Is it me or others who matter? The interplay between consumer values vis-à-vis status and affiliation motives as shapers of meat alternative interest

Kyösti Pennanen [a,b,*], Roosa-Maaria Malila [a,b], Harri T. Luomala [a]

[a] *University of Vaasa, School of Marketing and Communication, Finland*
[b] *VTT Technical Research Centre of Finland Ltd, Finland*

A B S T R A C T

This study is about the role of consumers' personal values (Self-enhancement, Openness to change, Self-transcendence, and Conservation) in consumers' interest towards meat alternatives. In addition, the underlying role of two social motives, status and group affiliation are analysed. A conceptual model with hypotheses was developed and validated, and the hypotheses were tested through PLS-SEM with data from four European countries (Finland, the UK, Germany, and Sweden, total N = 3600). The results show that self-focused personal values (Self-enhancement and Openness to change) are not associated with consumers' interest towards meat alternatives. The case is different with other-focused values. Self-transcendence had a positive connection to interest while Conservation had a negative relationship. Finally, the data suggest an underlying role of social motive status between Self-enhancement and interest and the same for group affiliation between Self-transcendence and Conservation and interest. Based on the results, strategies to support meat alternative adoption such as value activation through priming, cognition and emotion-driven marketing are proposed.

1. Introduction

The current food system is largely based on animals as the main protein source causing a burden on the environment (Gerber et al., 2013). Worldwide, meat production is responsible for 57 % of food production greenhouse gas emissions (Xu et al., 2021), contributing also to water usage (Heinke et al., 2020) and loss of biodiversity (Ritchie & Roser, 2022). Considering that the global population tend to grow, the burden of meat consumption is expected to increase (Aiking & de Boer, 2020). To avoid this, a shift towards plant-based diets is required as emphasized by the EAT-Lancet Commission (2019). One potential avenue is the so-called meat alternatives, referring to food products based on plant-based or other non-animal protein ingredients aimed at replacing meat products in consumers' diets and at the same time reducing the environmental challenges related to protein consumption (Geada et al., 2021; Grossmann & Weiss, 2021).

Meat alternatives have received significant interest from food technologists and product developers and various forms of meat alternatives have appeared on the market and more are developed all the time (EIT Food, 2022). At the same time, consumer researchers have activated to build an understanding of the factors affecting consumer acceptance of the products as reviewed recently by Onwezen, Bouwman, Reinders, and Dagevos (2021). This interest is no surprise as consumer acceptance will eventually dictate the future of meat alternatives and capitalize on the subsequent potential for environmental benefits. Still, more understanding is required as meat alternatives constitute only a small niche of the total meat market at the moment (Statista, 2022a).

Several enablers and barriers to consumers' meat alternative acceptance have been identified. Considering product perceptions, consumer studies have pinpointed that the taste of the product is important to consumers (Grahl, Strack, Mensching, & Mörlein, 2020). In their study, Michel, Hartmann, and Siegrist (2021) found that consumers are more likely to associate disgust with meat alternatives, while meat was characterised more often as tasty. In addition to product perceptions, several consumer characteristics have been found to either foster or hinder meat alternative acceptance. Starting with demographics and socio-economics, females (Bryant, Szejda, Parekh, Deshpande, & Tse, 2019), younger (Elzerman, Keulemans, Sap, & Luning, 2021), and highly educated consumers (Nevalainen, Niva, & Vainio, 2023) are found to be more open to meat alternatives. Various

psychographics shape the meat alternative acceptance as well. Perhaps the most studied is food neophobia or the tendency to avoid novel foods, which has a significant negative relationship with consumers' interest (e.g. Siegrist & Hartmann, 2020; Verbeke, 2015). Also, food domain innovativeness (Lang, 2020), attachment to meat (Circus & Robison, 2019), positive emotions towards meat alternatives (Onwezen, Verain, & Dagevos, 2022), and attitudes towards food production technologies (Krings, Dhont, & Hodson, 2022) are found to contribute to consumer acceptance. Further, consumers' food choice motives contribute to consumers' views on meat alternatives. For instance, a motive to choose healthy foods (Grasso, Hung, Olthof, Verbeke, & Brouwer, 2019), environmentally-friendly foods (Niva & Vainio, 2021), and foods that have been produced with considerations of the ethical aspects (Hoek et al., 2011) are among the motives associated with positive views.

All of the above-mentioned attitudinal and motivational drivers for meat alternative acceptance are ultimately driven by consumers' personal values. Personal values refer to an individual's guiding principles of life towards a certain preferred end-state (Rokeach, 1973). Personal values influence other more concrete constructs such as attitudes, motives, and eventually behaviours towards specific objects (e.g. sustainable food products) to reach the value-congruent outcome (Schwartz, 1994). Personal values have attracted some attention in the scope of meat alternatives. In a recent study, Lehto, Korhonen, Muilu, and Konttinen (2023) applied Schwartz's (1992) theory of personal values as a segmentation tool and identified five different value-based consumer segments showing varying opinions towards plant-based meat and dairy alternatives. Those consumers who appreciated Self-transcendence (esp. universalism) were prone to plant-based meat and dairy alternative consumption. The authors concluded that personal value-based tailoring of meat alternatives or communication about them could be worthwhile to increase consumers' interest. Another recent study applied the Value-Attitude-Behavior approach demonstrating that Norwegian consumers' hedonistic and biospheric values drive attitudes and subsequent self-reported consumption of seaweed-based foods (Govaerts & Olsen, 2023). Interestingly, the study further reported that the relationship between personal values and attitudes is not necessarily direct but can be influenced by other constructs. In their case, higher perceived uniqueness and perceived naturalness of the products served as moderators and strengthened the personal value effect on attitudes. Other potential influencing factors could be for instance social motives (Neel, Kenrick, White, & Neuberg, 2016), which have been found to connect with personal values (Schwartz, Struch, & Bilsky, 1990). Especially, the need for status referring to an individual's need for other people to look up to the person, respect the rank or position and be in a position of leadership (Neel et al., 2016) and group affiliation meaning an individual's inherent need to be part of a group and further maintain the group bonds (Neel et al., 2016) have been associated with environmentally sustainable consumption (although not in connection to personal values) (e.g. Guo, Zhang, Liao, & Wu, 2020; Luomala, Puska, Lähdesmäki, Siltaoja, & Kurki, 2020). This makes them potentially relevant constructs affecting the relationship between personal values and behavioural intentions towards meat alternatives.

Taken together, there is some evidence that personal values have a relationship with consumers' interest towards meat alternatives and this relationship could be affected by other constructs. Thus, the objective of this study is to analyse the role of personal values in consumers' interest towards plant-based meat alternatives. Further, it is proposed that social motives status and group affiliation underlie the relationship between personal values and consumers' interests. To reach the study objective, first, a conceptual model with accompanying hypotheses is developed. Second, the model is empirically validated and tested with data (N = 3600) from four European countries; Finland, the UK, Sweden, and Germany. It is intended that the study contributes by validating the role of personal values in consumers' interest towards meat alternatives and by doing so provides opportunities to develop insights on how to promote consumers' meat alternative consumption. Personal values are

abstract concepts and challenging to apply in meat alternative promotion. Therefore, understanding the underlying effect of the more concrete motives for status and group affiliation could open avenues in tailoring marketing or social motive-driven interventions to support the adoption of meat alternatives among those consumers whose values are incongruent with the products.

2. Conceptual model and hypothesis development

Perhaps the most prominent work on personal values is by Schwartz (1992, 1994) who developed the universal theory of personal values. The theory postulates that an individual's personal values are the force behind their perceptions, attitudes, preferences, and behaviours (Sagiv & Schwartz, 2022). The theory embraces ten basic personal values, further divided into four higher-order categories, namely Self-enhancement (constituting of basic values achievement and power), Openness to change (constituting of basic values self-direction, hedonism, and stimulation), Self-transcendence (constituting of basic values benevolence and universalism), and Conservation (constituting of basic values security, conformity, and tradition) (Schwartz, 1992). According to the theory, the values are further divided into two conflicting pairs; Openness to change vs. Conservation, and Self-enhancement vs. Self-transcendence, which should have different relationships with attitudes and behaviours concerning different objects (Sagiv & Schwartz, 2022; Schwartz, 1992).

Fig. 1 presents the conceptual model for the study. The model has two basic theoretical foundations. First, it presumes that personal values have a direct relationship with consumers' interest towards meat alternatives as proposed by Schwartz's (1992) theory and as indicated by recent studies in the context (Govaerts & Olsen, 2023; Lehto et al., 2023). Second, the model takes into consideration the conflicting values by proposing that the conflicting value pairs (Openness to change versus Conservation; Self-enhancement versus Self-transcendence) have opposite roles. In addition to these basic assumptions, the model proposes that social motives status and group affiliation underlie the relationships between personal values and interests; this role of social motives is proposed to be positive by nature. However, the underlying role of status and group affiliation is limited only to the congruent values (i.e. status for Self-enhancement and Openness to change, and group affiliation for Conservation and Self-transcendence). Next, an elaborated rationale on the expectations behind the model is described along with formal hypotheses.

2.1. Self-enhancement and interest towards meat alternatives

Self-enhancement value refers to the seeking of achievement and power in forms of social status and control over other people (Sagiv & Schwartz, 2022). In earlier studies on sustainable food consumption, consumers who value Self-enhancement in life are found less interested in buying green products (e.g. Vermeir & Verbeke, 2008). A recent study, which applied Stern and Dietz's (1994) value theory in combination with dual-concern theory in the context of plant-based meat alternatives indicated the same (Jang & Cho, 2022). The study found that those consumers who appreciate egoistic values (cf. Self-enhancement in Schwartz theory) showed less anticipated positive effects in their plant-based meat alternative buying behaviours. In other words, consumers' valuing Self-enhancement might not see such benefits in sustainable products (including meat alternatives), which could facilitate or support their quest for achievement or power.

As meat alternatives are considered to replace meat, the cultural meanings of meat might have a role to play. Meat has been associated with masculinity (Schösler, de Boer, Boersema, & Aiking, 2015) and further with power and strength (Kildal & Syse, 2017) indicating that those consumers who find Self-enhancement important in their lives might find meat alternative products opposite to their values. Thus,
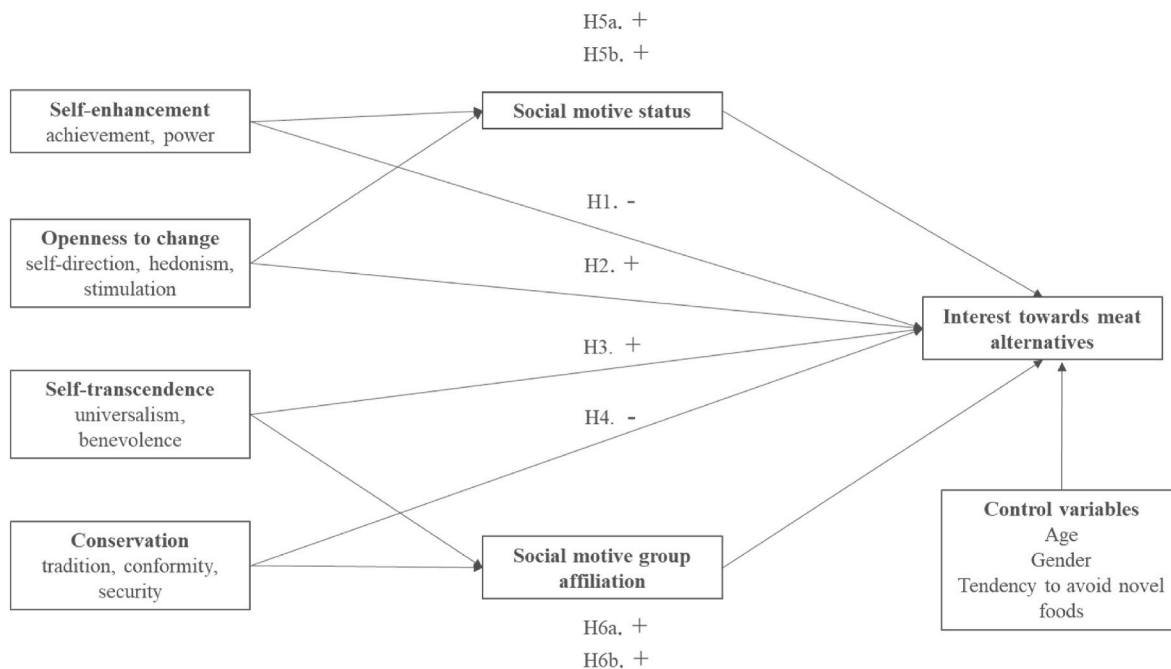
Fig. 1. Conceptual model and hypothesized relationships between the constructs. + stands for the expected positive relationship between the constructs, and – means the expected negative relationship between the constructs. The arrows in the figure do not intend to depict causal relationships between the constructs but the direction from the independent variables to the dependent variable.

H1. The increased personal value of Self-enhancement is associated with lower interest towards meat alternatives.

2.2. Openness to change and interest towards meat alternatives

By definition, Openness to change refers to self-direction (independence of thought, action, choices, exploration of new things), hedonism (seek for pleasure and sensorial gratification), and stimulation (seek for excitement, novelty, and challenges in life) (Sagiv & Schwartz, 2022). These types of characteristics have been associated with environmentally friendly consumption. For instance, consumer innovativeness has been connected with more positive attitudes toward green consumption (Lao, 2014) and pro-environmental behaviours (Englis & Phillips, 2013). In the sustainable food consumption domain, Lang (2020) in his study about meat products blended with plant-based ingredients (mushroom) found that consumers showing higher food domain innovativeness tended to find the blended products more interesting. On top of the innovativeness, the shift to using meat alternatives resembles a change in diet for which consumers holding values related to Openness to change might be better equipped. However, it is to be noted that the value hedonism might conflict here with the other two value sub-types. Studies have shown that both consumers' expected (Michel et al., 2021) and experienced (Szenderak, Frona, & Rakos, 2022) sensory perceptions of meat alternatives are inferior to meat indicating that those who value hedonism might not find meat alternatives tempting. Regardless,

H2. The increased personal value of Openness to change is associated with higher interest towards meat alternatives.

2.3. Self-transcendence and interest towards meat alternatives

Individual's self-transcendence value construes of two sub-dimensions; benevolence refers to caring for the welfare of people close to one and universalism extends the care of welfare to a global level including all people and nature (Sagiv & Schwartz, 2022). Some evidence is available that consumers high in self-transcendence value show a more positive view of environmentally friendly consumption. Pinto, Nique, da Silva Anana, and Herter (2011) in their study found that

social-related values (under which self-transcendence values belong) were associated with higher environmental awareness. Another study reported that both benevolence and universalism are connected to a higher perception of the benefits of green products (Burcu & Seda, 2013). Some evidence on the topic is available in the meat alternative domain as well. In a recent study, Lewisch and Riefler (2023) established a positive relationship between universalism and willingness to try cultured meat. They based their hypothesis on the assumption that consumers valuing universalism might consider animal welfare in dietary choices so important that it leads to an increased willingness to try products alternative to meat. Further, consumers inherently associate environmental sustainability and healthiness with meat alternatives (Michel et al., 2021). This most likely resonates well with universalism (esp. caring for nature) but might be relevant for benevolence too as caring for the environment and especially healthiness could add to the well-being of those close to the person. Thus,

H3. The increased personal value of Self-transcendence is associated with a higher interest towards meat alternatives.

2.4. Conservation and interest towards meat alternatives

Schwarz's (1992) value theory breaks Conservation into three sub-domains, namely seek for security (both personal and on a societal level), conformity (following the rules of society and interpersonal avoidance of upsetting other people), and upholding the traditions both on a larger cultural and religious context, but also within the closer communities such as family (Sagiv & Schwartz, 2022). Conservation value has been associated with environmentally sustainable consumption. Vermeir and Verbeke (2008) found that consumers' tendency to appreciate security, conformity, and traditions in their lives positively moderated the relationship between their attitudes and intentions to buy sustainable dairy products. This might have been because sustainable products could be considered tools to maintain society and communities. However, the logic might be the opposite with meat alternatives as by definition such products are aimed at replacing something traditional (i.e. the meat). Studies have reported that consumers freely associate social and cultural dimensions with meat including attributes

such as 'tradition', 'friends and family', 'gatherings', 'special occasions', and traditional meat dishes (de Andrade, de Aguiar Sobral, & Ares, 2016; Realini et al., 2022). Meanwhile, meat alternatives have been characterized e.g. as 'unnecessary' and 'artificial' (Michel et al., 2021). Therefore,

H4. The increased personal value of Conservation is associated with lower interest towards meat alternatives.

2.5. The underlying role of social motives status and group affiliation

Personal values are found to be "cognitive representations of motivational goals" (Sagiv & Schwartz, 2022, p. 539). However, personal values are not the same as motives. Research suggests that abstract personal values are at the top of the cognitive hierarchy and they have an influence on the more concrete cognitive structures such as attitudes, perceptions, and intentions (Brunso, Scholderer, & Grunert, 2004). According to Verplanken and Holland (2002), personal values set the scene for the more concrete motives defined by the situation in which the motivational goal is elicited. These concrete and situational motives further guide the behaviour. To concretise, a food choice situation in a supermarket might elicit a value-congruent goal to explore new products and further a concrete motivation to act (i.e. to buy meat alternative products to satisfy curiosity) for individuals valuing Openness to change. In general, the four high-order hierarchies of personal values can be divided into two categories based on their motivational focus. Self-enhancement and Openness to change values drive motivations that are individual-focused (Sagiv & Schwartz, 2022), that is, individuals holding these values express motivations, that lead to beneficial outcomes for them personally. Contrary, individuals holding Self-transcendence and Conservation values show other-focused motivations leading to beneficial outcomes for others.

The research carried out on social motives highlights two relevant motives for self-focused and other-focused individuals, namely status and group affiliation (Neel et al., 2016). Social motive status refers to an individual's need for other people to look up to the person, respect the rank or position and be in a position of leadership (Neel et al., 2016). Griskevicius, Tybur, and van den Bergh (2010) showed that status motive might counterintuitively drive green consumption. The study explained that choosing a green option will give an impression to other consumers that the person is pro-social with subsequent beneficial (personal) effects on the person's status. This hypothesis got further support as the effect of status motive occurred only in public conditions while in private conditions it led to non-green consumption. The study by Babutsidze and Chai (2018) implied the same; status motive had a positive connection to individuals' Greenhouse gas mitigation practices as it served as social signalling to other people that the individual cared for the environment and subsequently elevated their status. In the food consumption domain (organic foods), the results of Griskevicius et al. (2010) were corroborated by Puska, Kurki, Lähdesmäki, Siltaoja, and Luomala (2018). The research showed that status motive not only led to higher intentions towards organic foods but also elevated taste pleasantness and emotional response towards organic carrots and cheeses (but only in public conditions).

The reviewed studies did not focus on the relationship between status motive and personal values. Indeed, conceptually distinguishing between self-enhancement value and status motive is not a straightforward issue. In this research, they are considered as theoretically related, but also different in one important way. Self-enhancement value can be viewed as primarily concerned with power over others and resources whereas status motive revolves around the respect and admiration afforded by others (Anderson, Hildreth, & Howland, 2015; Dubois, Rucker, & Galinsky, 2012). Power (cf. self-enhancement) grants individuals the ability to force their will upon others, while status involves voluntary deference: people defer to high-status individuals because they want to, but they defer to powerful individuals because they have

to (Anderson et al., 2015). Dubois et al. (2012) studied how the feeling of power/powerlessness affected consumers' preferences for food portion sizes and identified that the need for status mediated the relationship in a way that those with a lower sense of power seek higher status and prefer larger portion sizes (and vice versa). Thus, it is also hypothesized in this study that status motive underlies the path from Self-enhancement (cf. power) to the interest in meat alternatives, even dampening the hypothesized (H1) negative relationship of Self-enhancement. Thus,

H5a. Status motive underlies the relationship between self-enhancement and interest towards meat alternatives.

Concerning Openness to change, the direction of the motive's underlying role is not as clearly conceptually justified. This is because people expressing this value are not seeking status per se, but rather new experiences. However, Openness to change is an individualistic value (Sagiv & Schwartz, 2022) and people with this value might consider status relevant although not as important as those embracing Self-enhancement. There is some recent empirical evidence supporting the idea. Sestino, Amatulli, Peluso, and Guido (2023) studied the Openness to change concerning consumers' perceived usefulness of virtual assistants in luxury hotels. They proposed that consumers' status orientation will inflate the positive relationship between openness to change and perceived usefulness. Indeed, the results supported their hypotheses, but they also revealed that even on the highest level of status orientation, the openness to change had still a significant positive connection to perceived usefulness. Another study by Li, Wang, Li, and Liao (2021) found that social norms positively mediated the path between consumers' innovativeness and their intention to buy organic foods. This result indicates that consumers open to new things consider how others view them. Thus,

H5b. Status motive underlies the relationship between Openness to change and interest towards meat alternatives.

Group affiliation motive refers to an individual's inherent need to be part of a group and further maintain the group bonds (Neel et al., 2016). This motive has been suggested to be important in the sustainable consumption domain, especially to those individuals holding other-focused values (i.e. Self-transcendence and Conservation) to reach social responsibility and meet social expectations through consumption (Rahman, Chwialkowska, Hussain, Bhatti, & Luomala, 2023). Although the need for group affiliation and its role in green consumption has not been under wide empirical scrutiny, some results exist. Gao and Mattila (2016) in their study concerning green hotel selection found that those study participants who were assigned to a socially included condition (vs. socially excluded) were more likely to select a green hotel when their motive for self-affirmation of personal values was primed. This indicates that making a choice appreciated by the social group can have beneficial effects on green choices. As Self-transcendence is an inherently other-focused value (Sagiv & Schwartz, 2022), it could be assumed that an individual's motive for group affiliation could have an underlying role (positive by nature) in the relationship between the value and interest towards meat alternatives. Therefore,

H6a. Group affiliation motive underlies the relationship between Self-transcendence and interest towards meat alternatives.

Concerning Conservation, the logic might be different. Although Conservation is an other-focused value, it was earlier hypothesized that it has a negative relationship with the meat alternative interest due to the potential of meat alternatives to shake the traditional ways of consuming meat. However, those who value Conservation are highly group-oriented in the way that they want to secure the group (Schwartz, 1992). As the discussion about climate change and the associated threats has increased, it might be that those consumers who value Conservation could see the meat alternatives as tools to secure the group around them. These group-maintaining goals might elicit the opposite effect to the

primary effect of values (Steg, Bolderdijk, Keizer, & Perlaviciute, 2014). In other words, group affiliation may be such a strong motivational goal for individuals with Conservation values that they are willing to show positive interest towards meat alternatives just for the sake of group integrity. Therefore,

H6b. Group affiliation motive underlies the relationship between Conservation and interest towards meat alternatives.

2.6. Control variables

As several demographic and psychographic variables are found to affect meat alternative consumption (see Introduction section), three control variables (age, gender, and tendency to avoid novel foods) are included as control variables to increase the validity of the results. Previous studies have frequently shown that consumers' age has a significant connection to meat alternative acceptance; when age increases, meat alternative acceptance decreases (e.g. Elzerman et al., 2021). Moreover, females have been found to view meat alternatives more positively than males (Bryant et al., 2019). On the other hand, the tendency to avoid novel foods (or food neophobia) has been shown to have a negative relationship with attitudinal and behavioral responses to meat alternatives in a wide array of earlier empirical studies (e.g. Siegrist & Hartmann, 2020; Verbeke, 2015).

3. Methodology

The conceptual model was validated, and estimated, and the hypothesized relationships were analysed by Partial Least Squares structural equation modelling (PLS-SEM). PLS-SEM aims to estimate the predictive power of the independent variables to the dependent variable (s) by minimizing the unexplained variance in the model's dependent variables (Guenther, Guenther, Ringle, Zaefarian, & Cartwright, 2023). The method further explores the relative strength of the independent variables in causing variation in the dependent variable (Hair et al., 2017b). Both of these are in the focus of the current study. An alternative to PLS-SEM is the covariance-based SEM (CB-SEM). The main idea of CB-SEM is to estimate a model-based covariance matrix with as little difference as possible from the observed covariance matrix in the data. In other words, CB-SEM is about fitting the theoretical model to the data to confirm the proposed theory (Guenther et al., 2023). Despite the differences in the main purposes of the methods, CB-SEM is also capable of prediction although weaker than PLS-SEM in that respect.

One criterion to choose between the two methods is the nature of the data. PLS-SEM is intended for composite model data while CB-SEM assumes that the data follow a common factor model (e.g. Sarstedt, Hair, & Ringle, 2023). It is argued that in applied research (as is the case of this study), the data do not always follow the common factor model, but might be composite-based instead (e.g. Sarstedt, Hair, Ringle, Thiele, & Gudergan, 2016). Further, PLS-SEM is found robust in analysing common factor model data, although it produces some biases, while the biases produced by CB-SEM in cases where the data follows a composite model are larger (Sarstedt et al., 2023). As the data model is difficult to identify in practice, PLS-SEM was considered more feasible than CB-SEM in this study.

Finally, PLS-SEM has been found suitable method for estimating models extending some established theories (in this study the personal value theory) with some new theoretical concepts (in this study the social motive status and group affiliation) (Hair et al., 2019). This is because PLS-SEM is more sensitive in comparison to CB-SEM leading to higher statistical power in observing potentially significant relationships between the variables in the model.

3.1. Data collection and sample

Data was collected in Finland, the UK, Germany, and Sweden by an

external service provider through an online survey in the autumn of 2021. From each country, 900 participants were recruited totalling 3600 participants (Table 1). The invitation to the study was sent randomly via e-mail to a cohort of external service provider's panel members. Approximate panel sizes at the moment of data collection were the following 1) Finland: 80 000, 2) UK: 350 000, 3) Germany: 250 000, 4) Sweden: 90 000. The response rates to the invitation varied between 10 % and 20 % depending on the country. The data collection aimed at reaching an equal share of participants by gender. Another recruitment criterion was related to the participants' age, the intent was to reach such a sample, which roughly corresponds with the national average in 2021 (Finland: 43.6, UK: 40.3, Germany: 44.7, Sweden: 41.6). The countries for the study were chosen through the following logic: Finland is a small but generally open-minded market for food innovations (EIT Food, 2021), Sweden is a small market in which consumers have shown doubts concerning plant-based meat alternatives (Röös, de Groote, & Stephan, 2022; Spendrup & Hovmalm, 2022), Germany is the main EU consumer market for plant-based meat alternatives (Statista, 2022b), and UK is the most mature non-EU market for meat alternatives (Statista, 2022b).

The study design was approved by the ethical committee of VTT Technical Research Centre of Finland Ltd (126343, approval date 24.6.2021). To ensure that the ethical principles were met, all participants were given information about the study purpose, the responsible organization carrying out the research, the funding body, data handling procedures, and estimated answering time. With this information, the participants were asked to provide their informed consent for participation by clicking the survey link. If the participants agreed, they moved on to filling in the survey. All data provided by the participants was anonymised and no personal or other data potentially compromising individual participant identity, were collected.

Table 1 provides the overall view of the data. The gender distribution was roughly even between males and females and no statistically significant differences were observed between the countries. Age varied slightly between the countries. In Germany, the mean age of the sample was a few years higher than in the other countries. Education level caused variation between the countries. In the UK, the share of highly educated participants was highest followed by Sweden, Finland, and Germany. In Germany, the share of participants with secondary education was the highest. No differences between the countries emerged in the share of participants with low education. The samples differed also by the self-reported level of income. In the Finnish sample, the share of low-income participants was the highest and in Germany the lowest. Also, the share of middle-income participants was the highest in the Finnish sample. Finally, the share of urban participants was the lowest and that of rural participants was the highest in the German sample. No major differences in the place of residence were visible between the other countries.

3.2. Measures

The survey items for the study were adopted from the previous literature (all scales and individual items are presented in Table 2). For the measurement of personal values, the Short Schwartz's Value Survey (SSVS) with ten individual items by Lindeman and Verkasalo (2005) was applied. The scale for the items ranged from 0 to 8, with anchors in 0 = opposed to my principles, 1 = not important, 4 = important, and 8 = extremely important.

The measures for social motive status and group affiliation with six items for both were based on the scales by Neel et al. (2016). The response scale ranged from 1 = totally disagree to 5 = totally agree. The tendency to avoid novel foods scale was based on Nezlek, Forestell, and Cypryanska (2021) and included five individual items measured on a five-point Likert scale ranging from 1 = totally disagree to 5 = totally agree.

The interest towards meat alternatives was measured with two items

Table 1
Characteristics of the sample by gender, age, education, income level, and place of residence. Differences between the countries were tested with the Chi-square –test or one-way ANOVA. Significant differences between the countries are denoted with different superscript letters.

Sample characteristic	Finland (N = 900)	UK (N = 900)	Germany (N = 900)	Sweden (N = 900)	Total (N = 3600)	Chi-square/F	df	p
Gender %								
Female	49.8[a]	50.4[a]	53.0[a]	50.2[a]	50.9			
Male	49.9[a]	49.3[a]	46.9[a]	49.6[a]	48.9			
Other	0.3[a]	0.3[a]	0.1[a]	0.2[a]	0.2	3.76	9	.93
Mean age (SD)	44.50[a] (15.13)	43.47[a] (14.46)	48.29[b] (15.60)	43.38[a] (14.85)	44.91 (15.14)	21.28	3	<.001
Education %								
Compulsory education	8.6[a]	5.7[a]	5.4[a]	7.3[a]	6.7			
Secondary education	56.0[a]	40.2[b]	65.4[c]	50.9[a]	53.1			
Higher education	34.6[a]	52.6[b]	28.6[c]	41.1[d]	39.2			
Something else	0.8[a]	1.5[s]	0.6[s]	0.7[s]	1.0	144.05	9	<.001
Income level %								
Low	38.2[a]	31.7[b]	25.6[c]	26.8[bc]	30.6			
Middle	55.7[a]	63.4[b]	66.7[b]	65.1[b]	62.7			
High	6.1[ab]	4.9[b]	7.7[ab]	8.1[a]	6.7	48.32	6	<.001
Place of residence								
Capital area	23.2[ab]	19.1[b]	23.1[ab]	25.1[a]	22.6			
Other urban area	59.9[a]	58.2[a]	45.1[b]	56.3[a]	54.9			
Rural area	16.9[a]	22.7[b]	31.8[c]	18.6[ab]	22.5	82.86	6	<.001

on a five-point Likert scale ranging from 1 = totally disagree to 5 = totally agree adapted from Zerbini, Vergura, and Latusi (2019). The reason to take only these two items was that interest/intention scales tend to form homogeneous multi-item scales with redundant items threatening the validity of the construct (Diamantopolous et al., 2012). Thus, two items with assumingly different meanings to consumers (interest in meat alternative products and willingness to recommend the products) were applied. Before responding to the interest scale, the participants were provided with a short description of meat alternatives: "*Meat alternatives can be considered as products that do not contain meat but serve a similar purpose as meat products by providing the main source of protein. Meat alternatives are mostly made from plant-based ingredients such as soy, fava beans, oats and legumes. Common forms of meat alternatives are patties, sausages, mince, cold cuts, and strips.*". Provision of the description was deemed necessary as the products are not mainstream yet, thus potentially unfamiliar to consumers.

The original questionnaire was prepared in English. To guarantee the quality of the translations to Finnish, German, and Swedish, the back-translation method was applied. In practice, independent translators translated the original version to the target language and after that other translators converted the questionnaire back to English.

3.3. Data analysis

The data analysis followed the three-step approach adapted from Hair et al. (2017a). First, the measurement model was evaluated with more detailed observations on the constructs' reliability, convergent validity, and discriminant validity. In the second step, the structural model was estimated and followed by hypothesis testing including analysis of the strength and significance of path coefficients and effect sizes. For this step, bootstrapping with 5000 subsamples and a 95 % confidence interval was applied. The third step included the evaluations of the model's predictive relevance (both in-sample predictive power and out-of-sample predictive relevance). This was done through the PLS$_{predict}$ algorithm with 10 folds and 10 repetitions.

The analyses aimed at detecting the underlying role of social motives were carried out as follows. First, the paths between independent variables (personal values) and dependent variable (interest towards meat alternatives) were analysed without the social motives in the model. After that, status and group affiliation were included in the model and direct effects from the IVs to the DV as well as indirect effects via these underlying variables were observed. The underlying role was established in case the direct effect without the status and group affiliation and the indirect effect with them were statistically significant.

The main analyses were carried out with pooled data from all

countries to generate a wide overview of the studied phenomenon. Although the study is not about cross-cultural variation, a secondary analysis was done by using the country as moderator (Multi-group analyses, PLS-MAGA) to see potential differences in the model's path strengths between the countries. All statistical analyses were performed with SmartPLS 4 software by Ringle, Wende, and Becker (2022).

4. Results

4.1. Evaluation of the measurement model

The measurement model evaluation took the basis of the outer loadings of the individual measures, reliability of the constructs, convergent validity, and discriminant validity (Hair et al., 2017a). Almost all of the individual items had acceptable loadings to the constructs exceeding the recommended threshold value of 0.70 (Hair et al., 2017a). However, some exceptions emerged. The item self-direction for the personal value Openness to change showed a borderline loading of 0.64, but it was retained in the analysis as it represents an item of one of the study's focal constructs. This decision had a negative effect on the convergent validity (AVE), but it remained at an acceptable level. Two items for the status motive and one item for the group affiliation motive had poor loadings leading to removing them from further analyses. After these adjustments, the reliability of the constructs was evaluated. The Cronbach alphas for Openness to change and Self-transcendence were on the borderline considering the recommended threshold of 0.60. However, all composite reliabilities were above 0.70 so no further adjustments were made (Hair et al., 2017a). Convergent validity for all variables was in line with the recommendations as the average variance extracted (AVE) exceeded the value of 0.50 (Hair et al., 2017a). The constructs, items, item loadings, construct reliability, and convergent validity for all countries are reported in Table 2.

To analyse the discriminant validity, Heterotrait-Monotrait Ratio (HTMT) was applied. The results showed acceptable outcomes according to the recommended criteria (none of the variables received a score above the threshold value of 0.90) (Hair et al., 2017a). The HTMT results are reported below in Table 3.

4.2. Evaluation of the structural model and hypothesis testing

Table 4 reports the main results of the structural model evaluation. The hypotheses were verified or refuted based on the significance of the path beta coefficient and the effect size, which both needed to be significant to rule out any irrelevant correlations. The reason for this approach was the large sample size, which might generate low

Table 2

Constructs, items, descriptive statistics, item loadings, construct reliability, and convergent validity. All reliability indicator and convergent validity indicator values are without the items removed from the analyses.

Construct/Item	Mean (SD)	Item loading	CA	CR	AVE
Self-enhancement	3.79 (1.66)		0.71	0.87	0.78
POWER – i.e., social power, authority, wealth	3.07 (1.89)	0.88			
ACHIEVEMENT – i.e., success, capability, ambition, influence on people and events	4.50 (1.87)	0.88			
Openness to change	4.60 (1.58)		0.64	0.80	0.58
HEDONISM – i.e., the gratification of desires, enjoyment in life, self-indulgence	4.77 (1.93)	0.80			
STIMULATION – i.e., daring, a varied and challenging life, an exciting life	4.41 (1.83)	0.83			
SELF-DIRECTION – i.e., creativity, freedom, curiosity, independence, choosing one's own goals	5.79 (1.76)	0.64			
Self-transcendence	5.71 (1.57)		0.63	0.84	0.73
UNIVERSALISM – i.e., broadmindedness, the beauty of nature and arts, social justice, a world at peace, equality, wisdom, unity with nature, environmental protection	5.41 (1.93)	0.88			
BENEVOLENCE – i.e., helpfulness, honesty, forgiveness, loyalty, responsibility	6.02 (1.74)	0.83			
Conservation	5.41 (1.51)		0.72	0.84	0.63
TRADITION – i.e., respect for tradition, humility, accepting one's position in life, devotion and modesty	4.80 (2.03)	0.73			
CONFORMITY – i.e., obedience, honouring parents and elders, self-discipline and politeness	5.32 (1.92)	0.86			
SECURITY – i.e., national security, family security, social order, cleanliness, return favours	6.10 (1.74)	0.80			
Social motive status	2.99 (0.87)		0.77	0.85	0.60
It's important to me that other people look up to me	2.92 (1.15)	0.77			
I want to be in a position of leadership	2.73 (1.20)	0.76			
It's important to me that others respect my rank or position	3.32 (1.08)	0.77			
I do things to ensure that I don't lose the status I have	2.98 (1.05)	0.79			
I do not like being at the bottom of a hierarchy (*removed from the analysis*)	3.44 (1.12)	0.65			
I do not worry very much about losing status REV (*removed from the analysis*)	2.58 (1.09)	0.17			
Social motive group affiliation	3.60 (0.84)		0.87	0.90	0.65
Being part of a group is important to me	3.30 (1.12)	0.78			
I enjoy working with a group to accomplish a goal	3.55 (1.07)	0.82			
I like being part of a team	3.58 (1.07)	0.85			
Working in a group is usually more trouble than it's worth REV (*removed from the analysis*)	3.22 (1.10)	0.37			
When I'm in a group, I do things to help the group stay together	3.71 (0.95)	0.80			

Table 2 (*continued*)

Construct/Item	Mean (SD)	Item loading	CA	CR	AVE
Getting along with the people around me is a high priority	3.88 (0.96)	0.78			
Interest towards meat alternatives			0.90	0.95	0.91
I am interested in buying meat alternatives	3.04 (1.42)	0.96			
I will recommend meat alternatives to others	2.83 (1.37)	0.96			
Tendency to avoid novel foods (*Control variable*)			0.92	0.94	0.76
I think something I have not eaten before will taste strange	2.11 (1.14)	0.88			
I have doubts about eating things I have never had before	2.24 (1.21)	0.88			
I think that if I eat something I have not eaten before, I will not like it	1.96 (1.12)	0.87			
I don't really trust new foods	2.16 (1.15)	0.87			
Foods I have never eaten before seem sort of disgusting	1.84 (1.07)	0.85			
Age (*Control variable*)	44.79 (15.17)	1.00			
Gender[a] (*Control variable*)	–	1.00			

SD = Standard deviation; CA = Cronbach's alpha, CR = Composite reliability, AVE = Average variance extracted.

[a] 1 = male, 2 = female.

significant correlations without relevance. The effect sizes were calculated through the following formula: $f^2 = R^2_{included} - R^2_{excluded}/1 - R^2_{excluded}$. In the formula, R^2 refers to the variance explained in interest towards meat alternatives when a certain independent variable is included or excluded. The standard errors for f^2 were calculated through the SmartPLS bootstrapping and equalled to the standard deviation of the 5000 subsamples used in the analysis.

The results show that Self-enhancement had a significant positive relationship with the interest towards meat alternatives. However, the effect size was insignificant leading to rejection of the hypothesis 1. In the case of the Openness to change, there was no statistically significant connection to interest. Thus, hypothesis 2 was rejected as well. Both other-oriented values had a significant relationship with the interest. Self-transcendence had a strong positive connection while Conservation value was negative. Thus, hypotheses 3 and 4 were confirmed. The role of the control variables (age, gender, tendency to avoid novel foods) was as expected.

After the structural model evaluation, the predictive power and predictive relevance of the model were assessed. According to the R^2-value, the model was able to explain 20 % of the variance in the interest towards meat alternatives. This confirmed that the model indeed had in-sample predictive power. Regarding the out-of-sample predictive relevance, Stone-Geisser's Q^2 *value* was applied. As the Q^2 exceeded zero (0.18), the predictive relevance of the model was established (cf. Hair et al., 2017a).

4.3. Underlying role of status and group affiliation

In the first step of the analysis, the direct effects between personal values and interests were established without status and group affiliation in the model. This observation revealed that all personal values were in connection with the interest. The analysis continued with including the social motive variables in the model and subsequent observations of the direct effect of personal values on interest and indirect ones via the underlying variables. The results show that direct effects with status and group affiliation variables (i.e. from independent variables to dependent variables), indirect effects (i.e. the path from independent variables via the social motive variables to the dependent

Table 3
Discriminant validity. Heterotrait-Monotrait Ratio (HTMT).

	Age (Control variable)	Conservation	Gender (Control variable)	Interest towards meat alternatives	Social motive group affiliation	Social motive status	Openness to change	Self-enhancement	Self-transcendence
Age (Control variable)									
Conservation	0.094								
Gender (Control variable)	0.090	0.086							
Interest towards meat alternatives	0.260	0.080	0.162						
Social motive group affiliation	0.059	0.321	0.109	0.186					
Social motive status	0.280	0.211	0.076	0.166	0.401				
Openness to change	0.213	0.505	0.097	0.205	0.332	0.409			
Self-enhancement	0.268	0.391	0.070	0.132	0.240	0.672	0.658		
Self-transcendence	0.034	0.647	0.247	0.365	0.442	0.115	0.761	0.212	
Tendency to avoid novel foods (Control variable)	0.123	0.083	0.054	0.165	0.120	0.124	0.113	0.167	0.205

Table 4
Results of the structural model evaluation.

Path (hypothesis)	β	f²	Decision
Self-enhancement → Interest towards meat alternatives (H1–)	0.06 [2.87] **	0.00 [1.38]ns	Reject
Openness to change → Interest towards meat alternatives (H2 +)	−0.04 [1.76]ns	0.00 [0.82]ns	Reject
Self-transcendence → Interest towards meat alternatives (H3 +)	0.32 [16.15] ***	0.08 [7.51]***	Accept
Conservation → Interest towards meat alternatives (H4 –)	−0.19 [10.56]***	0.02 [3.75]***	Accept
Age (Control variable)	−0.21 [13.39]***	0.05 [6.38]***	As expected
Tendency to avoid novel foods (Control variable)	−0.13 [8.28]***	0.02 [4.04]***	As expected
Gender[a] (Control variable)	0.16 [5.20] ***	0.01 [2.54]**	As expected

[ ] = T statistics; ** = p ≤ .01, *** = p ≤ .001, ns = not significant; β = Beta coefficient; f² = Effect size; [a]1 = male, 2 = female.

variable), and total effects were significant indicating a positive underlying role for the social motives in all cases except for the Openness to change (non-significant total effect). Thus, hypotheses 5a, 6a, and 6b were accepted. It is notable, that in the case of Conservation, the negative direct effect without the group affiliation turned into a positive indirect one when the path went via this variable. All results of the analyses are reported in Table 5.

4.4. Multi-group analyses by country

The main analyses were carried out with the pooled data. However, the cross-cultural nature of the study allows additional observation of the potential differences in the model between the four study countries. Thus, multigroup analyses (PLS-MGA) were carried out treating the country as a grouping variable. With regards to H1, the path was significant (and positive against the assumption of H1) only in Sweden, yet the effect size was insignificant. No differences between the countries emerged (Table 6). H2, stating that Openness to change has a positive connection with interest towards meat alternatives, did not hold in any country. In the Finnish data, a negative relationship (but insignificant effect size) occurred along with stronger path strength in comparison to the UK and Swedish data. Hypothesis 3 (Self-transcendence → Interest) was according to the expectations in all countries except Sweden (insignificant effect size), showing a positive relationship. In addition, the path in the Finnish data was stronger than in the German data. Finally, H4 was confirmed in all countries; Conservation value had a negative association with interest towards meat alternatives. In

Table 5
Results concerning the analyses of social motives' underlying role between personal values and interest towards meat alternatives.

Path (hypotheses)	Direct effect without social motive variable β	Direct effect with social motive variable β	Indirect effect β	Total effect β	Decision
Self-enhancement → Social motive status → Interest towards meat alternatives (H5a)	0.09 [4.50]***	0.06 [2.87]**	0.04 [3.94] ***	0.09 [4.95] ***	Accept
Openness to change → Social motive status → Interest towards meat alternatives (H5b)	−0.05 [2.45]*	−0.04 [1.76]ns	0.01 [3.01]**	−0.03 [1.41]ns	Reject
Self-transcendence → Social motive group affiliation → Interest towards meat alternatives (H6a)	0.30 [16.12] ***	0.32 [16.15] ***	0.01 [2.71]**	0.33 [17.41] ***	Accept
Conservation → Social motive group affiliation → Interest towards meat alternatives (H6b)	−0.14 [4.86]***	−0.19 [10.56] ***	0.01 [2.57]***	−0.18 [10.17] ***	Accept

[ ] = T statistics; * = p ≤ .05, ** = p ≤ .01, *** = p ≤ .001, ns = not significant; β = Beta co-efficient.

Germany, the strength of this path was significantly lower than in the Finnish and UK data. With regard to control variables, all paths were as expected in each country. However, the effect size for gender was insignificant in all countries. In addition, the effect sizes for the tendency to avoid novel foods were insignificant in the UK and Swedish data. The predictive power of the model was highest in Finland (28 %) and lowest in Sweden (16 %).

The multi-group analysis results concerning the underlying role of social motives (status, group affiliation) are presented in Table 7. In terms of H5a (Self-enhancement → Social motive status → Interest

Table 6
Multi-group analysis results by country for hypotheses 1–4. Significant differences in path strengths between the countries are denoted with different superscript letters.

Path (hypothesis)	Finland	UK	Germany	Sweden
Self-enhancement → Interest towards meat alternatives (H1–)	0.06[a]	0.03[a]	0.03[a]	0.08[a]
	[1.74][ns]	[0.73][ns]	[0.76][ns]	[2.03]*
f^2	0.00[a]	0.00[a]	0.00[a]	0.00[a]
	[0.84][ns]	[0.35][ns]	[0.22][ns]	[0.90][ns]
Openness to change → Interest towards meat alternatives (H2 +)	−0.10[a]	0.05[b]	−0.06[ab]	0.03[b]
	[2.65]**	[0.99][ns]	[1.52][ns]	[0.61][ns]
f^2	0.01[a]	0.00[a]	0.00[a]	0.00[a]
	[1.42][ns]	[0.21][ns]	[0.50][ns]	[0.40][ns]
Self-transcendence → Interest towards meat alternatives (H3 +)	0.44[a]	0.34[ab]	0.32[b]	0.16[c]
	[11.12] ***	[8.34]***	[8.64]***	[3.80]***
f^2	0.17[a]	0.09[b]	0.08[b]	0.02[c]
	[5.04]***	[4.11]***	[4.01]***	[1.83][ns]
Conservation → Interest towards meat alternatives (H4 –)	−0.24[a]	−0.25[a]	−0.15[b]	−0.15[ab]
	[7.32]***	[6.58]***	[4.08]***	[4.06]***
f^2	0.06[a]	0.05[ab]	0.02[b]	0.02[ab]
	[3.45]***	[3.11]**	[1.99]*	[1.98]*
Age (Control variable)	−0.19	−0.11	−0.29	−0.22
	[5.99]***	[3.16]***	[9.51]***	[6.80]***
f^2	0.04	0.01	0.09	0.05
	[2.94]**	[1.55][ns]	[4.33]***	[3.20]***
Gender[a] (Control variable)	0.22	0.20	0.15	0.12
	[3.66]***	[3.14]**	[2.48]**	[1.88][ns]
f^2	0.02	0.01	0.01	0.00
	[1.73][ns]	[1.49][ns]	[1.17][ns]	[0.90][ns]
Tendency to avoid novel foods (Control variable)	−0.15	−0.12	−0.16	−0.12
	[4.95]***	[3.69]***	[5.44]***	[2.46]*
f^2	0.03	0.02	0.03	0.02
	[2.30]*	[1.73][ns]	[2.55]*	[1.88][ns]
R^2 (Interest towards meat alternatives)	0.28[a]	0.19[bc]	0.24[ab]	0.16[c]

[ ] = T statistics; * = $p \leq .05$, ** = $p \leq .01$, *** = $p \leq .001$, ns = not significant; R^2 = Variance explained; f^2 = Effect size; [a]1 = male, 2 = female.

towards meat alternatives), no such role was detected. The underlying role proposed in H5b followed the same pattern as with pooled data. No effect was detected in any country. Support for hypothesis 6a was found in Germany and Sweden. In these countries, group affiliation motive positively underlay the path between the Self-transcendence value and interest. Finally, hypothesis 6b was confirmed in the Swedish data. In the Finnish, UK, or German data, group affiliation motive did not underlie the path between Conservation and interest.

5. Discussion

5.1. Implications for research

This study was about the relationship between consumers' personal values and their interest towards meat alternatives. In addition, the underlying role of two social motives, status and group affiliation was studied. A conceptual model was developed and accompanied by hypotheses suggesting the direction of relationships between the constructs. The model was validated, estimated, and the hypotheses were tested with data from four European countries (Finland, the UK, Germany, and Sweden). The results showed that self-focused personal values (Self-enhancement and Openness to change) were not associated with consumers' interest towards meat alternatives while other-focused values (Self-transcendence and Conservation) were. Self-transcendence had a positive connection to interest while Conservation value had a negative one. Finally, the underlying role of the status motive concerning Self-enhancement and the underlying role of the group affiliation motive for Self-transcendence and Conservation were found. All of the detected underlying roles were positive by nature.

When observing the study results more closely, the hypothesized negative relationship between Self-enhancement and interest towards meat alternatives did not hold. This result is in line with the recent findings by Lehto et al. (2023) with a Finnish sample. Although they observed the Self-enhancement values (Power, Achievement) individually, valuing neither of them increased or decreased the odds of consuming meat alternatives. This is interesting as cultural associations such as masculinity (Schösler et al., 2015) or power (Kildal & Syse, 2017) with meat could be assumed to resonate with Self-enhancement values and meat alternatives might be perceived as opposite leading to a negative correlation between the constructs. However, the results of earlier studies or this study did not support this assumption. Contrary, the path was positive and significant, yet the effect size was insignificant. One explanation for the result could be that consumers might not consider meat alternatives as opposites to meat but rather complementing options (i.e. meat alternatives might not necessarily host meanings opposite to meat). A recent Dutch study by Verain, Dagevos, and Jaspers (2022) supports this interpretation to some extent. The study identified meat eater/flexitarian segments and found that the largest segment, labelled as 'Unconscious flexitarian' showed the highest scores related to the status of meat consumption along with the meat-eating 'Compulsive meat eater' segment. In other words, appreciating the status related to meat did not stop these flexitarian consumers from reducing their meat consumption. Thus, meat alternatives in general might not be conflicting with the Self-enhancement value. However, it is to be noted that the Verain et al. (2022) study did not describe the Unconscious flexitarians' perceptions towards meat alternatives per se so the previous interpretation must be considered speculative at best.

The other self-focused personal value, Openness to change, was hypothesized to have a positive connection to interest towards meat alternatives. The hypothesis assumed that as consumers with this value are found to be innovative and explore new things (Sagiv & Schwartz, 2022), they would potentially be open to meat alternatives. This assumption did not hold, there was no significant relationship between the value and interest towards meat alternatives. One explanation is that the hedonism value was included in the Openness to change construct. Hedonism is found to correlate negatively with meat alternative acceptance (e.g. Varela et al., 2022), whereas the other Openness to change values (stimulation, self-direction) are found to have positive correlations (Lehto et al., 2023). As the three values were treated in this study as reflective indicators of Openness to change, hedonism might have inflated the other values' relationships with the interest leading ultimately to the non-significant outcome.

The other-focused personal values, Self-transcendence and Conservation acted according to the expectations. Self-transcendence had a strong positive connection to interest towards meat alternatives while Conservation value had a negative. These results are aligned with the earlier research in other sustainable consumption domains (e.g. Burcu & Seda, 2013; Pinto et al., 2011) and also in the recent studies carried out in the meat alternative context (Lehto et al., 2023; Lewisch & Riefler, 2023). Overall, the results related to direct relationships between values and interest indicate that other-focused values generate variation in consumers' thoughts on meat alternatives. This is not a surprise as Self-transcendence is perhaps the strongest value in connection to pro-environmental behaviours (Sagiv & Schwartz, 2022). In addition, the current study was implemented within developed European countries. There is evidence that in societies with high economic resources, people tend to rely more on Self-transcendence value in terms of environmentally beneficial behaviours (Chan, 2020).

It was hypothesized that status would underlie the relationship between self-focused personal values (Self-enhancement, Openness to change) and interests while group affiliation would serve the same role in between other-focused values (Self-transcendence and Conservation) and interest. Indeed, the results were according to the expectations in three out of four cases. Only in the case of Openness to change, the

Table 7

Multi-group analyses' results concerning the underlying role of status and group affiliation between personal values and interest towards meat alternatives. Significant differences in path strengths between the countries are denoted with different superscript letters.

Path (hypotheses)	Finland			UK			Germany			Sweden		
	Direct effect without social motive variable β	Direct effect with social motive variable β	Indirect effect β	Direct effect without social motive variable β	Direct effect with social motive variable β	Indirect effect β	Direct effect without social motive variable β	Direct effect with social motive variable β	Indirect effect β	Direct effect without social motive variable β	Direct effect with social motive variable β	Indirect effect β
Self-enhancement → Social motive status → Interest towards meat alternatives (H5a)	0.06[a] [1.55][ns]	0.06[a] [1.74][ns]	0.02[a] [1.18][ns]	0.08[a] [1.69][ns]	0.03[a] [0.73][ns]	0.07[a] [3.22]**	0.06[a] [1.41][ns]	0.03[a] [0.76][ns]	0.04[a] [1.94][ns]	0.10[a] [2.63]**	0.08[a] [2.03]*	0.02[a] [0.99][ns]
Openness to change → Social motive status → Interest towards meat alternatives (H5b)	−0.09[a] [2.27]*	−0.10[a] [2.65]**	0.00[a] [0.97][ns]	0.04[b] [0.89][ns]	0.05[b] [0.99][ns]	−0.01[a] [1.11][ns]	−0.08[a] [1.99]*	−0.06[ab] [1.52][ns]	0.00[a] [0.41][ns]	0.02[ab] [0.43][ns]	0.03[b] [0.61][ns]	0.01[a] [0.94][ns]
Self-transcendence → Social motive group affiliation → Interest towards meat alternatives (H6a)	0.40[a] [11.37]***	0.44[a] [11.12]***	0.01[a] [0.64][ns]	0.29[a] [7.01]***	0.34[ab] [8.34]***	0.00[a] [0.19][ns]	0.30[a] [7.77]***	0.32[b] [8.64]***	0.02[a] [2.02]*	0.18[b] [5.29]***	0.16[c] [3.80]***	0.03[a] [2.38]*
Conservation → Social motive group affiliation → Interest towards meat alternatives (H6b)	−0.17[a] [3.95]***	−0.24[a] [7.32]***	0.00[a] [0.57][ns]	−0.20[a] [2.75]**	−0.25[a] [6.58]***	0.00[a] [0.18][ns]	0.01[b] [0.09][ns]	−0.15[b] [4.08]***	0.01[a] [1.85][ns]	−0.13[ab] [2.41]*	−0.15[ab] [4.06]***	0.02[a] [2.11]*

[ ] = T statistics; * = $p \leq .05$, ** = $p \leq .01$, *** = $p \leq .001$, ns = not significant; β = Beta coefficient.

hypothesis failed. The reason for the latter might be the same as explained earlier; the hedonism value could have inflated the effect of stimulation and self-direction in the model. However, what is more interesting is the effect of group affiliation between the Conservation value and consumers' interests. The direct effect of value was negative, but the indirect one via group affiliation was positive. This indicates that emphasising the motive for group preservation might be so important to consumers with Conservation value that it can dampen the negative direct effect. However, it is to be noted that in multi-group analysis this effect was visible only in Swedish data. To sum up, the study results show that personal values might not have only direct relationships with consumers' interests, but there might be underlying and moderating factors shaping the relationships (cf. Govaerts & Olsen, 2023). As personal values are highly abstract constructs and often difficult to concretise in e.g. marketing or interventions, the notion that more concrete concepts such as motives can underlie the relationships could open up more concrete ways to support consumers' meat alternative acceptance. These issues are discussed next.

5.2. Implications for the promotion of meat alternative consumption

The sustainability of the food system is in jeopardy and consumers' food behaviours are in a key role to change the course. Despite the several technological innovations in meat alternatives, the consumption rates of the products are still low (Statista, 2022a). Therefore, each attempt to change the direction counts. When thinking about the means to promote meat alternative consumption, three major aspects can be considered; availability of the products, affordability of the products, and attractiveness of the products (Aschemann-Witzel & Janssen, 2022). From this study's perspective, the attractiveness of meat alternatives is the main area for which to consider solutions.

As said, personal values are the enablers of consumers' motives, attitudes, interests, intentions, and behaviours (Schwartz, 1992). Personal values are highly abstract concepts, thus, proposing concrete actions on how to utilise them in the facilitation of meat alternative consumption is difficult. However, there are some tools for the quest. Verplanken and Holland (2002) introduced and validated the idea that activation of environmentally relevant values leads to value-congruent (i.e. environmentally friendly) behaviours. They used different priming methods to activate values and explained that value activation elicits the motivational goal to act in a value-congruent manner. Since then, goal-priming has been applied in several studies concerning food consumption (e.g. Brecic et al., 2021; Luomala, Järvinen, Peltola, Pennanen, & Sihvonen, 2023) with various tools such as visuals, olfactory means in e.g. retail environments. The current study results showed that only one of the four value categories (Self-transcendence) had a positive direct effect on interest towards meat alternatives suggesting that activation of benevolence or universalism could be useful. The problem is that not all consumers base their decisions on these values leaving the open question of how to approach them.

The SHIFT framework by White, Habib, and Hardisty (2019) offers some practical ideas. First, the framework suggests that consumers

maintain their self-concept through consumption and favour such options that are aligned with it. From this study's results perspective, it means that those consumers who find Self-transcendence important might reinforce their self-concept via meat alternatives. This idea can be leveraged to other values as well. For instance, those who value Conservation had a negative interest towards meat alternatives. But can the meat alternatives be framed and communicated to them in different manners, perhaps not emphasising so much the environmental sustainability, animal welfare or health aspects? For instance, Yule and Hummings (2023) showed that omitting arguments about environmental benefits from plant-based meat marketing increases politically conservative consumers' interest in the products. The current study results on the other hand suggest that meat alternatives could be promoted to those who value Conservation as a tool for maintaining the society or caring for those close to one. These results indicate that there might be room for innovative marketing campaigns to assure the Conservatives that meat alternatives can be aligned with their self-concept and that the products are not a threat to their core values. The same ideas might apply to those who value Self-enhancement. The results showed that the status motive underlay the path between Self-enhancement and interest. Therefore, to those who value power and achievement in life, promoting and branding the products as luxurious ones could increase their interest as they could be used to signal status. Although, it should be mentioned that the effect of this type of promotion might not be long-lasting (Steg et al., 2014).

Second, the SHIFT framework emphasises that consumers' behaviours can be affected by feelings and cognitions, the former being an important factor behind consumers' interest in alternative proteins (Onwezen et al., 2022). For instance, positive emotions joy and pride might be relevant emotions to facilitate environmentally sustainable consumption behaviours (White, Habib, & Hardisty, 2019). There might be potential in harnessing these emotions in a value-congruent manner in the communication of meat alternatives. As an example, a stereotypical Conservatist or Self-enhancer could be depicted in a manner that generates joy or pride in the target group and perhaps leads to a more favourable attitude towards the meat alternatives, reducing the potential incongruence between the values and the products. Finally, the cognitions in the form of information campaigns, and factual advertising could be useful. The content could include information about the health and sustainability benefits and instructions on how to use meat alternatives as part of the daily diet. However, the effect of these types of cognition-driven efforts might be limited to those who already accept the benefits (Steg et al., 2014).

5.3. Limitations and suggestions for future research

This study has limitations. First of all, considering that the model applied abstract value constructs with concrete interest towards meat alternatives, the predictive power of the model is somewhat low. This is often encountered in studies dealing with personal values (Pepper, Jackson, & Uzzel, 2009), but it should not be considered a major weakness since the understanding of personal values relationship can often drive studies dealing with more concrete constructs (e.g. attitudes, motives). Second, the study focused on the underlying role of two social motives (status, and group affiliation), at the same time ignoring various other important constructs relevant to consumers' meat alternative adoption. This limits the overall view of the phenomena, but on the other hand, adds to the literature these motives as potentially relevant constructs to be considered in further studies. Third, the study treated personal values at an abstract level through the four higher-order value categories. Naturally, this leads to a loss of information as the lower-level ten basic values are summed up. As seen, for example in the Lehto et al. (2023) study, the ten basic values can show variation in their potential to explain plant-based meat alternative consumption. However, in this study, the higher-order approach was deemed necessary from the analytics perspective, which should not rely on single-item measures (Diamantopolous et al., 2012). Future research could take this into account and use measurements, which capture the ten basic values with multiple items to facilitate a more detailed view of their independent role and power. Fourth, the dependent variable (interest towards meat alternatives) applied in this research often does not correlate very well with actual behaviours reflecting the attitude-behaviour gap, also noted in the context of meat alternatives (Aschemann-Witzel & Janssen, 2022). In addition, the current study showed just the simple relationship between the IVs and DV, hence taking no stand on means how understanding of personal values could be translated into actual behaviours. Therefore, future studies should employ more experimental approaches, preferably in the form of field experiments, to gain an understanding of how consumers' personal values could be e.g. activated and what the consequences of this are to real food choices. Fifth, the manifestation of personal values in consumers' behaviour is dependent on the cultural, religious, social reference groups, contextual, and situational factors. This study did not take these factors into account but relied on the sample from European countries and did not consider the variation in values within the world. For instance, Bakr, Al-Bloushi, and Mostafa (2023) found no differences in consumers' intention to buy plant-based meat between Canada and Kuwait. However, Chong, Leung, & Lua (2022) find that Singaporean consumers perceived lab-grown meat more positively than US consumers because of the differences in motivation related to social image. Therefore, future studies could for instance analyse if the personal values have varying associations with attitudes, intentions, and behaviours concerning meat alternatives in different cultural, religious or social reference groups or whether the contextual or situational factors make any difference. Sixth, the study treated the social motives as concepts underlying the relationship between personal values and consumers' interests. In future research, social motives could be applied as mediators or moderators to reveal the strength of the relationship between personal values and consumers' interests under varying levels of social motives. Finally, the sample between the countries in terms of education and self-reported income level was biased. This could have naturally caused unwanted variation between the countries.

CRediT authorship contribution statement

Kyösti Pennanen: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Funding acquisition. **Roosa-Maaria Malila:** Conceptualization, Methodology, Investigation, Writing – review & editing. **Harri T. Luomala:** Conceptualization, Methodology, Writing – review & editing.

Ethical statement

The study design was approved by the ethical committee of VTT Technical Research Centre of Finland Ltd (126343, approval date 24.6.2021). To ensure that the ethical principles were met, all participants were given information about the study purpose, the responsible organization carrying out the research, the funding body, data handling procedures, and estimated answering time. With this information, the participants were asked to provide their informed consent for participation by clicking the survey link. If the participant agreed, he/she moved on to filling in the survey. All data provided by the participants was anonymised and no personal or other data potentially compromising individual participant identity, were collected. All data collected

in the study were fully anonymous and no personal or other data, which could reveal the identity of an individual participant, were collected or stored by the researchers.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

References

Aiking, H., & de Boer, J. (2020). The next protein transition. *Trends in Food Science and Technology, 105*, 515–522. https://doi.org/10.1016/j.tifs.2018.07.008

Anderson, C., Hildreth, J. A. D., & Howland, L. (2015). Is the desire for status a fundamental human motive? A review of the empirical literature. *Psychological Bulletin, 141*(3), 574–601. https://psycnet.apa.org/doi/10.1037/a0038781.

de Andrade, J. C., de Aguiar Sobral, L., & Ares, G. (2016). Understanding consumers' perception of lamb meat using free word association. *Meat Science, 117*, 68–74. https://doi.org/10.1016/j.meatsci.2016.02.039

Aschemann-Witzel, J., & Janssen, M. (2022). The role of policy actions to accelerate food consumer behaviour change. *Agricultural and Food Economics, 10*, 22. https://doi.org/10.1186/s40100-022-00230-x

Babutsidze, Z., & Chai, A. (2018). Look at me saving the planet! The imitation of visible green behavior and its impact on the climate value-action gap. *Ecological Economics, 146*, 290–303. https://doi.org/10.1016/j.ecolecon.2017.10.017

Bakr, Y., Al-Bloushi, H., & Mostafa, M. (2023). Consumer intention to buy plant-based meat alternatives: A cross-cultural analysis. *Journal of International Consumer Marketing, 35*(4), 420–435. https://doi.org/10.1080/08961530.2022.2122103

Brečić, R., Ćorić, D. S., Lučić, A., Gorton, M., & Filipović, J. (2021). Local food sales and point of sale priming: Evidence from a supermarket field experiment. *European Journal of Marketing, 55*(13), 41–62. https://doi.org/10.1108/EJM-07-2019-0604

Brunso, K., Scholderer, J., & Grunert, K. (2004). Closing the gap between values and behavior—a means–end theory of lifestyle. *Journal of Business Research, 57*(6), 665–670. https://doi.org/10.1016/S0148-2963(02)00310-7

Bryant, C., Szejda, K., Parekh, N., Deshpande, V., & Tse, B. (2019). A survey of consumer perceptions of plant-based and clean meat in the USA, India, and China. *Frontiers in Sustainable Food Systems, 3*, 11. https://doi.org/10.3389/fsufs.2019.00011

Burcu, C., & Seda, Y. (2013). Investigating the relationship between consumption values and personal values of green product buyers. *International Journal of Economics and Management Sciences, 2*(12), 29–40.

Chan, H.-W. (2020). When do values promote pro-environmental behaviors? Multilevel evidence on the self-expression hypothesis. *Journal of Environmental Psychology, 71*, Article 101361. https://doi.org/10.1016/j.jenvp.2019.101361

Chong, M., Leung, A.-K., & Lua, V. (2022). A cross-country investigation of social image motivation and acceptance of lab-grown meat in Singapore and the United States. *Appetite, 173*, Article 105990. https://doi.org/10.1016/j.appet.2022.105990

Circus, V. E., & Robison, R. (2019). Exploring perceptions of sustainable proteins and meat attachment. *British Food Journal, 121*(2), 533–545. https://doi.org/10.1108/BFJ-01-2018-0025

Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., & Kaiser, S. (2012). Guidelines for choosing between multi-item and single-item scales for construct measurement: A predictive validity perspective. *Journal of the Academy of Marketing Science, 40*, 434–449. https://doi.org/10.1007/s11747-011-0300-3

Dubois, D., Rucker, D. D., & Galinsky, A. D. (2012). Super size Me: Product size as a signal of status. *Journal of Consumer Research, 38*, 1047–1062. https://doi.org/10.1086/661890

EAT-Lancet Commission. (2019). Summary report of the EAT-lancet commission. Retrieved from https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report/.

EIT FOOD. (2021). The EIT Food Trust Report. Sustainable food choices and the role of trust in the food chain. Retrieved from https://www.eitfood.eu/news/just-half-of-european-consumers-trust-the-food-system-reveals-pan-european-study. (Accessed 4 April 2023).

EIT FOOD. (2022). Protein diversification: An EIT FOOD white paper. Retrieved from: https://www.eitfood.eu/reports/whitepaper-on-protein-diversification. (Accessed 9 March 2023).

Elzerman, J. E., Keulemans, L., Sap, R., & Luning, P. A. (2021). Situational appropriateness of meat products, meat substitutes and meat alternatives as perceived by Dutch consumers. *Food Quality and Preference, 88*, Article 104108. https://doi.org/10.1016/j.foodqual.2020.104108

Englis, B. G., & Phillips, D. M. (2013). Does innovativeness drive environmentally conscious consumer behavior? *Psychology and Marketing, 30*(2), 160–172. https://doi.org/10.1002/mar.20595

Gao, Y. L., & Mattila, A. S. (2016). The impact of option popularity, social inclusion/exclusion, and self-affirmation on consumers' propensity to choose green hotels.

Journal of Business Ethics, 136, 575–585. https://doi.org/10.1007/s10551-014-2536-6

Geada, P., Moreira, C., Silva, M., Nunes, R., Madureira, L., Rocha, C. M. R., et al. (2021). Algal proteins: Production strategies and nutritional and functional properties. *Bioresource Technology, 332*, Article 125125. https://doi.org/10.1016/j.biortech.2021.125125

Gerber, P. J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., et al. (2013). *Tackling climate change through livestock: A global assessment of emissions and mitigation opportunities*. Food and Agriculture Organization of the United Nations (FAO).

Govaerts, F., & Olsen, S. S. (2023). Consumers' values, attitudes and behaviours towards consuming seaweed food products: The effects of perceived naturalness, uniqueness, and behavioural control. *Food Research International, 165*, Article 112417. https://doi.org/10.1016/j.foodres.2022.112417

Grahl, S., Strack, M., Mensching, A., & Mörlein, D. (2020). Alternative protein sources in Western diets: Food product development and consumer acceptance of spirulina-filled pasta. *Food Quality and Preference, 84*, Article 103933. https://doi.org/10.1016/j.foodqual.2020.103933

Grasso, A. C., Hung, Y., Olthof, M. R., Verbeke, W., & Brouwer, I. A. (2019). Older consumers' readiness to accept alternative, more sustainable protein sources in the European Union. *Nutrients, 11*(8). https://doi.org/10.3390/nu11081904, 1904.

Griskevicius, V., Tybur, J. M., & van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology, 98*(3), 392–404. https://doi.org/10.1037/a0017346

Grossmann, L., & Weiss, J. (2021). Alternative protein sources as technofunctional food ingredients. *Annual Review of Food Science and Technology, 12*, 93–117. https://doi.org/10.1146/annurev-food-062520-093642

Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. *Industrial Marketing Management, 111*, 127–142. https://doi.org/10.1016/j.indmarman.2023.03.010

Guo, Y., Zhang, P., Liao, J., & Wu, F. (2020). Social exclusion and green consumption: A costly signalling approach. *Frontiers in Psychology, 11*, Article 535489. https://doi.org/10.3389/fpsyg.2020.535489

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017a). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). USA: SAGE Publications Inc.

Hair, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017b). PLS-SEM or CB-SEM: Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis, 1*(2), 107–123.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Heinke, J., Lannerstad, M., Gerten, D., Havlík, P., Herrero, M., Notenbaert, A. M. O., et al. (2020). Water use in global livestock production—opportunities and constraints for increasing water productivity. *Water Resources Research, 56*(12). https://doi.org/10.1029/2019WR026995, 1–16.

Hoek, A. C., Luning, P. A., Weijzen, P., Engels, W., Kok, F. J., & de Graaf, C. (2011). Replacement of meat by meat substitutes. A survey on person- and product-related factors in consumer acceptance. *Appetite, 56*(3), 662–673. https://doi.org/10.1016/j.appet.2011.02.001

Jang, H.-W., & Cho, M. (2022). Relationship between personal values and intentions to purchase plant-based meat alternatives: Application of the dual concern theory. *International Journal of Environmental Research and Public Health, 19*, 8673. https://doi.org/10.3390/ijerph19148673

Kildal, C. L., & Syse, K. L. (2017). Meat and masculinity in the Norwegian armed forces. *Appetite, 112*, 69–77. https://doi.org/10.1016/j.appet.2016.12.032

Krings, V. C., Dhont, K., & Hodson, G. (2022). Food technology neophobia as a psychological barrier to clean meat acceptance. *Food Quality and Preference, 96*, Article 104409. https://doi.org/10.1016/j.foodqual.2021.104409

Lang, M. (2020). Consumer acceptance of blending plant-based ingredients into traditional meat-based foods: Evidence from the meat-mushroom blend. *Food Quality and Preference, 79*, Article 103758. https://doi.org/10.1016/j.foodqual.2019.103758

Lao, K. (2014). Research on mechanism of consumer innovativeness influencing green consumption behaviour. *Nankai Business Review International, 5*(2), 211–224. https://doi.org/10.1108/NBRI-11-2013-0041

Lehto, E., Korhonen, K., Muilu, T., & Konttinen, H. (2023). How do values relate to the consumption of meat and dairy products and their plant-based alternatives? *Food Quality and Preference, 106*, Article 104804. https://doi.org/10.1016/j.foodqual.2022.104804

Lewisch, L., & Riefler, P. (2023). Behavioural intentions towards cultured meat: The role of personal values, domain-specific innovativeness and distrust in scientists. *British Food Journal, 125*(5), 1769–1781. https://doi.org/10.1108/BFJ-03-2022-0270

Lindeman, M., & Verkasalo, M. (2005). Measuring values with the short Schwartz's value survey. *Journal of Personality Assessment, 85*(2), 170–178. https://doi.org/10.1207/s15327752jpa8502_09

Li, L., Wang, Z., Li, Y., & Liao, A. (2021). Impacts of consumer innovativeness on the intention to purchase sustainable products. *Sustainable Production and Consumption, 27*, 774–786. https://doi.org/10.1016/j.spc.2021.02.002

Luomala, H. T., Järvinen, S., Peltola, J., Pennanen, K., & Sihvonen, J. (2023). Priming shoppers' well-being goal in grocery stores: Moving toward healthier food choices? *Food Quality and Preference, 108*, Article 104882. https://doi.org/10.1016/j.foodqual.2023.104882

Luomala, H., Puska, P., Lähdesmäki, M., Siltaoja, M., & Kurki, S. (2020). Get some respect – buy organic foods! When everyday consumer choices serve as prosocial status signalling. *Appetite, 145*, Article 104492. https://doi.org/10.1016/j.appet.2019.104492

Michel, F., Hartmann, C., & Siegrist, M. (2021). Consumers' associations, perceptions and acceptance of meat and plant-based meat alternatives. *Food Quality and Preference, 87*, Article 104063. https://doi.org/10.1016/j.foodqual.2020.104063

Neel, R., Kenrick, D. T., White, A. E., & Neuberg, S. L. (2016). Individual differences in fundamental social motives. *Journal of Personality and Social Psychology, 110*(6), 887–907. https://doi.org/10.1037/pspp0000068

Nevalainen, E., Niva, M., & Vainio, A. (2023). A transition towards plant-based diets on its way? Consumers' substitutions of meat in their diets in Finland. *Food Quality and Preference, 104*, Article 104754. https://doi.org/10.1016/j.foodqual.2022.104754

Nezlek, J. B., Forestell, C. A., & Cypryanska, M. (2021). Approach and avoidance motivation and interest in new foods: Introducing a measure of the motivation to eat new foods. *Food Quality and Preference, 88*, Article 104111. https://doi.org/10.1016/j.foodqual.2020.104111

Niva, M., & Vainio, A. (2021). Towards more environmentally sustainable diets? Changes in the consumption of beef and plant- and insect-based protein products in consumer groups in Finland. *Meat Science, 182*, Article 108635. https://doi.org/10.1016/j.meatsci.2021.108635

Onwezen, M. C., Bouwman, E. P., Reinders, M. J., & Dagevos, H. (2021). A systematic review on consumer acceptance of alternative proteins: Pulses, algae, insects, plant-based meat alternatives, and cultured meat. *Appetite, 159*, Article 105058. https://doi.org/10.1016/j.appet.2020.105058

Onwezen, M. C., Verain, M. C. D., & Dagevos, H. (2022). Positive emotions explain increased intention to consume five types of alternative proteins. *Food Quality and Preference, 96*, Article 104446. https://doi.org/10.1016/j.foodqual.2021.104446

Pepper, M., Jackson, T., & Uzzel, D. (2009). An examination of the values that motivate socially conscious and frugal consumer behaviours. *International Journal of Consumer Studies, 33*(2), 126–136. https://doi.org/10.1111/j.1470-6431.2009.00753.x

Pinto, D. C., Nique, W. M., da Silva Anana, E., & Herter, M. M. (2011). Green consumer values: How do personal values influence environmentally responsible water consumption? *International Journal of Consumer Studies, 35*, 122–131. https://doi.org/10.1111/j.1470-6431.2010.00962.x

Puska, P., Kurki, S., Lähdesmäki, M., Siltaoja, M., & Luomala, H. (2018). Sweet taste of prosocial status signaling: When eating organic foods makes you happy and hopeful. *Appetite, 121*, 348–359. https://doi.org/10.1016/j.appet.2017.11.102

Rahman, S. U., Chwialkowska, A., Hussain, N., Bhatti, W. A., & Luomala, H. (2023). Cross-cultural perspective on sustainable consumption: Implications for consumer motivations and promotion. *Environment, Development and Sustainability, 25*, 997–1016. https://doi.org/10.1007/s10668-021-02059-8

Realini, C. E., Ares, G., Antunez, L., Brito, G., Luzardo, S., del Campo, M., et al. (2022). Meat insights: Uruguayan consumers' mental associations and motives underlying consumption changes. *Meat Science, 192*, Article 108901. https://doi.org/10.1016/j.meatsci.2022.108901

Ringle, C. M., Wende, S., & Becker, J.-M. (2022). *SmartPLS 4*. Oststeinbek: SmartPLS GmbH. http://www.smartpls.com.

Ritchie, H., & Roser, M. (2022). *Environmental impacts of food production*. Retrieved from https://ourworldindata.org/environmental-impacts-of-food. (Accessed 9 March 2023).

Rokeach, M. (1973). *The nature of human values and value systems*. New York, NY: The Free Press.

Röös, E., de Groote, A., & Stephan, A. (2022). Meat tastes good, legumes are healthy and meat substitutes are still strange - the practice of protein consumption among Swedish consumers. *Appetite, 174*, Article 106002. https://doi.org/10.1016/j.appet.2022.106002

Sagiv, L., & Schwartz, S. (2022). Personal values across cultures. *Annual Review of Psychology, 73*, 517–546. https://doi.org/10.1146/annurev-psych-020821-125100

Sarstedt, M., Hair, J. F., & Ringle, C. M. (2023). "PLS-SEM: Indeed a silver bullet" – retrospective observations and recent advances. *Journal of Marketing Theory and Practice, 31*, 261–275. https://doi.org/10.1080/10696679.2022.2056488

Sarstedt, M., Hair, J. F., Ringle, C. M., Thiele, K. O., & Gudergan, S. P. (2016). Estimation issues with PLS and CBSEM: Where the bias lies. *Journal of Business Research, 69*, 3998–4010. https://doi.org/10.1016/j.jbusres.2016.06.007

Schösler, H., de Boer, J., Boersema, J. J., & Aiking, H. (2015). Meat and masculinity among young Chinese, Turkish and Dutch adults in The Netherlands. *Appetite, 89*, 152–159. https://doi.org/10.1016/j.appet.2015.02.013

Schwartz, S. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology, 25*, 1–65.

Schwartz, S. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues, 50*(4), 19–45.

Schwartz, S., Struch, N., & Bilsky, W. (1990). Values and intergroup social motives: A study of Israeli and German students. *Social Psychology Quarterly, 53*(3), 185–193.

Sestino, A., Amatulli, C., Peluso, A. M., & Guido, G. (2023). Integrating internet-of-things technologies in luxury industries: The roles of consumers' openness to technological innovations and status consumption. *Technology Analysis & Strategic Management*. https://doi.org/10.1080/09537325.2023.2216792

Siegrist, M., & Hartmann, C. (2020). Perceived naturalness, disgust, trust and food neophobia as predictors of cultured meat acceptance in ten countries. *Appetite, 155*, Article 104814. https://doi.org/10.1016/j.appet.2020.104814

Spendrup, S., & Hovmalm, H. P. (2022). Consumer attitudes and beliefs towards plant-based food in different degrees of processing – the case of Sweden. *Food Quality and Preference, 102*, Article 104673. https://doi.org/10.1016/j.foodqual.2022.104673

Statista. (2022a). *Meat substitutes – Europe*. Retrieved from https://www.statista.com/outlook/cmo/food/meat/meat-substitutes/europe. (Accessed 3 March 2023).

Statista. (2022b). *Sales value of meat substitutes in selected countries in Europe between October 2019 and September 2020*. Retrieved from https://www.statista.com/statistics/1056227/meat-substitutes-market-size-in-europe-by-country/. (Accessed 4 April 2023).

Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014). An integrated framework for encouraging pro-environmental behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology, 38*, 104–115. https://doi.org/10.1016/j.jenvp.2014.01.002

Stern, P. C., & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues, 50*(3), 65–84. https://doi.org/10.1111/j.1540-4560.1994.tb02420.x

Szenderak, J., Frona, D., & Rakos, M. (2022). Consumer acceptance of plant-based meat substitutes: A narrative review. *Foods, 11*(9), 1274. https://doi.org/10.3390/foods11091274

Varela, P., Arvisenet, G., Gonera, A., Myhrer, K. S., Fifi, V., & Valentin, D. (2022). Meat replacer? No thanks! The clash between naturalness and processing: An explorative study of the perception of plant-based foods. *Appetite, 169*, Article 105793. https://doi.org/10.1016/j.appet.2021.105793

Verain, M. C. D., Dagevos, H., & Jaspers, P. (2022). Flexitarianism in The Netherlands in the 2010 decade: Shifts, consumer segments and motives. *Food Quality and Preference, 96*, Article 104445. https://doi.org/10.1016/j.foodqual.2021.104445

Verbeke, W. (2015). Profiling consumers who are ready to adopt insects as a meat substitute in a Western society. *Food Quality and Preference, 39*, 147–155. https://doi.org/10.1016/j.foodqual.2014.07.008

Vermeir, I., & Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological Economics, 64*(3), 542–553. https://doi.org/10.1016/j.ecolecon.2007.03.007

Verplanken, B., & Holland, R. W. (2002). Motivated decision making: Effects of activation and self-centrality of values on choices and behaviour. *Journal of Personality and Social Psychology, 82*(3), 434–447. https://doi.org/10.1037//0022-3514.82.3.434

White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing, 83*(3), 22–49. https://doi.org/10.1177/0022242919825649

Xu, X., Sharma, P., Shu, S., Lin, T.-S., Ciais, P., Tubiello, F. N., et al. (2021). Global greenhouse gas emissions from animal-based foods are twice those of plant-based foods. *Nature Foods, 2*, 724–732. https://doi.org/10.1038/s43016-021-00358-x

Yule, J. A., & Hummings, K. H. (2023). *Conservative consumer disinterest in plant-based meat: A problem of message incongruence*. Appetite, Article 106574. https://doi.org/10.1016/j.appet.2023.106574

Zerbini, C., Vergura, D. T., & Latusi, S. (2019). A new model to predict consumers' willingness to buy fair-trade products. *Food Research International, 122*, 167–173. https://doi.org/10.1016/j.foodres.2019.04.008