

RESEARCH ARTICLE

Veg*ns' and omnivores' reciprocal attitudes and dehumanization: The role of social dominance orientation, ingroup identification, and anticipated reproach

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Abstract

Two studies compared omnivores' and veg*ns' attitudes and dehumanization tendencies toward each other and identified the social psychological factors explaining them. Study 1 ($N = 208$, Italians) showed that veg*ns' hold less positive attitudes toward omnivores than the reverse, and attributed to them less human uniqueness and nature; these differences were explained by veg*ns' stronger identification with the ingroup and higher perceptions of reproach from the outgroup, even if omnivores' higher levels of social dominance orientation worsened their attitude toward veg*ns. Study 2 (pre-registered, $N = 200$, mostly from UK) overall replicated Study 1 findings at the explicit level. Interestingly, omnivores' and veg*ns' implicit attitudes were equally positive (but less positive than self-reported attitudes) and not predicted by the same mediators associated with the explicit measures. This work suggests that neither veg*ns nor omnivores hold negative attitudes toward each other: they were both positive or neutral toward the outgroup, even if at the explicit level this positivity is greater for omnivores.

KEYWORDS

anticipated reproach, dehumanization, ingroup identification, intergroup attitudes, prejudice, social dominance, vegetarians and vegans

1 | INTRODUCTION

Vegetarian and vegan (hereafter, "veg*n") diets are healthy (Melina et al., 2016), environmentally sustainable (e.g., Poore & Nemecek, 2018), and save the lives of both animals and humans by contrasting famine (e.g., Berners-Lee et al., 2018). Notwithstanding these highly valuable benefits, people who make this choice seem to be victims of prejudice. Cole and Morgan (2011), who introduced the term "vega-phobia," identified 397 articles dealing with veganism in UK national newspapers during 2007, of which 73.4% were negative and disparaging. This may suggest that, unlike prejudice against other minorities, bias against veg*ns is not considered a problem but is even mainstream

and commonly accepted (or at least was in 2007). Indeed, veg*n participants have reported negative social experiences (e.g., decreased contact from friends) and everyday discrimination related to their food and lifestyle choices (Hirschler, 2011; MacInnis & Hodson, 2017; see also Markowski & Roxburgh, 2019).

Consistently, a stream of research is now available on this topic and shows that omnivores tend to manifest a bias against veg*ns (e.g., Bresnahan et al., 2016; Bryant, 2019; De Groeve et al., 2021; 2022; Earle & Hodson, 2017; MacInnis & Hodson, 2017). However, less attention has been devoted to the other side of the coin—that is, veg*ns' attitudes toward omnivores. This issue merits consideration, since veg*nism is becoming a more popular choice worldwide and the relationships

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between veg*ns and omnivores are thus likely to become more frequent and relevant in people's daily lives (Food Revolution Network, 2018).

Veg*n-omnivore interactions are rooted in people's belonging to a social minority or majority and involve the consequences of asymmetrical intergroup relationships. We devised two studies aimed to assess and compare veg*ns' and omnivores' attitudes and dehumanization tendencies toward their respective outgroup and to identify social psychological factors driving those evaluations by testing the mediating role of social dominance orientation (SDO), ingroup identification, and anticipated reproach from the outgroup. Aspiring to propose a parsimonious model of omnivores-veg*ns' reciprocal attitudes that could be also applied to other majority-minority intergroup relations, we selected these three mediators based on their distinction (they concern different domains and do not overlap each other) and generality (they are not specific of the omnivores-veg*ns relation and can apply to both groups).

1.1 | Omnivores' bias against veg*ns

While veg*ns' attitudes toward omnivores have been examined only recently (Bagci et al., 2021; Tian et al., 2019), several studies have tested the hypotheses that veg*ns, as a social minority, are the targets of negative evaluations from members of the social majority (i.e., omnivores). MacInnis and Hodson (2017) examined omnivores' attitudes toward veg*ns and showed that they were equivalent to or more negative than their attitudes toward other groups that are common targets of prejudice (e.g., Blacks and homosexuals) and minorities who challenge social norms (i.e., environmentalists and feminists), and more negative than their attitudes toward other groups characterized by food selectivity (i.e., coeliac eaters, lactose intolerants, and religious dieters). In another study (Minson & Monin, 2012), 47% of omnivorous respondents freely associated at least one negative word (out of three they were asked to generate) with vegetarians. These results were interpreted as empirical evidence of a strong bias against veg*ns. However, 53% of Minson and Monin's (2012) participants reported only neutral or positive associations with vegetarians. In addition, it is noteworthy that the mean attitude scores in these and other studies (Chin et al., 2002; Judge & Wilson, 2019; MacInnis & Hodson, 2017; Minson & Monin, 2012) all fall on the positive side of the scale. Therefore, rather than outright negativity, omnivores in general conveyed neutral or even positive attitudes toward veg*ns, although less positive than those elicited toward other minorities (MacInnis & Hodson, 2017).

However, the most interesting contribution in this field is the attempt to understand the reasons why at least some omnivores hold negative attitudes toward veg*ns. This line of research has investigated different processes explaining this specific form of bias. A specific reason potentially motivating people to dislike veg*ns involves the psychological mechanism of cognitive dissonance. Rothgerber (2014) showed that the mere exposure to a vegetarian reminds omnivores of the "meat paradox" (i.e., eating meat while believing that hurting animals is wrong) and thus activates different strategies intended to

minimize this state of cognitive dissonance. Derogating veg*ns might be one of these strategies and a recent theoretical framework (De Groeve & Rosenfeld, 2022) proposes that the meat paradox would induce a vegan paradox, that is an ambivalent attitude toward vegans (vegan advocates particularly), considered moral and committed but also arrogant and overcommitted (see also De Groeve et al., 2022). From a different perspective, Tian et al. (2019) found that omnivores scoring high on meat rationalization (that is the belief that eating meat is natural, normal, necessary, and nice) expressed more negative attitudes toward and fewer positive evaluations of veg*ns.

However, there are more general reasons pertaining to minority-majority relationships and general intergroup dynamics on which we focus the present research. These factors suggest that also veg*ns could be biased toward omnivores.

1.2 | Why would omnivores and veg*ns dislike each other?

1.2.1 | The social dominance explanation

SDO (Sidanius & Pratto, 1993, 1999) has been already identified as a reason why omnivores dislike veg*ns. MacInnis and Hodson (2017) found that prejudice-prone individuals—for example, those scoring high on right-wing ideologies such as right-wing authoritarianism (Altemeyer, 1981, 1988), SDO, and conservatism—reported more negative judgments of veg*ns, as well as other minorities, and heightened discrimination intentions toward veg*ns (see also Earle et al., 2019; Judge & Wilson, 2019).

In addition, the association between right-wing ideologies and judgment toward veg*ns was mediated by veg*nism threat. In other words, right-wingers held negative attitudes toward this minority outgroup because they perceived them as challenging the status quo and prevailing social norms of animal exploitation (MacInnis & Hodson, 2017; see also Dhont & Hodson, 2014; Dhont et al., 2016). In line with these results, vegans are evaluated more negatively than vegetarians, and both are evaluated more negatively when their choice is motivated by animal rights and environmental concerns rather than personal health reasons (MacInnis & Hodson, 2017). A similar result emerged more recently (Bagci et al., 2021; De Groeve et al., 2022): meat-eaters evaluated veg*ns less positively than flexitarians (i.e., individuals limiting meat consumption to some extent, without eschewing it entirely). In other words, those who more strongly challenge social norms seem to attract the most negative judgments. Interestingly, meat-eaters' negative attitudes toward veg*ns were motivated by the perception that they represent a threat to their own country's cultural tradition (Bagci et al., 2021; MacInnis & Hodson, 2017).

Conservatism (e.g., DeLuca-McLean & Castano, 2009) and SDO also predict infra-humanization (e.g., Costello & Hodson, 2011), that is, the subtle tendency to view outgroup members as less human than ingroup members (Leyens et al., 2001; 2007). This could be especially relevant in the context of omnivores-veg*ns relationships as the effect of SDO is particularly strong in conditions of symbolic threat (to values

and traditions), which maximally express intergroup differences along uniquely human dimensions (Costello & Hodson, 2011).

We chose to focus on SDO as one of the hypothesized mediating factors in our model because, among the right-wing ideology variables, it showed the highest association with omnivores' attitudes toward veg*ns (ManInnis & Hodson). As an individual difference, SDO might be considered an obstacle to veg*n choice, a possible reason why some people become veg*ns while other do not. However, SDO may also be conceived of as "a general attitudinal orientation toward intergroup relations, reflecting whether one generally prefers such relations to be equal, versus hierarchical" (Pratto et al., 1994, p. 742), and we know that group membership affects attitudes (e.g., Newcomb, 1943). More specifically, social dominance theory predicts that members of dominant groups will endorse SDO, whereas members of subordinate groups will oppose social hierarchy (Pratto, 1999; Pratto et al., 2006). For example, men and higher status ethnic/racial groups score higher on the SDO dimension than women and lower status ethnic/racial groups (see Lee et al., 2011 for a meta-analysis). These differences, based on ascribed characteristics, suggest that belonging to a dominant group produces or reinforces high levels of SDO as a means to justify and perpetuate one's own privilege. Consistently, gender differences in SDO have been explained by status differences (Batalha et al., 2011), SDO have been shown to increase among supporters of the formerly low-power political party following electoral victory (Liu et al., 2008), and manipulating the perceived status of participants produced differences in their SDO scores (Batalha et al., 2011; Schmitt et al., 2003). Therefore, SDO is not only conceived of as a predictor, but is also an outcome, and a circular relation between diet and SDO is plausible: on the one hand, individuals scoring low (vs. high) on this dimension are more likely to become veg*ns; on the other hand, being omnivore (i.e., a member of the majority group) should reinforce a high level of SDO as a mean to maintain one's own status, while being veg*n (i.e., a member of a minority emphasizing equality among all beings) should further decrease SDO.

Since omnivores generally display higher levels of SDO than veg*ns (Allen et al., 2000; Bilewicz et al., 2011; Veser et al., 2015), we could expect greater prejudice from omnivores toward veg*ns than the other way around. However, we must consider that, as an individual difference, SDO should predict outgroup derogation also within each group; in other words, also veg*ns scoring relatively high on this dimension should dislike omnivores to a greater extent than veg*ns scoring low.

1.2.2 | The social identity explanation

The reciprocal attitudes between omnivores and veg*ns can be also rooted in the general tendency to manifest prejudice against outgroup members, as described by the literature on intergroup bias and the different theoretical approaches focusing on it (social identity theory, Tajfel & Turner, 1979; self-categorization theory, Turner et al., 1987; optimal distinctiveness theory, Brewer, 1991). According to these perspectives, discrimination against the members of a social category originates from intergroup relations, even when explicit conflicts of

interest are not at stake (Tajfel, 1981). In particular, intergroup discrimination stems from identification with the ingroup and the motivation to maintain a positive social identity and can take the shape of ingroup favouritism and outgroup derogation (Hewstone et al., 2002).

Although ingroup love is more common and more widely documented (e.g., Brewer, 1999, 2017; Halevy et al., 2008), outgroup hate does emerge in particular intergroup situations which are specifically relevant for the omnivores-veg*ns relation, such as among morality-based groups involving oppositional outgroups (Parker & Janoff-Bulman, 2013; Weisel & Bohm, 2015). The members of these groups share the moral conviction that a certain behaviour (e.g., eating meat) is either right or wrong and perceive the outgroup as harmful and threatening. While omnivores may consider veg*ns a threat to the status quo (e.g., MacInnis & Hodson, 2017), veg*ns may consider omnivores a threat to animals, the planet, and even omnivores' own health, given the moralization of this domain (e.g., Brandt & Rozin, 1997).

Intergroup comparison seems to induce outgroup derogation (Branscombe & Wann, 1992, 1994; Mummendey et al., 2001) and infra-humanization (e.g., Demoulin et al., 2009; Hackel et al., 2014; Russo & Mosso, 2019) for highly identified individuals. Indeed, among omnivores, ingroup identification as a meat eater was associated with more negative attitudes toward veg*ns (MacInnis & Hodson, 2017), while infra-humanization has not yet been examined in the context of omnivores-veg*ns relationships. As veg*ns usually share a strong social identity (Nezlek et al., 2020; Nezlek & Forestell, 2020; Plante et al., 2019; Rosenfeld & Burrow, 2018), we could expect greater prejudice from veg*ns toward omnivores than the other way around.¹ Indeed, several studies carried out with laboratory-created and real groups, employing a variety of measures of ingroup identification, have shown that minority group members are more attached to their ingroups and manifest both stronger ingroup favouritism (for a review, see Leonardelli et al., 2010) and stronger outgroup derogation (e.g., Moscatelli et al., 2017). The latter effect is especially evident when the majority group is perceived as a threat to minority members' self-esteem (Branscombe & Wann, 1992, 1994; Brewer, 1999) and to stigmatized social minorities (e.g., Bettencourt et al., 1999; Simon et al., 1991). For example, considering the preference for negative messages about the outgroup as a form of outgroup derogation, some studies showed that older people were more likely to select and read negative (vs. positive) news about young people (Knobloch-Westerwick & Hastall, 2010), and Black newspaper readers preferred negative articles about White people over positive ones (Appiah et al., 2013).

Also, for morality-based groups, minority status further implies negative attitudes toward the outgroup (Parker & Janoff-Bulman, 2013). This outgroup derogation may be due to the need to compensate for the insecurity derived from belonging to a smaller or less powerful group (Ellemers et al., 1992; Tajfel & Turner, 1979). Negative attitudes toward a majoritarian outgroup therefore serve in-group protective functions (Branscombe et al., 1999; Leonardelli & Brewer, 2001) and

¹ On the other hand, we must also consider that the majority's negative attitudes are particularly directed toward strongly identified minorities (Kaiser & Pratt-Hyatt, 2009).

represent a way to bolster minority group members' self-esteem (Knobloch-Westerwick & Hastall, 2010).

1.2.3 | The anticipated reproach explanation

Beyond general intergroup dynamics, a further reason for omnivores–veg*ns reciprocal disliking could derive from anticipated reproach. We already know that, among omnivores, a defensive negative view of veg*ns also stems from anticipated moral criticism from them (Minson & Monin, 2012). Minson and Monin (2012) argue that this is an instance of “do-gooder derogation”: disparaging morally motivated others to defuse anticipated reproach (for a review, see Cramwinckel et al., 2015). They found a negative correlation between the valence of words associated with vegetarians and the perception that vegetarians view themselves as morally superior. In addition, in a second study they showed that making this alleged moral reproach—a form of threat to one's self-esteem—experimentally salient worsened omnivores' attitudes toward vegetarians (Minson & Monin, 2012).

However, the perceived reproach from the outgroup should apply not only to omnivores, but also to veg*ns. Although it is unlikely that omnivores disapprove of veg*ns on a strictly moral base, it is very likely that the latter anticipate a more general reproach from the former (perhaps based on a presumed hedonistic or nutritional superiority), as previous studies have documented (e.g., MacInnis & Hodson, 2017). This represents a threat to veg*ns' self-esteem and may be a further reason to expect that they are also biased against omnivores.

Anticipated reproach may exacerbate any other intergroup conflict wherein each group feels criticized by the outgroup, such as many minority/majority or morality-based oppositional groups.

1.3 | The present research

Despite the theoretical reasons to expect negative attitudes from veg*ns toward omnivores, this possibility has been empirically investigated only recently. Tian et al. (2019, Study 2) asked both omnivores and veg*ns to evaluate different dietary groups (omnivores, conscientious omnivores, flexitarians, vegetarians and vegans) and found that veg*ns expressed the most negative attitudes toward the omnivore group. Bagci et al. (2021) found the classic intergroup bias for both veg*ns and omnivores. They also tried to explain veg*ns' and omnivores' reciprocal attitudes, testing the same model separately for the veg*n and the omnivorous samples.² However, these recent studies which also examined veg*ns' attitudes toward omnivores (and not only the reverse) did not directly compare omnivores' and veg*ns' reciprocal attitudes nor provide a comprehensive explanation for them. Therefore, it is not yet clear whether omnivores or veg*ns attitudes toward

their respective outgroup were equally negative or different, and why. Such a direct comparison is worth making because of the dynamic nature of this majority–minority relationship. Indeed, veg*ns are a social minority progressively increasing its group size and power, with a strong social identity and a feeling of being stigmatized and threatened in their self-esteem. On the other hand, omnivores likely perceive a loss of their majority status (in both numerical and power terms) and a threat to their cultural tradition. Therefore, both groups have good reasons to derogate the respective outgroup and comparing their specific and common motivations seems particularly relevant. In addition, prior investigations only concerned explicit attitudes and were carried out in China (Tian et al., 2019) and in Turkey (Bagci et al., 2021): To the best of our knowledge, this topic has not yet been analysed in Western cultures and with reference to more subtle dehumanization tendencies and implicit attitudes.

For these reasons, we aimed to compare both omnivores' and veg*ns' reciprocal evaluations,³ assessed at different levels of awareness, and proposed a parsimonious model of the main social psychological factors explaining these evaluations. The above-reviewed literature provides reasons to expect both veg*ns and omnivores to hold negative attitudes toward each other, thus we could not formulate a specific hypothesis about who will be more negative. However, and more importantly, previous studies and theories suggest different processes driving veg*ns' and omnivores' negative reciprocal attitudes.

First, omnivores generally display higher levels of SDO than do veg*ns (Allen et al., 2000; Bilewicz et al., 2011; Vesper et al., 2015). SDO is in turn associated with higher perceived threat from outgroups and higher prejudice, both in general (Costello & Hodson, 2011; Esses et al., 2003; Hodson et al., 2009) and in relation to veg*ns specifically (Dhont & Hodson, 2014; Dhont et al., 2016; Earle et al., 2019; Judge & Wilson, 2019; MacInnis & Hodson, 2017). For these reasons, we expected omnivores (vs. veg*ns) expressing more SDO that in turn would be associated with more negative attitudes and higher dehumanization tendencies toward the outgroup (Hp1).

Second, veg*ns are members of a morality-based, stigmatized minority with a strong social identity (Nezlek et al., 2020; Nezlek & Forestell, 2020; Plante et al., 2019; Rosenfeld & Burrow, 2018), and outgroup derogation specifically emerges in these kinds of groups (Betencourt et al., 1999; Branscombe & Wann, 1992; 1994; Simon et al., 1991). Therefore, we anticipated that veg*ns' stronger identification with their ingroup would be associated with more negative attitudes and higher dehumanization tendencies toward omnivores (Hp2).

Finally, as omnivores evaluate vegetarians more negatively when they foresee their moral reproach (Minson & Monin, 2012), but veg*ns also perceive general reproach from omnivores (e.g., MacInnis & Hodson, 2017), we also expected that both veg*ns' and omnivores' negative attitudes and dehumanization tendencies toward the respective outgroup would be explained by the reproach they anticipated from the outgroup (Hp3).

² Bagci et al. (2021) also involved flexitarians as participants and assessed the other groups attitudes toward flexitarians: they have been found to be very similar to omnivores, so we did not include this group and measure in our study.

³ We chose to assess omnivores' attitudes toward vegans specifically, because this is their more distant and less liked outgroup (De Groot & Rosenfeld, 2022; MacInnis & Hodson, 2017).

We firstly tested the hypothesized model in Study 1, with an Italian convenience sample. Since previous research on diet-related intergroup attitudes has not considered reciprocal dehumanization (the tendency to downplay the ascription of human qualities), in Study 1 we examined explicit attitudes and the more subtle attribution of human traits to the respective outgroup. Drawing on the dual model of dehumanization (Haslam, 2006), we explored participants' perception that outgroup members possess both human uniqueness (distinguishing them from animals) and human nature (distinguishing them from inanimate objects). Then, Study 2 aimed to replicate previous findings with English-speaking participants (mostly from UK) and to extend them by including an implicit measure of attitude.

The questionnaire and data supporting our findings are openly available in the Open Science Framework at https://osf.io/wu3gm/?view_only=78e20982ae144646b3f40530dadbdad5

2 | STUDY 1

2.1 | Method

2.1.1 | Participants and procedure

Using an a priori power analysis, we set the goal of recruiting at least 199 participants, sufficient to detect a small to medium effect size of $f = 0.20$ with $\alpha = 0.05$ and power = 0.80 for a 2×2 between-participants factorial design. A total of 208 Italian adults (159 women; aged 19–78 years, $M = 36.14$, $SD = 12.67$) voluntarily completed an online questionnaire administered via Qualtrics; 28.8% had a Master's degree or higher, 13.3% had a Bachelor's degree, and 58.2% a lower level of education. They were recruited through personal mailing lists, Facebook groups, and snowball sampling.

After acquiring informed consent, we asked participants to report some socio-demographic information and to declare their current diet (our design first factor). The subsequent questions concerned attitudes toward and dehumanization of the outgroup category (i.e., omnivores for veg*ns and vegans for omnivores), anticipated reproach from the outgroup (presented in manipulated order to check whether reproach affects participants' attitudes and dehumanization tendencies only when made salient, i.e., the second factor), identification with the ingroup, political self-placement (on a 10-point left–right continuum), and SDO.

In total, 101 participants declared themselves to be omnivores, 29 vegetarians, and 78 vegans (vegetarians and vegans were considered together as veg*n participants).

2.1.2 | Measures

Attitudes toward outgroup category

Respondents rated the outgroup category on a series of 10 adjectives (five positive and five negative) taken from Minson and Monin (2012) using a 5-point scale (ranging from *not at all* to *very much*). Drawing on

Earle and Hodson (2017), we also asked participants to rate how much they *felt bothered* by the outgroup members on a 5-point scale (ranging from *not at all* to *very much*). In calculating the index, we did not consider the adjective “skinny” because, from a conceptual point of view, we cannot consider “skinny” an absolute positive adjective, as it may carry (for example) the connotation of being emaciated.⁴ Therefore, after recoding the five negative adjectives and the bother item, we built an index of *attitudes* toward the outgroup category ($\alpha = 0.78$).

Dehumanization

Participants rated how the outgroup possess a series of (high and low) human uniqueness and human nature traits (Bastian & Haslam, 2010) on a 5-point scale (ranging from *not at all* to *very much*). Example items are “they are refined and cultured” (High Human Uniqueness, four items), “they are unsophisticated” (Low Human Uniqueness, two items), “they have interpersonal warmth” (High Human Nature, three items), “they are superficial as if they had no depth” (Low Human Nature, three items). After recoding the low items, we computed a mean score for human uniqueness ($\alpha = 0.68$) and for human nature (0.76). Higher scores denote higher human uniqueness and higher human nature attributed to the outgroup.

Ingroup identification

Following MacInnis and Hodson (2017), we proposed three items to participants: (a) the importance that being a meat eater/veg*n held for their identity; (b) the degree to which they perceived themselves as similar to other meat-eaters/veg*ns; and (c) their attachment to other meat-eaters/veg*ns. Responses were given on a 5-point scale (ranging from *does not describe me at all* to *describes me very well*). We built an index of ingroup identification by averaging responses ($\alpha = 0.71$). Higher scores indicate stronger ingroup identification.

Anticipated reproach from the outgroup

Based on Minson and Monin (2012), three items assessed the extent to which participants felt that outgroup members were generally critical of their ingroup on a 5-point scale (anchored at *strongly disagree* and *strongly agree*): (a) “Omnivores/Vegans think they are superior to vegetarians and vegans/omnivores”, (b) “Omnivores/Vegans try to convert vegetarians and vegans/omnivores”, (c) “Omnivores/Vegans are angry with vegetarians and vegans/omnivores”. We calculated an index averaging the answers ($\alpha = 0.74$), with higher scores indicating a stronger perception of reproach from the outgroup. To control whether this factor affected participants' attitudes only when it was made salient, as in Minson and Monin's (2012) study, we manipulated the order of presentation of this battery such that half of the sample responded to these items before the outgroup evaluation and the other half after.

Social dominance orientation

Finally, participants completed the Italian short version (Di Stefano & Rocco, 2005; eight items) of the Social Dominance Orientation Scale

⁴ Following Minson & Monin (2012) who excluded the “religious” item from their score, we did not assess this trait as its valence is very subjective.

TABLE 1 Descriptive statistics and correlation (Study 1)

	M (SD)	Correlations								
		2	3	4	5	6	7	8	9	10
1. Age	36.14 (12.67)	0.21**	-0.08	-0.01	-0.04	0.13	0.13	-0.03	-0.21**	-0.16*
2. Education (years)	14.89 (3.19)		0.03	-0.19	-0.11	-0.09	-0.04	0.16*	0.06	0.09
3. Involvement	3.78 (0.73)			-0.02	-0.08	0.11	0.00	-0.10	-0.14	-0.16*
4. Political self-placement	4.08 (2.36)				0.36***	0.06	-0.06	-0.07	-0.01	-0.05
5. SDO	1.75 (0.62)					-0.06	-0.02	-0.16*	-0.11	-0.07
6. Ingroup identification	2.86 (0.94)						0.17*	-0.35***	-0.41***	-0.43***
7. Anticipated reproach	3.44 (0.86)							-0.39***	-0.29***	-0.27***
8. Attitude	3.15 (0.56)								0.64***	0.68***
9. Human uniqueness	3.18 (0.51)									0.66***
10. Human nature	3.32 (0.63)									

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

(Pratto et al., 1994). Responses were provided on a 5-point scale (ranging from *completely disagree* to *completely agree*). After rescaling the appropriate items, we computed an average score ($\alpha = 0.78$).

Personal involvement in the food domain

Omnivores and veg*ns may differ in their level of involvement in the food domain (relevant for the present intergroup categorization) and this should be controlled for. Three items (i.e., interest in food, anchored at *not at all* and *very much*, and frequency of conversation about food and frequency of cooking, both anchored at *never* and *several times a day*) captured participants' personal involvement in the food domain. A single index of personal involvement was computed by averaging the answers on 5-point scales, with higher scores representing stronger involvement ($\alpha = 0.83$).

2.2 | Results

2.2.1 | Preliminary analysis

Table 1 displays descriptive statistics and correlations for the measures. Before testing the hypotheses, we checked for variables that could constitute potential confounding factors, that is, participants' age, political self-placement, education level (recoded as years), personal involvement in the food domain, and gender. The attitude measure was associated with education, the human uniqueness score was negatively correlated with age, and the human nature score was negatively correlated with both age and involvement. These variables were thus included as covariates in the respective subsequent models. Three univariate analyses of variance (ANOVA) showed that participants' gender affected none of the dependent variables, neither alone nor in interaction with diet, $F_s(1, 196) < 1.90, p > .170$. The effect of the order of the presentation of the anticipated reproach measure was tested in all analyses; as it did not yield any significant main or interaction effects, $F_s(1, 197) < 1.19, p > .277$, it is not presented here.

2.2.2 | Comparing veg*ns' and omnivores' reciprocal evaluations

An independent sample *t*-test revealed that veg*n participants manifested less positive attitudes toward omnivores $t(206) = 4.48, p < .001$, 95% CI [.19, .48]⁵, $d = -0.62$ ($M = 2.98, SD = 0.59$), and attributed to them lower levels of human uniqueness, $t(202) = 8.15, p < .001$, 95% CI [0.38, 0.63], $d = -1.14$ ($M = 2.93, SD = 0.43$), and human nature, $t(202) = 6.44, p < .001$, 95% CI [0.36, 0.68], $d = -0.90$ ($M = 3.06, SD = 0.61$) than the reverse (attitudes: $M = 3.32, SD = 0.47$; human uniqueness $M = 3.44, SD = 0.45$; human nature $M = 3.58, SD = 0.54$). In addition, a single sample *t*-test showed that only omnivores' mean scores were significantly different from the scale midpoint (3), testifying that their attitudes were indeed positive, $t(100) = 6.79, p < .001$, 95% CI [0.22, 0.41], $d = 0.68$, as the attribution of human uniqueness, $t(100) = 9.69, p < .001$, 95% CI [0.35, 0.53], $d = 0.97$, and human nature to the outgroup, $t(99) = 10.82, p < .001$, 95% CI [0.47, 0.69], $d = 1.09$. In contrast, vegans were neutral in their attitudes and attribution of human uniqueness and nature to the outgroup, $t_s(102) < 1.60, p_s > .113$.

2.2.3 | Explaining veg*ns' and omnivores' reciprocal evaluations

To test the hypotheses, we ran a mediational analysis on each dependent variable using PROCESS, the SPSS macro provided by Hayes (2013). We tested three Models 4, setting 5000 bootstrap resamples, simultaneously entering participants' SDO, ingroup identification, and anticipated reproach scores as potential mediators of the relation between diet and evaluations (i.e., attitude, attribution of human

⁵ These and the following 95% Confidence Intervals provide an estimate of the boundaries between which the true mean difference lies in 95% of all possible random samples of 208 participants.

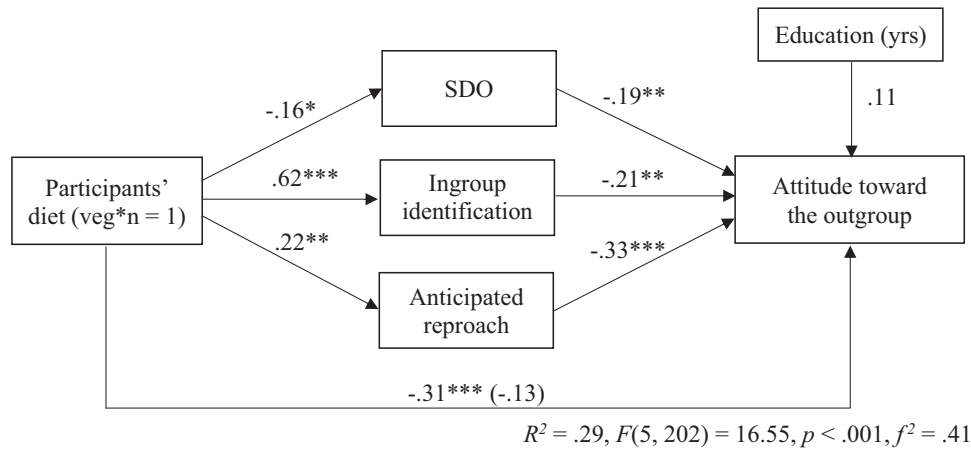


FIGURE 1 Attitude mediation model (Study 1). Note. Path coefficients are β . * $p < .05$; ** $p < .01$; *** $p < .001$.

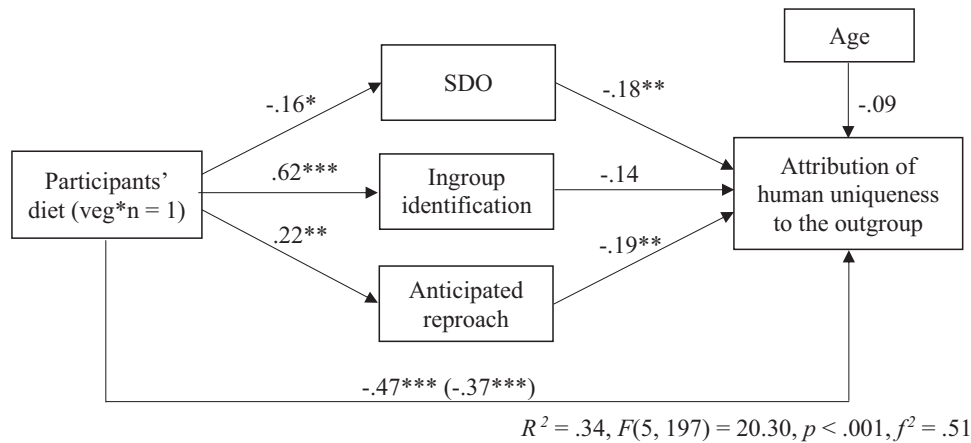


FIGURE 2 Human uniqueness mediation model (Study 1). Note. Path coefficients are β . * $p < .05$; ** $p < .01$; *** $p < .001$.

uniqueness and human nature) of the outgroup. We also included specific covariates for each model, that is, education level in the attitude model, participants' age in the human uniqueness model, and both age and involvement in the food domain in the human nature model.⁶

Results are illustrated in Figures 1–3. As expected, the total effect of participants' diet on their attitudes toward the outgroup was totally mediated by SDO ($IE = 0.03, SE = 0.02, 95\% CI [0.01, 0.08]$), ingroup identification ($IE = -0.15, SE = 0.06, 95\% CI [-0.28, -0.04]$), and anticipated reproach ($IE = -0.08, SE = 0.03, 95\% CI [-0.15, -0.03]$); total $IE = -0.19, SE = 0.07, 95\% CI [-0.34, -0.06]$. In a similar way, the total effect of diet on human uniqueness attribution was partially medi-

ated by SDO ($IE = 0.03, SE = 0.02, 95\% CI [0.01, 0.07]$) and anticipated reproach ($IE = -0.05, SE = 0.02, 95\% CI [-0.09, 0.01]$), while ingroup identification had a marginally significant indirect effect ($IE = -0.09, SE = 0.05, 95\% CI [-0.19, 0.002]$); total $IE = -0.10, SE = 0.05, 95\% CI [-0.22, -0.005]$. Though this mediation was partial as well, the indirect effects of the same mediators appeared stronger for the attribution of human nature: SDO ($IE = 0.03, SE = 0.02, 95\% CI [0.004, 0.07]$), ingroup identification ($IE = -0.22, SE = 0.06, 95\% CI [-0.35, -0.11]$), and anticipated reproach ($IE = -0.05, SE = 0.02, 95\% CI [-0.11, -0.01]$); total $IE = -0.24, SE = 0.07, 95\% CI [-0.38, -0.12]$. Veg*n (vs. omnivore) participants expressed both higher ingroup identification and stronger anticipated reproach, which in turn were associated with a less positive attitude toward the outgroup and a lower attribution of human uniqueness and human nature. On the other hand, omnivores' higher levels of SDO worsened their attitudes and lowered the attribution of humanity to the outgroup, though not enough to counteract the effects of the other two mediators.

⁶ We ran three corresponding regression analyses aimed to detect potential outliers based on Cook's distance (Cook, 1977; Hutcheson & Sofroniou, 1999). Cook's distance is a measure of the change in the regression coefficients that would occur if a case was deleted, thus revealing which cases are most influential in affecting the regression equation. It is affected by the case being an outlier on both the dependent variable and the predictors. We ran the model before and after eliminating cases with a Cook's distance larger than $4/N$, i.e., 13 cases for the attitude model, 12 for the human uniqueness model, and 15 for the human nature model. As the findings did not change when excluding or including those cases, we reported the full sample results, aiming to retain the highest possible number of participants and maximize power. In addition, the analyses run without the covariates yielded substantially the same results.

⁷ This indirect effect became significant if age was not included as covariate.

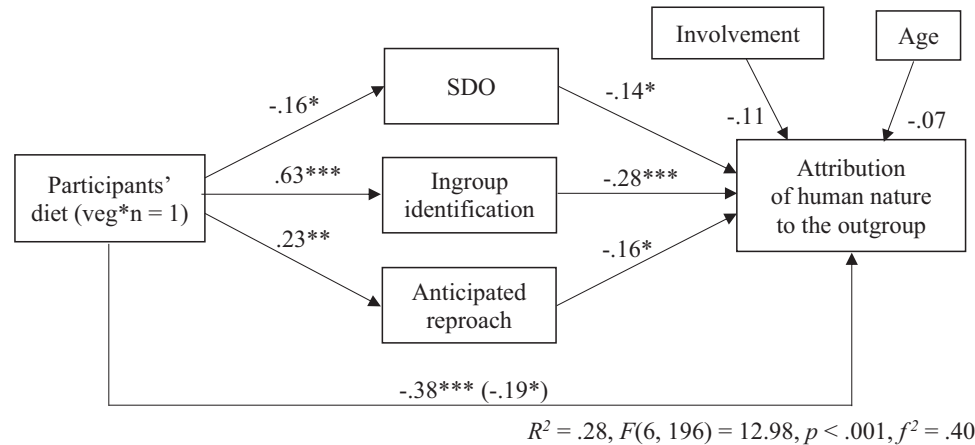


FIGURE 3 Human nature mediation model (Study 1). Note. Path coefficients are β . * $p < .05$; ** $p < .01$; *** $p < .001$.

2.3 | Discussion

Study 1 showed that veg*n participants had less positive attitudes toward omnivores than the reverse and attributed to the outgroup lower levels of human uniqueness and nature. While omnivores expressed positive evaluations of veg*ns, veg*ns appeared neutral toward omnivores. In addition, this difference was fully (for attitude) or partially (for humanness attribution) explained by veg*ns' higher levels of ingroup identification and anticipated reproach from the outgroup, even if omnivores displayed higher levels of SDO which worsened their attitudes.

This study has some limitations. First, the gender distribution of our sample is quite unbalanced, since men represented only 23.61% of the total sample. Though our preliminary analyses showed that gender had no effect on the dependent variables, this disproportion may have influenced our results, which cannot be generalized without caution. As previous studies (Chin et al., 2002; Judge & Wilson, 2019; MacInnis & Hodson, 2017) have suggested that omnivorous men are more biased against veg*ns than are omnivorous women, the predominance of women in the present sample may explain why our omnivorous participants expressed on average positive attitudes.

Another drawback concerns the risk of social desirability bias. Although the authors of some previous works (Cole & Morgan, 2011; MacInnis & Hodson, 2017) have argued that prejudice against veg*ns is largely accepted and openly expressed, we cannot be sure that people truly feel entitled to fully manifest this negativity toward other persons. It should be emphasized that the dehumanization measure we used is subtle (lay respondents are not aware of its purpose; Kteily & Landry, 2022), but still explicit: implicit measures would help capture the complex range of spontaneous reactions toward the outgroup.

To overcome these limitations, in Study 2 we assessed omnivores' and veg*ns' implicit, as well as explicit, reciprocal attitudes. We also recruited more male participants, and from different Western countries, to deepen our understanding of these intergroup attitudes.

3 | STUDY 2

Study 2 was preregistered (<https://doi.org/10.17605/OSF.IO/9UCZ3>) and aimed to replicate Study 1 findings in a different context, with a gender balanced sample, and also including an implicit measure of attitude toward the outgroup.

3.1 | Method

3.1.1 | Participants and procedure

Using an a priori power analysis, we set the goal of recruiting at least 156 participants, sufficient to detect a small to medium effect size of $d = 0.40$ with $\alpha = 0.05$ and power = 0.80 for a two independent groups design. The same target sample size is required for a linear multiple regression with four predictors, $f^2 = 0.04$.

We recruited 229 participants through Prolific, pre-screened by White/Caucasian race/ethnicity (as we used White faces as stimuli, we did not want to insert another possible intergroup categorization), English as first language, and diet⁸ (excluding pescatarians and flexitarians/semi-vegetarians), and balanced for sex. After giving their informed consent, they reported their current diet and socio-demographic information, and then completed the measures of identification with the ingroup, anticipated reproach from the outgroup, SDO, implicit and explicit attitudes toward the outgroup. The whole study was administered via Inquisit Web. Respondents confirmed their consent after being fully debriefed and were paid £1.

We dropped 29 respondents who failed one or both the attention and instruction manipulation checks included in the questionnaire. The final sample comprised 102 omnivores, 60 lacto-ovo vegetarians and

⁸ To enrol approximately the same number of veg*ns and omnivores, we ran two studies on Prolific and separately prescreened 110 vegetarian and vegan participants and 110 omnivorous participants. In this way we could also balance each subsample for sex.

38 vegans. They were 96 women and 103 men (one preferred not to report their sex). Most of them were from UK (84.0%) and live in UK (82.5%); 23.7% had a Master's degree or higher, 37.4% had a Bachelor's degree, and 38.9% a lower level of education.

3.1.2 | Measures

Ingroup identification ($\alpha = 0.79$) and anticipated reproach from the outgroup ($\alpha = 0.34$) were assessed (in counterbalanced order) by the same items used in Study 1. As reliability of anticipated reproach measure substantially improved after removing the third item ("Omnivores/vegans are angry with vegetarians and vegans/omnivores"; $\alpha = 0.66$), we computed the reproach score as the mean of the first two items. Then participants filled in the four-item SDO scale by Pratto et al. (2013; $\alpha = 0.65$).

Implicit attitude toward the outgroup was measured through a Single-Category (Karpinski & Steinman, 2006) adaptation of the Brief Implicit Association Test (BIAT; Sriram & Greenwald, 2009). The BIAT is a short version of the Implicit Association Test (IAT, Greenwald et al., 1998) consisting of two or four critical blocks of combined trials wherein participants are asked to focus on just one matched pair of categories at a time. Though the BIAT has been developed as dual, we believe it is particularly suitable to be also used with one target category only. We chose to assess participants' absolute attitude toward the outgroup rather than a relative attitude toward the ingroup versus outgroup because a standard comparative measure would not allow us to determine whether a certain score depends on participants' attitude toward the ingroup or toward the outgroup. Though we can assume that both groups would display an intergroup bias (see also Bagci et al., 2021), with a dual measure we could not know if this is due to ingroup favouritism or outgroup derogation.

Respondents were presented with the pictures of four White faces (two males and two females), introduced as members of the outgroup (vegans for omnivorous participants and omnivores for veg*n participants). After seeing this introductory page, they were instructed to categorize the four faces as either vegans (for omnivorous participants) or omnivores (for veg*an participants) along with good and bad words. In other words, there were one target category and two attribute categories: the focal attributes were good words in a type of block, and bad words in the other. The BIAT included two 12-trial practice blocks and four 24-trial test blocks. We computed the D score as suggested by Nosek et al. (2014) and, drawing on the same work, one respondent was excluded from the analyses because he had more than 10% of latencies faster than 300 ms. The D score is interpretable as a Cohen's d effect size and positive values indicate a stronger implicit association between the target category and good words than between the target category and bad words, that is, a positive attitude toward the outgroup, whereas negative values indicate a negative implicit attitude. The reliability was acceptable and comparable to that observed in other standard dual BIATs (Nosek et al., 2014; Sriram & Greenwald, 2009), $\alpha = 0.74$.

For the sake of brevity and simplicity, participants' explicit attitudes were measured by means of the two items: "Overall, what is your opinion of vegans/omnivores?" (5-point Likert response scale anchored at *completely negative* and *completely positive*) and "Do you feel bothered by vegans/omnivores?" (5-point Likert response scale anchored at *not at all bothered* and *extremely bothered*). After recoding the second item, a mean score was computed so that higher values indicate a more positive attitude toward the outgroup, Spearman-Brown corrected $\alpha = 0.73$.

3.2 | Results

3.2.1 | Preliminary analysis

Table 2 displays descriptive statistics and correlations for the measures. As participants' explicit attitudes were negatively correlated with their level of education (recoded as years), and implicit attitudes were positively correlated with age, we controlled for these variables in the subsequent respective analyses. Before testing the hypotheses, we checked for potential gender differences in our dependent variables. We also checked for block order effects on the BIAT score. A univariate ANCOVA on explicit attitudes, with both diet and gender as between participants factors and education as covariate, showed that gender had no main nor interactive effect with diet, $F_s(1,192) < 1.75$, $ps > .146$, $\eta^2s < 0.01$. A univariate ANCOVA on implicit attitudes, with diet, gender, and block order as between participants factors and age as covariate, showed that gender had no main nor interactive effect with diet, $F_s(1,189) < 2.59$, $ps > .109$, $\eta^2s < 0.01$, whereas block order had a main effect, $F(1,189) < 9.53$, $p > .002$, $\eta^2 = 0.05$, indicating a more positive attitude for participants categorizing vegans with negative words first ($M = 0.30$, $SD = 0.37$) than for those categorizing vegans with positive words first ($M = 0.16$, $SD = 0.32$). Therefore, we also controlled for block order in the model on implicit attitude.

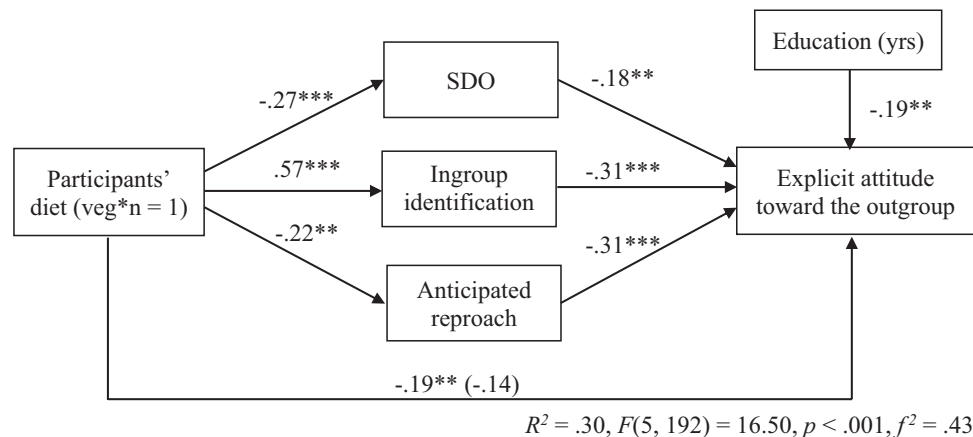
3.2.2 | Comparing veg*ns and omnivores reciprocal attitudes

An independent samples t-test showed that veg*n participants manifested less positive explicit attitudes toward omnivores ($M = 3.36$, $SD = 0.74$) than the reverse ($M = 3.76$, $SD = 0.85$), $t(198) = 3.56$, $p < .001$, 95% CI [0.18, 0.62], $d = -0.50$. In addition, a single sample t-test showed that both means were significantly higher from the scale midpoint (3), indicating an actually positive attitude toward the outgroup for both veg*ns, $t(97) = 4.81$, $p < .001$, 95% CI [0.21, 0.51], $d = 0.49$, and omnivores, $t(101) = 9.12$, $p < .001$, 95% CI [0.60, 0.93], $d = 0.90$. In contrast, no difference as a function of diet emerged for the BIAT score, $t(197) = 0.25$, $p = .799$, 95% CI [-0.09, 0.11]. Both omnivores' and veg*ns' implicit attitude toward the outgroup was significantly greater than 0, thus indicating a slightly positive attitude, $t(198) = 9.35$, $p < .001$, 95% CI [0.19, 0.28], $d = 0.66$.

TABLE 2 Descriptive statistics and correlation (Study 2)

	M (SD)	Correlations					
		2	3	4	5	6	7
1. Age	39.17 (13.64)	0.02	−0.31***	−0.10	0.23**	0.11	0.17*
2. Education (years)	14.75 (2.02)		0.04	0.00	−0.08	−0.22**	0.05
3. Ingroup identification	3.10 (1.12)			0.04	−0.19**	−0.36***	−0.06
4. Anticipated reproach	3.32 (1.04)				0.10	−0.31***	−0.08
5. SDO	1.91 (0.77)					−0.12	0.00
6. Explicit attitude	3.57 (0.82)						0.01
7. Implicit attitude	0.23 (0.35)						

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

**FIGURE 4** Explicit attitude mediation model (Study 2). Note. Path coefficients are β . ** $p < .01$; *** $p < .001$.

3.2.3 | Explaining veg*ns' and omnivores' reciprocal attitudes

To test the hypotheses and confirm Study 1 findings, we ran a mediational analysis on each dependent variable using PROCESS, the SPSS macro provided by Hayes (2013). We tested two Models 4, setting 5000 bootstrap resamples, simultaneously including participants' SDO, ingroup identification, and anticipated reproach scores as mediators of the relation between diet and attitudes toward the outgroup. In the explicit model we also entered education (in years) as covariate. In the implicit model, we included age and block order.⁹

As expected, the total effect of participants' diet on their explicit attitudes toward the outgroup was fully mediated by SDO ($IE = 0.08$, $SE = 0.04$, 95% CI [0.02, 0.18]), ingroup identification ($IE = -0.29$, $SE = 0.08$, 95% CI [-0.47, -0.13]), and anticipated reproach ($IE = 0.12$, $SE = 0.04$, 95% CI [0.05, 0.21]; see Figure 4). Veg*n participants (vs. omnivores) expressed stronger ingroup identification, which in

turn were associated with less positive attitudes toward the outgroup. On the other hand, omnivores reported higher levels of both SDO and anticipated reproach, which in turn decreased the positivity toward the outgroup. Since in this sample omnivores perceived more reproach from the outgroup than veg*ns, the effects of the three mediators counteracted each other, thus the total indirect effect was not significant (total $IE = -0.09$, $SE = 0.10$, 95% CI [-0.29, 0.11]).

In contrast, when implicit attitude toward the outgroup was the dependent variable, a different pattern of results emerged. Even if diet predicted the mediators, the latter did not significantly predict participants' attitudes ($ps > .37$), which were only associated with age, $\beta = 0.18$, $p = .015$, and block order, $\beta = 0.21$, $p = .003$, $R^2 = 0.08$, $F(6, 192) = 2.82$, $p = .012$.

3.3 | Discussion

Overall, Study 2 confirmed Study 1 findings at the explicit level, in a different sample, while disconfirming them at the implicit level. Veg*ns expressed less positive explicit attitudes toward omnivores than the reverse, but their implicit attitudes did not differ. The absence of gender differences in a gender balanced sample allowed to exclude

⁹ The analysis of influential cases based on Cook's distance (Cook, 1977) identified 11 cases for the first model and 8 cases for the second model. As the findings did not change when excluding or including those cases, we reported the full sample results, to retain the highest possible number of participants and maximize power. Results are the same either including or excluding the covariates.

that omnivores' positive evaluations elicited in Study 1 were due to a predominance of women in that sample.

In addition, both explicit and implicit attitudes of both dietary groups were significantly positive, suggesting that there is no real negativity or prejudice. As the *D* score is interpretable as a Cohen's *d* effect size, we can compare the average slight positivity that emerged at the implicit level ($M = 0.23$, $SD = 0.35$) with the effect sizes of the above reported one-sample *t*-tests, indicating that veg*ns reported a moderately positive explicit attitude toward omnivores ($d = 0.49$) and omnivores reported a strongly positive explicit attitude toward vegans ($d = 0.90$). In both cases, it seems that the explicit measures exaggerated the implicit positivity.

As for the mediational model, its predictive power has been proven only for explicit attitudes, but not implicit ones. In line with Study 1, participants' levels of ingroup identification, SDO, and anticipated reproach from the outgroup fully mediated omnivores' and veg*ns' reciprocal attitudes. However, in contrast with Study 1, omnivores perceived higher reproach from veg*ns than the reverse, and this effect, along with that of SDO, counteracted the effect of veg*ns' higher ingroup identification. This difference proved the flexibility of the model, irrespective of the direction of total and indirect effects, which may vary according to the sample.

4 | GENERAL DISCUSSION

Previous research (Earle & Hodson, 2017; MacInnis & Hodson, 2017; Minson & Monin, 2012) has focused on the existence of and reasons for the common prejudice omnivores hold against veg*ns, whereas only more recently, two articles (Bagci et al., 2021; Tian et al., 2019) explored whether veg*ns also hold negative attitudes against omnivores. However, it was not yet clear whether omnivores' and veg*ns' attitudes toward their respective outgroup were equal or different, and why. We contributed to answer these questions by assessing and directly comparing omnivores' and veg*ns' reciprocal evaluations in both an Italian and a mostly British sample. In addition, unlike prior researchers (Bagci et al., 2021; Tian et al., 2019), who tested their hypotheses separately for omnivorous and veg*n participants, we proposed a more parsimonious model of the processes explaining the potential difference between omnivores' and veg*ns' reciprocal attitudes.

The present results consistently showed, in two different Western countries, that veg*n participants expressed less positive evaluations toward omnivores than the reverse. Moreover, the total effect of dietary group on veg*ns' and omnivores' reciprocal explicit attitudes was fully mediated by participants' SDO (Hp1), ingroup identification (Hp2), and anticipated reproach (Hp3). In study 1, we also assessed the attribution of human uniqueness and nature to the outgroup: also for these variables, veg*ns' less positive orientations were partially explained by the same mediators.

As expected, in line with social dominance theory (Pratto, 1999; Pratto et al., 2006) and prior results (Allen et al., 2000; Bilewicz et al., 2011; Veser et al., 2015), omnivorous participants reported higher lev-

els of SDO in both studies. In turn, as in previous research (e.g., Costello & Hodson, 2011; Earle et al., 2019), this would have made them more biased against their outgroup if not for the effect of ingroup identifications and anticipated reproach from the outgroup. On the other hand, indeed, veg*ns identified with their ingroup more than omnivores, and this ingroup identification was associated with a less positive attitude toward the outgroup. This consistently emerged in both samples and is in line with previous research showing that being part of a stigmatized social minority elicits strong ingroup identification (e.g., Abrams, 1994; Brewer & Weber, 1994; Ellemers & van Rijswijk, 1997) that, in turn, is associated with compensatory outgroup derogation (Appiah et al., 2013; Bettencourt et al., 1999; Moscatelli et al., 2017), especially when the majority group is perceived as a threat to minority members' self-esteem (Branscombe & Wann, 1992; 1994).

Finally, our studies showed the importance of anticipated reproach in explaining both omnivores' and veg*ns' reciprocal attitudes. Minson and Monin (2012) found that anticipated moral reproach from vegetarians predicted omnivores' derogation toward them. Study 1 showed that the reverse pattern is also possible: Veg*ns perceived general criticism from their outgroup even to a greater extent than omnivores, and therefore seemed to react by derogating them. Alternatively, they may have experienced (and thus expected) poor treatment from omnivores and thus held lower liking toward them. Indeed, even when not linked to moral judgment, this perceived reproach can be interpreted as a threat to self-esteem. Instead, omnivores felt more reproached than veg*ns in Study 2 and this indirect effect, along with that of SDO, counteracted the effect of veg*ns higher ingroup identification. This difference between the two samples may be interpreted as a consequence of a greater acceptance of veg*ns in the UK than in Italy, and proved the flexibility and usefulness of our model in different contexts. Returning to the role of anticipated reproach, our results suggest that, while threat to the status quo (associated with SDO) predicted majority prejudice against the minority, threat to self-esteem may explain both majority and minority negativity against the outgroup. Interestingly, in Study 1, manipulating the salience of this perceived reproach (by measuring it either before or after the attitude toward the outgroup) did not affect the results, suggesting that it is nevertheless salient and influential.

In Study 2, we also assessed participants' implicit attitudes toward the outgroup. It is interesting (and reassuring) that no difference emerged at this level, as a function of diet. Both veg*ns and omnivores manifested slightly positive attitudes toward each other. In addition, none of the hypothesized mediators predicted participants' implicit attitudes. The discrepancy between explicit and implicit measures is thus threefold: only explicit attitudes were associated with participants' diet and explained by their levels of SDO, ingroup identification, and anticipated reproach; in addition, explicit and implicit attitudes did not correlate. This divergence could be attributed to methodological explanations or to real differences in underlying cognitive processes. As for methodological issues, we tried to keep the two measures as congruent as possible by using an affective self-reported measure and an absolute implicit measure (Hofmann et al., 2005). However, despite the acceptable reliability of the BIAT score, we cannot exclude an

explanation in terms of low sensitivity of the single-category BIAT. Future studies could investigate omnivores' and veg*ns' reciprocal attitudes using a more traditional IAT (Greenwald et al., 1998), SC-IAT (Karpinski & Steinman, 2006) or explicit and implicit measures maximizing structural fit (Payne et al., 2008).

If we could definitely rule out the methodological issues, our results would suggest that the attitudes which both dietary groups were either unwilling (because not fair) or unable (because introspectively inaccessible) to report, though slightly positive, are less positive than those they overtly expressed. These implicit attitudes were also equally positive for both groups, possibly indicating that the differences that emerged at the explicit level may not tell the whole story and that automatic behavioural responses toward the respective outgroup may be the same for omnivores and veg*ns. Overcoming the misleading question on people's "true" attitudes, we can draw on a recent work (Dalege & van der Maas, 2020) showing that implicit measures are more accurate than explicit measures in tapping conflicting evaluative reactions to an attitude object. According to this view, assessing attitudes in a relatively high entropy state (i.e., in their natural state, as spontaneous reactions) allowed us to show that they are the same for omnivores and veg*ns and not affected by participants' conscious reasoning about intergroup equality, sense of belonging to the ingroup, and perceived criticism from the outgroup, which instead predicted diet-related differences emerging when attitudes were measured in a low entropy state (i.e., asking respondents to reflect on them). This assessment seems particularly useful considering the dissonance likely to characterize veg*ns' and omnivores' reciprocal orientation (De Groeve & Rosenfeld, 2022). Further research is needed to confirm these results and interpretations, also in relation to dispositional or situational different levels of behavioural control (Friese et al., 2008).

The present work has some limitations. The choice of merging different subgroups under the umbrella category of veg*ns can be considered one. Vegans and vegetarians (among other possible subgroups) are perceived differently by omnivores (e.g., vegans less positively than vegetarians; MacInnis & Hodson, 2017), can be involved in reciprocal bias and tensions (MacInnis & Hodson, 2021; Povey et al., 2001; Rothgerber, 2014), and may also differ in their attitudes toward omnivores and relative explanations. In addition, a distinction based on motivations for avoiding meat seems even more relevant: for example, health veg*ns are better tolerated by omnivores (MacInnis & Hodson, 2017), whereas animal and environmental veg*ns are preferred by veg*ns (MacInnis & Hodson, 2021; Rothgerber, 2014). Although we did not assess veg*n participants' motivations, we re-ran our models entering two separate dummy variables for vegetarians and vegans. The results are very similar to those reported above and can be found in Supplementary Materials; the minimal differences elicited between vegetarians and vegans could be due to the prevalence of vegans in Study 1 and of vegetarians in Study 2. Future studies should involve more balanced samples of vegetarians and vegans and assess the different motivations for meat avoidance to further explore how these distinctions can moderate veg*ns' attitudes toward omnivores. For instance, we could expect that ethical veg*ns hold less positive attitudes toward omnivores than health veg*ns because of their higher

level of ingroup identification, anticipated reproach and lower level of SDO.

Another potential flaw of this research is that we only measured participants' attitudes toward their respective dietary outgroup, thus we cannot be sure that veg*ns specifically dislike omnivores to a greater extent than the reverse rather than just rate others more harshly than omnivores do. However, previous research (e.g., Holler et al., 2021; Vesper et al., 2015), which already showed that veg*ns are less prejudiced and more empathic than omnivores, should help rule out this alternative interpretation.

We also acknowledge that not all the potential mechanisms explaining omnivores' and veg*ns' reciprocal attitudes have been considered. We aimed to propose a parsimonious model, focusing on three main mediators. This model, however, could be extended to include other relevant explanations of the investigated intergroup attitudes, such as perceived outgroup entitativity which should increase its derogation (Hamilton et al., 2009; Moscatelli & Rubini, 2011) or ingroup satisfaction which should differentially affect majority and minority (Leonardelli & Brewer, 2001). In addition, future studies may identify more effective predictors (e.g., automatic, associative, or related to early experience) of both groups' implicit attitudes, and actual discrimination in different circumstances.

Notwithstanding its weaknesses, this is the first investigation of veg*ns' attitudes toward omnivores in a Western country, and we believe that it makes an important contribution by showing that neither veg*ns nor omnivores hold negative attitudes toward each other: they were both positive or at least neutral toward the outgroup, even if the degree of positivity varies according to the group and the kind of measurement. This result may indicate shifting norms in favour of veg*ns (De Groeve & Rosenfeld, 2022) and is just apparently in contrast with previous research which, though speaking of prejudice and bias, actually found that omnivores on average display favourable orientations toward veg*ns (e.g., MacInnis & Hodson, 2017; Minson & Monin, 2012). Study 2 for the first time confirmed this overall positivity also at the implicit level.

The present research has practical implications concerning possible ways to improve omnivores-veg*ns interaction and mutual comprehension: This is twice important because these intergroup tensions could be a serious obstacle to majority's adoption of a more plant-based diet which is a win-win and urgent action for both human health and the environment (Willett et al., 2019). In addition to the well-known strategies of decategorizing (Brewer & Miller, 1984) and emphasizing human and common identities (Gaertner et al., 2000), our results suggest that reducing the anticipated reproach from the outgroup may be a useful means to mitigate intergroup negativity. For instance, this could be easily done through feedbacks and communications stressing that many omnivores expressed admiration and positive evaluations toward veg*ns and also veg*ns are not so negative toward omnivores. Our results go in this direction and may be popularized precisely to decrease the perception of mutual negativity. This latter suggestion may also hold true for other groups whose members feel criticized by the outgroup. On a theoretical ground, indeed, the whole proposed model may be effectively applied

to other intergroup relationships involving either minority/majority or morality-based oppositional groups.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The materials and data supporting our findings are openly available in the Open Science Framework at https://osf.io/wu3gm/?view_only=78e20982ae144646b3f40530dadbda5.

ETHICS STATEMENT

Since the data collection was anonymous and involved no identifying information and no medical treatment, no ethics approval for the study was needed according to our university's guidelines.

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SUPPORTING INFORMATION

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