theoretically meaningful mediator of political differences in dietary habits, complementing (rather than replacing) established ideological explanations by capturing how individuals differentially internalize information about meat-related consequences.

Political ideology, health and environmental concern

Although no studies to date have directly tested whether awareness of such consequences mediates the relationship between ideology and intentions to reduce meat intake, evidence from adjacent domains provides important insights. Some studies indicate that conservatives tend to be less attentive to public health recommendations and less aware of health risks. For example, Bernstein et al. (2016) found that U.S. states with stronger Republican support displayed lower uptake of vaccines recommended for adolescents, while at the individual-level conservative ideology is negatively associated with awareness of human papillomavirus (HPV) and the HPV vaccine (Chido-Amajuoyi et al., 2023). Similar divides also emerged during the COVID-19 pandemic: conservatives engaged less in preventive behaviours such as mask-wearing and distancing (Geana et al., 2021). These findings may appear counterintuitive given that conservatives typically exhibit higher disgust sensitivity (e.g., Brenner & Inbar, 2015) and stronger existential needs for safety (Hennes et al., 2012), traits that should, in principle,

heighten concern for health risks. Yet motivated reasoning processes appear to override these dispositional tendencies when health issues become politicized. A crucial factor underlying these patterns might be conservatives' systematically lower trust in scientific institutions, as discussed above.

Parallel ideological gaps emerge in environmental concern: conservatives consistently report lower awareness of environmental problems (Cruz, 2017; Guber, 2013), a pattern that can be understood, for instance, through Schwartz's value theory (Schwartz, 1992). Indeed, individuals who prioritize self-transcendence values (e.g., universalism), which are typically more strongly endorsed by liberals, are more likely to perceive environmental problems as relevant. In contrast, those emphasizing self-enhancement and conservation values (more commonly associated with conservative and right-wing orientations) may be less attentive to such issues, resulting in lower levels of perceived awareness. Notably, Cruz's (2017) meta-analysis shows that ideological polarization on environmental concern has intensified over time, reflecting increasingly divergent worldviews. Taken together, this body of evidence reveals a consistent pattern: conservatives tend to exhibit lower awareness and concern regarding both health and environmental risks.

The present research

Building on this literature, the present study aims to investigate why individuals with more conservative ideological orientations tend to be less willing than liberals to reduce and replace meat consumption, focusing on the role of awareness of its negative consequences. Indeed, no prior study has investigated whether awareness may serve as a psychological mechanism linking political ideology and orientation to meat reduction intentions. The present research directly addresses this gap. Specifically, in a large and demographically representative sample of the Italian population, we examine whether conservatives and liberals differ in their awareness of the environmental and health consequences of meat consumption, and whether such awareness mediates political differences in intentions to reduce or replace meat.

In addition, for completeness and to obtain a more accurate and robust assessment of individuals' political positioning, we measured both political ideology and political orientation. Although highly correlated, these constructs are in part theoretically and empirically distinct. Political ideology reflects structured belief systems and value orientations, whereas political orientation refers to self-placement along the left-right continuum (Carmines & D'Amico, 2015; Jost et al., 2009). Importantly, some individuals may find

it difficult or uncomfortable to explicitly place themselves on a political scale. Others may hold ideological attitudes without strongly identifying with a political label. Assessing both ideology and orientation, therefore, offers a more comprehensive representation of political positioning and minimizes misclassification due to measurement resistance or ambiguity.

Guided by this background, we formulated the following hypotheses:

H1 Political ideology/orientation is expected to be associated with intentions to reduce and replace meat consumption, with more conservative positions linked to lower intentions.

H2 Conservatives are expected to display less awareness of the negative consequences of meat consumption, both in terms of environmental (H2a) and health (H2b) impacts.

H3 Awareness of the environmental (H3a) and health (H3b) consequences of meat consumption are expected to be positively associated with the intention to reduce and replace meat consumption.

H4 Lower awareness of these negative consequences, both environmental (H4a) and health-related (H4b), are expected to mediate the relationship between political ideology/orientation and intentions to reduce or replace meat consumption.

Methods

Transparency and openness

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of University of Padua.

Data were analyzed using R within the RStudio environment (Posit team, 2025). Path modeling and structural analyses were primarily conducted using the lavaan (Rosseel, 2012), psych (Revelle, 2025), semPlot (Epskamp, 2025), and car (Fox & Weisberg, 2019) packages. All necessary materials, raw and processed data, and analysis scripts—compiled in a Quarto document—are openly available at https://osf.io/zs5v2/overview?view_only=92e681a774a54926a27e781f610475e0.

Participants

Participants were recruited through Norstat, a data collection company specifically designed to provide large, reliable, and demographically representative samples. Norstat

implements ongoing quality assurance procedures and adheres to international standards, which are certified under ISO 9001 and ISO 20252:2019. Panel members are individuals who have given informed consent to participate in surveys on a broad range of topics. Access to these panels is regulated through invitation-only codes, ensuring rigorous control over participants' quality. All participants were recruited online.

The sample size was selected to balance parsimony with the goal of obtaining a nationally stratified and representative sample. This size allowed for adequate stratification across key sociodemographic dimensions—gender, age, and region—while limiting unnecessary increases in sampling complexity and data collection costs. Slight oversampling was applied to Molise and Valle d'Aosta due to their small population sizes. Educational level was monitored during sampling to ensure sufficient heterogeneity through soft stratification.

Overall, 4,066 participants ($M_{age} = 51.1, SD = 16.57$, range 18–89 years) took part in the study; 2094 of them identified as women (51.5%), 1960 as men (48.2%), 8 preferred not to say (0.2%), and 4 identified as nonbinary (0.1%). Concerning the educational level, 1,085 participants (26.7%) had a middle school or lower degree, 2,500 had obtained a high school degree (61.5%), 288 had a bachelor's degree (7.1%), 176 had a master's degree (4.3%) and 17 had a specialization/Ph.D. (0.4%). Regarding dietary habits, 3,458 participants (85.0%) identified as omnivores, 389 (9.6%) as flexitarians, 116 (2.9%) as vegetarians, 73 (1.8%) as pescatarians, and 30 (0.7%) as vegans. Questions regarding meat consumption were administered exclusively to omnivores and flexitarians ($N = 3825$).

Measures

The questionnaire was part of a broader study and included multiple variables, only a subset of which is reported in this work. To test the hypotheses of the present study, the

following variables were considered. Means, standard deviations and correlations are reported in Table 1.

Political orientation

Participants self-identified their political position on a single item ranging from 1 (far left) to 7 (far right).

Political ideology

Participants completed a 7-item scale assessing their ideological alignment on a series of socially and politically relevant issues (e.g., "Immigration regulations should be more restrictive," adapted from Carraro et al., 2011; $\alpha = 0.80$). Responses were recorded on a 7-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree), with higher scores indicating a stronger right-wing political ideology.

Awareness of consequences of meat consumption

Participants completed two 3-item scales assessing participants' awareness. The first scale focused on environmental impacts (i.e., "Meat production is one of the causes of environmental pollution"; "A reduction in meat consumption would contribute to environmental protection"; "Meat production is one of the causes of climate change"). The second scale concerned the health consequences (i.e., "Meat consumption contributes to the development of cardiovascular diseases"; "Meat consumption contributes to the development of cancer"; "Reducing meat consumption has positive effects on health"). Both measures, adapted from Carfora et al. (2020), were rated on a 7-point Likert scale from 1 (completely disagree) to 7 (completely agree) and showed high internal consistency (respectively $\alpha = 0.94$ and $\alpha = 0.91$). To test whether environmental and health awareness represent distinct constructs, we conducted a confirmatory factor analysis (CFA) comparing a two-factor model with a

Table 1 Descriptives and correlations.

Variable	<i>n</i>	M (SD)	1	2	3	4	5	6	7	8
1. Political orientation	4066	3.93 (1.41)	—							
2. Political ideology	4066	3.43 (1.22)	0.49***	—						
3. Environmental awareness	4066	4.28 (1.59)	-0.30***	-0.37***	—					
4. Health awareness	4066	4.46 (1.40)	-0.23***	-0.24***	0.75***	—				
5. Reduction intention	3825	3.75 (1.58)	-0.14***	-0.10***	0.49***	0.55***	—			
6. Replacement intention	3825	3.32 (1.63)	-0.15***	-0.13***	0.51***	0.54***	0.76***	—		
7. Gender 0=M, 1=W	4054	—	-0.04*	-0.11***	0.07***	0.05***	0.03*	0.06***	—	
8. Age	4066	51.1 (16.57)	-0.02	0.21***	-0.06***	0.04**	0.06***	0.02	-0.09***	—
9. Education level	4066	1.91 (0.73)	-0.06***	-0.16***	0.10***	0.06***	0.01	0.04*	0.04**	-0.49***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. *n* ranges from 3825 to 4066 due to planned questionnaire conditional logic. M and SD represent mean and standard deviation, respectively. Pearson correlation coefficients (*r*) are displayed. Likert-scale constructs represent mean composite scores, while single-item ordinal variables were analysed as interval measures

one-factor model. The two-factor model showed good fit, $\chi^2(8, N=4066)=232.21$, CFI = 0.990, TLI = 0.982, RMSEA = 0.083, SRMR = 0.019, and fit the data significantly better than the one-factor model, $\Delta\chi^2(1)=3116.60$, $p < .001$. The two factors were strongly correlated ($r = .80$), but this did not indicate redundancy. Full results are reported on OSF.

Meat reduction and replacement intention

Participants were presented with two 3-item scales evaluating their intentions to reduce and substitute meat consumption over the upcoming week. The first scale measured participants' agreement with 3 statements on the topic of meat reduction (i.e., "Over the next seven days, I intend to reduce my meat consumption"; "I plan to reduce my meat consumption"; "I will reduce my meat consumption"). The second scale measured participants' agreement with 3 statements on the topic of meat replacement (i.e., "Over the next seven days, I intend to replace my meat consumption"; "I plan to replace my meat consumption"; "I will replace my meat consumption"). Both measures, adapted from Carfora et al. (2022), were rated on a 7-point Likert scale from 1 (completely disagree) to 7 (completely agree) and showed high internal consistency (respectively $\alpha=0.96$ and $\alpha=0.97$).

Results

Preliminary analysis

To explore the relationships among the variables, a correlation matrix was generated (see Table 1). Political ideology and political orientation were both negatively correlated with intentions to reduce and replace meat consumption, indicating that more conservative or right-leaning individuals reported lower intentions to change their dietary behaviour, in line with H1. Specifically, political ideology was negatively correlated with reduction intention, $r(3823)=-0.10$, 95% CI [-0.12, -0.07], $p < .001$, and replacement intention, $r(3823)=-0.13$, 95% CI [-0.17, -0.10], $p < .001$, whereas political orientation showed similar associations with reduction, $r(3823)=-0.14$, 95% CI [-0.17, -0.11], $p < .001$, and replacement intentions, $r(3823)=-0.15$, 95% CI [-0.18, -0.12], $p < .001$. In addition, a negative association emerged between both political orientation and ideology and both environmental and health awareness. Specifically, individuals who identified as more right-leaning or conservative tended to report lower levels of awareness regarding the environmental and health consequences of a meat-based diet, in line with H2a and H2b, respectively ($rs(4064)=-0.30$ to -0.37 for environmental awareness;

$rs(4064)=-0.23$ to -0.24 for health awareness, all $ps < 0.001$). Moreover, environmental awareness was positively correlated with reduction intention, $r(3823) = 0.49$, 95% CI [0.46, 0.51], $p < .001$, and replacement intention, $r(3823) = 0.51$, 95% CI [0.48, 0.53], $p < .001$, while health awareness showed similar associations with reduction, $r(3823) = 0.55$, 95% CI [0.52, 0.57], $p < .001$, and replacement intention, $r(3823) = 0.54$, 95% CI [0.51, 0.56], $p < .001$, in line with H3. This suggests that greater awareness of the negative consequences of meat consumption for both health and the environment is associated with a stronger intention to reduce and replace it.

Full mediation models

To test H4, four path analyses with similar structures but different predictors and outcomes were conducted. The aim was to test whether all models, regardless of whether political ideology or orientation was used as predictor and whether the outcome referred to reducing or replacing meat, would converge on consistent patterns, thereby strengthening the robustness of the findings. Both outcomes were included in two separate models because they capture related but distinct intentions. Specifically, meat reduction involves a quantitative change primarily driven by health motives (Seffen & Dohle, 2023), whereas replacement entails a qualitative shift involving distinct psychological barriers, such as overcoming food neophobia, to adopt alternative products (Collier et al., 2021, 2022; Onwezen & Dagevos, 2024; Reuzé et al., 2023). Notably, conservatives tend to show higher food neophobia (Guidetti et al., 2022), which may limit their willingness to adopt alternative protein sources, making it important to evaluate both intentions separately. Nevertheless, despite this strong theoretical rationale, reduction and replacement intentions are highly intertwined in practice. Given their substantial empirical overlap, we acknowledge they cannot be treated as completely independent; therefore, while modeled as distinct outcomes, their specific effects should be interpreted with caution. Gender (dummy variable; Man=0, Woman=1), age, and educational level were included as control variables.

Collinearity among mediators was assessed using the Variance Inflation Factor (VIF) in RStudio. The VIF value was below the recommended threshold of 3 (i.e., 2.19; Hair et al., 2019). Covariances were modelled to investigate the relationship between the two types of awareness. Across all models, the covariance between the two mediators was positive and statistically significant ($covs \approx 1.38-1.44$, 95% CIs [1.30, 1.52], all $ps < 0.001$), corresponding to strong standardized correlations ($r \approx .72-0.73$).

Moreover, to retain an identified model ($df=1$) and preserve the interpretability of global fit indices, we report here

only the theoretically relevant indirect effects and omit the direct path in the main analyses. Including a direct path from ideology (or political orientation) to reduction and replacement intentions would have resulted in a saturated model, thereby precluding the evaluation of overall model fit. This choice is consistent with methodological recommendations suggesting that model testability should be preserved when additional parameters do not substantially contribute to theoretical explanation (Kline, 2016).

To assess the robustness of our conclusions and rule out the presence of unspecified direct effects, we additionally estimated alternative models including the direct path from the independent to the dependent variables. Model comparisons, based on the Bayesian Information Criterion (BIC) due to the sensitivity of the chi-squared difference test with large samples (Raftery, 1995), indicated that the inclusion of the direct effect did not meaningfully improve model fit. Accordingly, the more parsimonious full mediation structure was retained. Full details of these supplementary analyses are available in the OSF repository.

The models are described in more detail below. Unstandardized coefficients (*b*) and standardized coefficients (β) are reported for all structural paths and indirect effects.

Mediation effects on reduction intention

Model 1: Political ideology as independent variable

Model 1 ($R^2=0.32$; Fig. 1) fit the data adequately: $\chi^2(1)=21.22$, $p < .001$; CFI = 0.996; TLI = 0.940; RMSEA = 0.073, 90% CI [0.048, 0.101], $p\text{-close} = 0.065$; SRMR = 0.011. While the CFI and SRMR indicate good fit, the RMSEA and TLI suggest a marginal fit, with RMSEA slightly exceeding the conventional cutoff of 0.06 (Hu & Bentler, 1999). Political ideology was significantly associated with both

environmental awareness ($b = -0.46$, 95% CI [-0.50, -0.42], $\beta = -0.36$, $p < .001$) and health awareness ($b = -0.28$, 95% CI [-0.32, -0.24], $\beta = -0.25$, $p < .001$), indicating that more conservative orientations were linked to lower levels of awareness. In turn, both environmental ($b=0.20$, 95% CI [0.16, 0.25], $\beta=0.20$, $p < .001$) and health awareness ($b=0.46$, 95% CI [0.41, 0.51], $\beta=0.40$, $p < .001$) were positively associated with meat reduction intention.

The total indirect effect of political ideology on meat reduction intention was significant ($b = -0.22$, 95% CI [-0.25, -0.19]; $\beta = -0.17$, $p < .001$). Specifically, environmental awareness ($b = -0.09$, 95% CI [-0.12, -0.07]; $\beta = -0.07$, $p < .001$) and health awareness ($b = -0.13$, 95% CI [-0.15, -0.11]; $\beta = -0.10$, $p < .001$) significantly mediated this relationship.

Model 2: Political orientation as independent variable

Model 2 ($R^2 = 0.32$; Fig. 2) demonstrated an excellent fit to the data: $\chi^2(1)=0.02$, $p = .892$; CFI=1.000; TLI=1.003; RMSEA=0.000, 90% CI [0.000, 0.020], $p\text{-close} = 0.999$; SRMR=0.000. Political orientation emerged as a significant predictor of both environmental awareness ($b = -0.31$, 95% CI [-0.34, -0.27], $\beta = -0.28$, $p < .001$) and health awareness ($b = -0.20$, 95% CI [-0.23, -0.17], $\beta = -0.21$, $p < .001$), with more right-leaning orientations associated with lower levels of awareness. Both environmental awareness ($b=0.20$, 95% CI [0.16, 0.25], $\beta=0.20$, $p < .001$) and health awareness ($b=0.46$, 95% CI [0.41, 0.51], $\beta=0.40$, $p < .001$) were positively related to the intention to reduce meat. Moreover, both environmental ($b = -0.06$, 95% CI [-0.11, -0.08]; $\beta = -0.06$, $p < .001$) and health awareness ($b = -0.09$, 95% CI [-0.08, -0.05]; $\beta = -0.08$, $p < .001$) significantly mediated the association between political orientation and replacement intention. The total indirect effect was also significant ($b = -0.15$, 95% CI [-0.18, -0.13]; $\beta = -0.14$, $p < .001$).

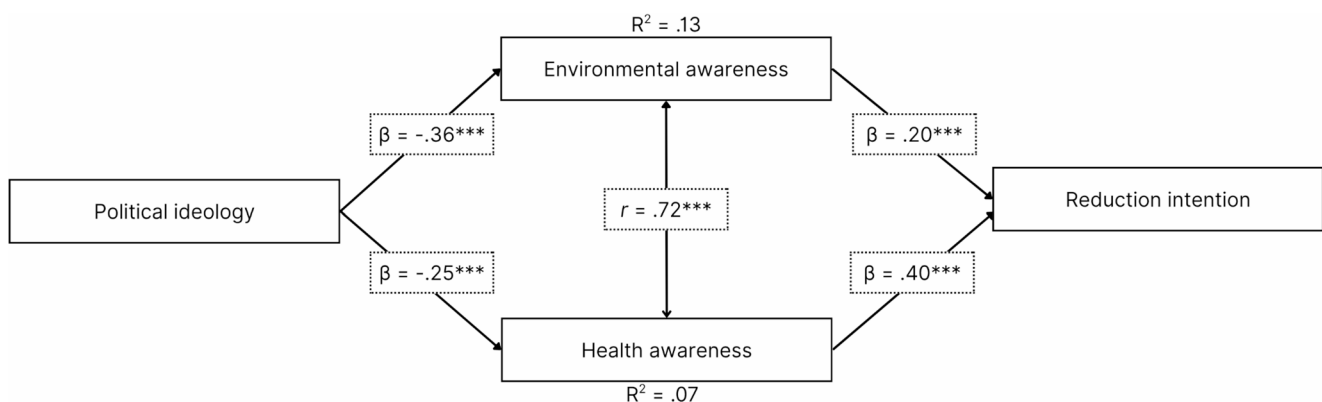


Fig. 1 Model 1 with political ideology and reduction intention. Note: Hypothesized Full Mediation Model. Values on single-headed arrows represent standardized path coefficients (β). The value on the double-

headed arrow represents the standardized direct effects (r) between the mediator variables. R^2 values indicate the proportion of variance explained by the predictors. $^{***}p < .001$

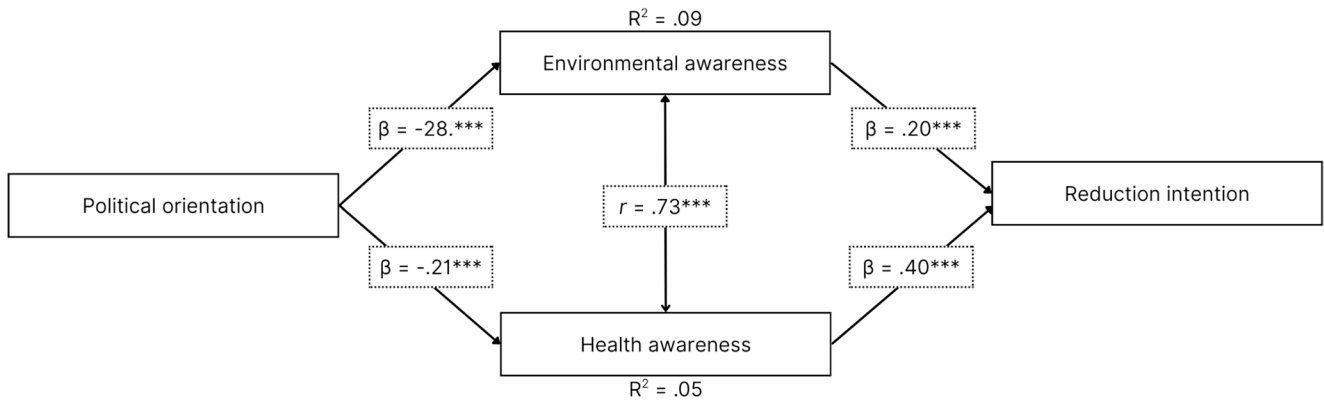


Fig. 2 Model 2 with political orientation and reduction intention. Note: Hypothesized Full Mediation Model. Values on single-headed arrows represent standardized path coefficients (β). The value on the double-

headed arrow represents the standardized direct effects (r) between the mediator variables. R^2 values indicate the proportion of variance explained by the predictors. $***p < .001$

Mediation effects on replacement intention

Model 3: Political ideology as independent variable

Model 3 ($R^2 = 0.319$; Fig. 3) demonstrated excellent fit to the data: $\chi^2(1)=8.83, p = .003$; CFI = 0.998; TLI = 0.977; RMSEA = 0.045, 90% CI [0.021, 0.075], p -close = 0.547; SRMR = 0.007. Both environmental ($b=0.26, 95\% \text{ CI } [0.21, 0.30], \beta = -0.36, p < .001$) and health awareness ($b=0.42, 95\% \text{ CI } [0.37, 0.47], \beta = -0.25, p < .001$) were significantly related to meat replacement intention. Moreover, both environmental ($b = -0.12, 95\% \text{ CI } [-0.14, -0.10]; \beta=-0.09, p < .001$) and health awareness ($b = -0.12, 95\% \text{ CI } [-0.14, -0.10]; \beta=-0.09, p < .001$) significantly mediated the relationship between political ideology and replacement intention. The total indirect effect was statistically significant ($b = -0.24, 95\% \text{ CI } [-0.27, -0.21]; \beta=-0.18, p < .001$), indicating that the mediators accounted for a substantial portion of the relationship between the independent and dependent variables.

Model 4: Political orientation as independent variable

Model 4 ($R^2 = 0.319$; Fig. 4) showed an excellent fit to the data: $\chi^2(1)=0.12, p = .725$; CFI=1.000; TLI=1.003; RMSEA=0.000, 90% CI [0.000, 0.031], p -close = 0.997; SRMR=0.001. The direct effects of political orientation on the two mediators are consistent with those observed in Model 2. Similarly, the effects of the mediators on replacement intentions align with those reported in Model 3. Analyses further revealed that both environmental ($b = -0.08, 95\% \text{ CI } [-0.10, -0.07]; \beta = -0.07, p < .001$) and health awareness ($b = -0.09, 95\% \text{ CI } [-0.10, -0.06]; \beta = -0.07, p < .001$) mediated the link between political orientation and meat replacement intentions. The overall indirect effect was statistically significant ($b = -0.16, 95\% \text{ CI } [-0.19, -0.14]; \beta = -0.14, p < .001$).

Models' comparison

Finally, to assess the robustness of our findings, we re-estimated all four models excluding the covariates. Model

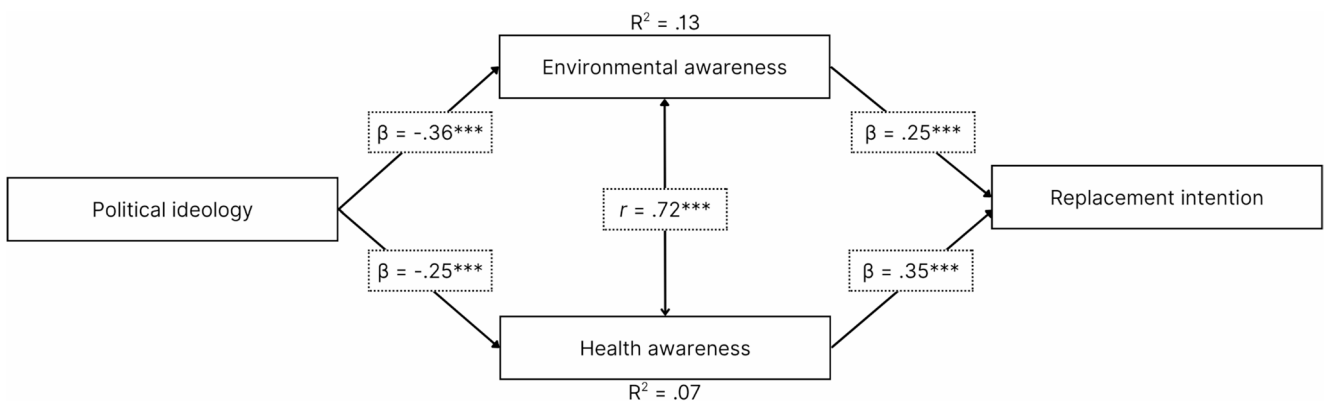


Fig. 3 Model 3 with political ideology and replacement intention. Note: Hypothesized Full Mediation Model. Values on single-headed arrows represent standardized path coefficients (β). The value on the

double-headed arrow represents the standardized direct effects (r) between the mediator variables. R^2 values indicate the proportion of variance explained by the predictors. $***p < .001$

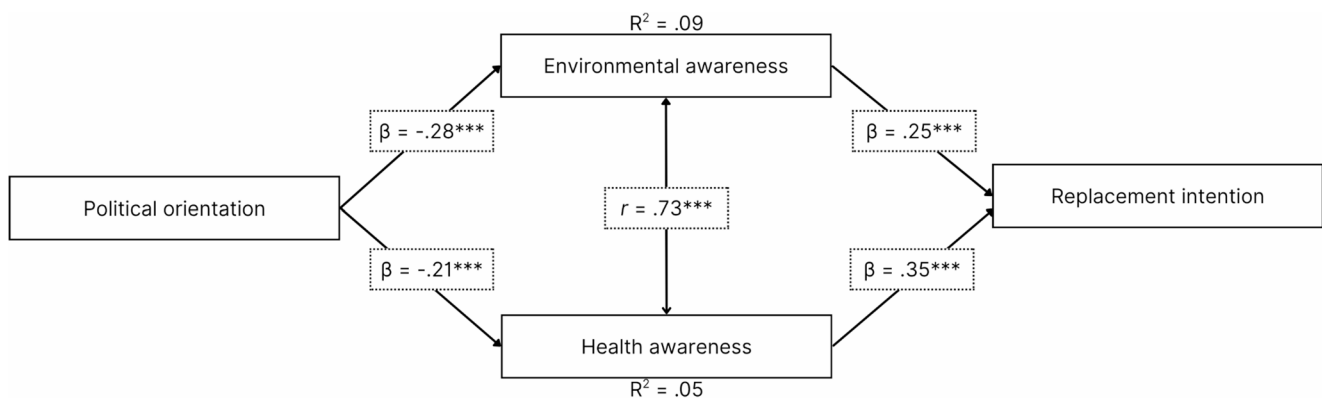


Fig. 4 Model 4 with political orientation and replacement intention. Note: Hypothesized Full Mediation Model. Values on single-headed arrows represent standardized path coefficients (β). The value on the

double-headed arrow represents the standardized direct effects (r) between the mediator variables. R^2 values indicate the proportion of variance explained by the predictors. *** $p < .001$

fit was assessed using multiple indices, including the chi-square test, CFI, TLI, RMSEA, and SRMR (Yaşlıoğlu & Yaşlıoğlu, 2020). Model 2 and Model 4, as shown in Table 2, demonstrated excellent fit, with chi-square values near zero, non-significant p -values, CFI and TLI values equal to or exceeding 1, and RMSEA=0, indicating near-perfect alignment between the model and the observed data. Model 3 demonstrated an overall acceptable fit, with CFI, TLI, and RMSEA all falling within commonly recommended thresholds, indicating a good correspondence between the hypothesized model and the observed covariance structure. In contrast, Model 1 presented more noticeable limitations. Although the CFI reached an excellent level, the RMSEA slightly exceeded the ideal 0.05 cutoff, while remaining within the broadly acceptable range of ≤ 0.08 , and the TLI fell below the recommended 0.95 threshold, even if still within an acceptable range (≥ 0.90). This pattern suggests that Model 1 provides a weaker representation of the underlying data structure relative to Model 3, indicating potential room for theoretical refinement or model specification. Taken together, the overall evaluation of the four models indicates that Model 2 and Model 4 offer the strongest balance between theoretical coherence and empirical fit, providing the most parsimonious and adequately fitting representations of the data. As for the models using political ideology as predictor, Model 3 appears viable and broadly consistent with expectations. In contrast, Model 1 may benefit from deeper theoretical reconsideration.

Supplementary analyses with direct effects

As clarified above, the main analyses report results from non-saturated mediation models. For the sake of completeness, and to further assess the robustness of the proposed mediation framework, we additionally estimated alternative models including direct paths from political ideology or political orientation to meat-reduction and meat-replacement intentions. As expected, the inclusion of these direct paths resulted in saturated models, precluding the evaluation of global fit indices. Accordingly, these models were examined by focusing on the magnitude and statistical significance of the direct and indirect effects. Results indicated small but statistically significant direct effects of political ideology on both meat-reduction and meat-replacement intentions ($\beta=0.04$, $ps = 0.003$), consistent with a pattern of partial mediation. By contrast, direct effects of political orientation were not statistically significant in either model ($\beta_s=-0.01$ to 0.00 , $ps \geq 0.74$), supporting full mediation through environmental and health awareness. Full results are reported in the OSF repository.

Discussion

The present study examined whether ideological differences in intentions to reduce or replace meat consumption could be explained, at least partially, by differences in awareness

Table 2 Comparison between models' fit indices excluding the covariates

	χ^2	df	p	CFI	TLI	RMSEA	SRMR
Model 1 [X=Political Ideology; Y=Reduction Intention]	21.22	1	<0.001	0.996	0.940	0.073	0.011
Model 2 [X=Political Orientation; Y=Reduction Intention]	0.02	1	0.893	1.000	1.003	0.000	0.000
Model 3 [X=Political Ideology; Y=Replacement Intention]	8.83	1	0.003	0.998	0.977	0.045	0.007
Model 4 [X=Political Orientation; Y=Replacement Intention]	0.12	1	0.725	1.000	1.003	0.000	0.001

of the environmental and health consequences of meat consumption. Across all four mediation models, two including political ideology and two including political orientation as independent variables, we observed a coherent pattern. Conservatives (vs. liberals) and right-wing (vs. left-wing) people displayed lower meat-reduction and meat replacement intention (in line with H1), as well as lower levels of both environmental and health awareness, consistent with H2a and H2b. These differences may reflect either variation in information internalization or differential access to information. Further research is needed to clarify the underlying processes. Moreover, both forms of awareness were positively associated with intentions to reduce (H3a) and replace meat (H3b), and awareness consistently mediated the association between ideological variables and intentions (H4), although with modest effect sizes, which is consistent with the multifactorial nature of dietary behaviours. Notably, health-related awareness displayed somewhat stronger associations with intentions than environmental awareness, suggesting that considerations related to personal well-being may exert greater motivational weight than ecological concerns. From an applied perspective, this pattern appears to suggest that emphasizing health-related benefits could represent a particularly promising pathway for promoting dietary shifts. Accordingly, interventions aimed at reducing meat consumption may benefit from integrating or foregrounding personal health outcomes alongside ecological messaging.

Overall, these findings contribute to ongoing discussions about how individual variables, specifically sociopolitical ideological worldviews, shape responses to scientific information and public policy challenges, ultimately influencing individuals' behaviours and intentions. Existing literature indicates that conservatives tend to consume more meat and express lower willingness to adopt sustainable diets (Carraro et al., 2025). Our results advance this line of work by identifying awareness as a psychologically meaningful mechanism that may at least partially account for these ideological differences. These findings invite reflection on the cognitive processes through which individuals transform available information into genuine awareness. Given that information about the negative health and environmental consequences of meat consumption is potentially widely accessible to everyone, the observed ideological gap suggests that motivated cognitive processes may hinder this transition from mere exposure to full awareness, particularly among conservatives.

This interpretation could be consistent with theories of motivated social cognition (Jost et al., 2009), according to which conservative worldviews serve epistemic, existential and relational functions by favouring stability, order, predictability, and protection against uncertainty. Acknowledging the negative consequences of meat consumption,

particularly those implicated in climate change, environmental degradation, or health risks, may conflict with these motives, thereby reducing the likelihood that conservatives fully internalize such information. Similarly, as aforementioned in the introduction, confirmation bias (Nickerson, 1998) may lead individuals to selectively attend to information that validates their dietary preferences while dismissing or downplaying evidence that challenges them. Together, these mechanisms may inhibit the transition from information to true awareness. Future research is needed to disentangle which of these cognitive processes plays the most prominent role and to examine how they may interact in shaping ideological differences in awareness and subsequent behavioural intentions.

Finally, the comparison between models involving political ideology and those using political orientation provides an additional insight. Indirect effects were generally stronger when ideology (rather than political orientation) was taken into consideration, suggesting that deeper value structures may offer a more robust understanding of the motivational basis underlying attitudes toward environmentally sustainable and health-related behaviours. This pattern supports arguments that political ideology and partisan orientation, although related, are conceptually distinct constructs that capture different levels of abstraction (Cruz, 2017). Supplementary analyses including direct paths showed that political ideology retained a small but statistically significant direct association with meat-reduction and replacement intentions, indicating partial mediation, whereas political orientation showed no significant direct effects, supporting full mediation through awareness. Overall, these findings suggest that awareness mechanisms play a central role in linking political worldviews to dietary intentions, while ideological beliefs may exert a modest additional influence beyond awareness.

Practical implications, limitations and future directions

From an applied perspective, these results might suggest the importance of communication strategies aimed at increasing awareness of the consequences of meat consumption, since a lack of such awareness is a critical factor partially able to explain why some individuals may fail to adopt behavioural change. This suggests that communication campaigns aimed at promoting sustainable dietary choices should prioritise strategies capable of increasing the personal relevance, salience, and emotional resonance of information about the environmental and health consequences of meat consumption.

The importance of transforming concern into awareness is also reflected in recent work on ideology and environmental threat sensitivity. For instance, Valmori et al. (2024)

found that inducing personal or collective mortality salience increased conservatives' concern for climate change. However, despite this increased concern, no corresponding increase emerged in their intentions to adopt sustainable dietary behaviours. This attitude-intentions gap suggests that concern alone may be insufficient to motivate change when the link between the threat (e.g., climate change) and specific behaviours (e.g., meat consumption) is not fully understood or made salient. In other words, individuals may feel worried about climate change yet remain unaware of the negative consequences of their everyday food choices, such as meat consumption.

Future research should therefore investigate which communication strategies most effectively foster awareness of the consequences of meat consumption across ideological groups, with a particular attention to approaches that can help overcome conservatives' resistance to information about the negative health and environmental impact of meat consumption.

Beyond the valuable and theoretically coherent results, several limitations should be acknowledged. First, the cross-sectional nature of the data does not allow for causal inferences, even though the ordering of variables in the mediation models was theoretically grounded. Indeed, mediation analyses based on cross-sectional data cannot establish causal mechanisms with certainty (e.g., Bullock et al., 2010; Fiedler et al., 2011; Pirlott & MacKinnon, 2016). Therefore, the proposed pathways should be interpreted with caution. Future research should test these relationships with longitudinal or experimental mediation designs, which would allow for stronger causal inference and a more rigorous assessment of the underlying processes. Second, behavioural intentions, although widely used in research on dietary change, do not always correspond to actual behaviours, and may have been influenced by social desirability concerns, particularly given the explicit reference to sustainable diets in the questionnaire. Moreover, awareness was assessed through self-report at a single time point; future research would benefit from incorporating behavioural or objective indicators of awareness, as well as longitudinal or experimental designs capable of capturing how awareness evolves following information exposure. A further limitation concerns the operationalization of political ideology. While the present study captures broad ideological positioning through self-placement and issue-based measures, it does not include more specific constructs such as RWA and SDO (see for instance, Ioannidou et al., 2026), nor does it explicitly address the economic dimension of ideology (see Crowson, 2009; Feldman & Johnston, 2014). These dimensions may play an important role in shaping attitudes toward animals and meat consumption and reduction, as well as the perceived relevance of different types of consequences.

Moreover, in this respect, the distinction between environmental and health consequences adopted in the present study was theoretically grounded in prior literature (e.g., Fantechi et al., 2026; Harguess et al., 2020; Kwasny et al., 2022; Rabitti et al., 2024), which conceptualizes these domains as reflecting different motivational systems (i.e., more collective vs. more personal consequences). However, the perceived relevance of these consequences may vary across individuals, particularly as a function of ideological orientation. Future research should therefore incorporate more fine-grained measures of ideological motivations and consider adopting elicitation procedures to better capture which consequences are most salient for different individuals (Ajzen & Fishbein, 2005), thereby providing a more comprehensive understanding of the mechanisms underlying the described relationships.

Another limitation pertains to the behavioural domain investigated. The present study focused specifically on meat reduction and replacement intentions, and it remains unclear whether awareness plays a similar mediational role for other sustainable and health-related behaviours, such as mobility choices, energy conservation, or food waste reduction.

Finally, although the use of a representative Italian sample strengthens ecological validity, the meaning of political ideology and the extent to which dietary behaviours are politicized differ across cultural contexts, which may limit the generalizability of the findings. In particular, Italy represents a specific context characterized by strong culinary traditions and a relatively lower diffusion of alternative protein sources when compared with some Northern European countries, such as Denmark and Finland (Zaleskiewicz et al., 2024), which may influence how meat consumption and its consequences are perceived. More broadly, cultural norms, local conditions, and socio-economic factors, as well as policies promoting awareness of environmental and health consequences, may affect both the salience of these consequences and their relationship with ideological variables. For instance individuals' socio-economic conditions, or their affective attachment to local culinary traditions, may shape the extent to which meat reduction and replacement are perceived as relevant or feasible behaviors, independently of their awareness of the associated consequences. Future research should also consider directly assessing baseline levels of awareness across contexts, as higher levels of generalized awareness, potentially driven by public policies and communication campaigns, may attenuate the association between these mediators and ideological differences. Cross-cultural replications would therefore be useful to clarify whether the mechanisms here observed are culturally specific or broader psychological tendencies. Indeed, while the underlying mechanisms identified in this study are likely to operate across contexts, their strength may vary depending on country-level cultural and socio-economic factors.

Conclusion

Despite some limitations, this study offers several notable strengths. To our knowledge, it is the first to examine awareness of the consequences of meat consumption as a psychological mechanism underlying ideological differences in intentions to reduce or replace meat. By using a representative sample and simultaneously considering political ideology and political orientation, the study strengthens the robustness of the findings.

Taken together, the results highlight a simple yet crucial insight: What matters is whether individuals are aware of the consequences of their choices. Although more empirical support is needed, enhancing awareness appears to be a promising target for inclusive interventions aimed at promoting more sustainable and healthier dietary choices across a broader segment of the population.

Authors' Contribution Luca Cussigh: Conceptualization, Methodology, Formal analysis, Writing – OriginalDraft; Giulia Scaglioni: Conceptualization, Methodology, Writing - Review & Editing; Margherita Guidetti: Conceptualization, Methodology, Writing - Review & Editing; Michela Lenzi: Conceptualization, Methodology, Writing - Review & Editing; Davide Naddeo: Conceptualization, Writing - Review & Editing; Valentina Carfora: Conceptualization, Methodology, Writing - Review & Editing; Luciana Carraro: Conceptualization, Methodology, Formal analysis, Writing – OriginalDraft.

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Data Availability The data that support the findings of this study are available in the Open Science Framework (OSF). The repository includes the dataset, the codebook, and a Quarto file containing the R code necessary to reproduce the analysis. These materials can be accessed via the following link (also included in the manuscript): https://osf.io/zs5v2/overview?view_only=92e681a774a54926a27e781f610475e0.

Declarations

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Research Ethics Committee of University of Padova (number 460-a).

Consent to participate Informed consent was obtained from all individual participants included in the study.

Consent to publish The study involved only anonymous data, and no identifying information or images of individual participants are included in this article.

Competing interests On behalf of all authors, the corresponding author states that there is no conflict of interest.

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