Society, health, price or taste? How consumers differ in their motivations to purchase food.

Corinna Hempel* and Jutta Roosen

Chair of Marketing and Consumer Research, TUM School of Management, Technical University of Munich

Contributed Paper prepared for presentation at the 96th Annual Conference of the Agricultural Economics Society, K U Leuven, Belgium

4 – 6 April 2022

*Corinna Hempel
Chair of Marketing and Consumer Research, TUM School of Management, Technical University of Munich
Alte Akademie 16, 85354 Freising/Weihenstephan, Germany
E: corinna.hempel@tum.de

Abstract

In the light of continuously changing consumer needs and demands related to food, it is important to gain insights on the motives and preferences that distinguish different consumer groups. We applied a best-worst scaling approach and a count-based analysis to elicit the relative importance of eleven food values. Based on that we conducted a latent class cluster analysis and were able to identify four consumer segments that differ in the extent to which they consider societal impact, health, price, and taste in food choices. The analysis is based on data from an online survey among 1020 respondents in Bavaria, Germany, in November 2020. Overall, the food value taste was rated most important in our study, which is different from previous research that identified safety as the most important value. However, considering the four segments, our findings show that taste is only of minor importance in the societal impact-centered and the price-sensitive segment as compared to the health-concerned and hedonic segment. Such findings suggest that target-specific policy and communication measures are needed to cater for consumers' heterogeneous needs and demands.

Keywords   Food values, consumer segmentation, latent class cluster analysis

JEL code   D12

Introduction and relevance

Consumers' needs as well as demands regarding their food choices are very heterogeneous and subject to continuous change. The amount and type of food that people choose does not only have an impact on their health but also on the environment and the climate (Clark et al. 2019). Hence, it is important to understand what drives consumers' choices and to monitor the development of these drivers to inform policy makers as well as marketers. Various scales have been developed and applied to investigate the relevance of different food choice motives. In the same vein, Lusk and Briggeman (2009) proposed a set of eleven values that specifically relate to consumers' food choices. They can be classified into self-centered values (i.e. naturalness, taste, price, convenience, appearance, nutrition, and safety) and society-centered values (i.e. tradition, origin, fairness, and environmental impact). In contrast to other multi-item scales in this context, the authors aimed at being rather abstract than specific in order to develop a set of food values that is generally applicable when explaining consumers' choices between a wide range of food products. Whereas values are widely referred to as concepts or beliefs about desirable end states of existence, the food values by Lusk and Briggeman (2009) should be interpreted as intermediary values that relate specifically to people's food choices and as such can also be considered as drivers or motives of consumers' food choices. Following the initial publication by Lusk and Briggeman in 2009, many researchers have applied the food values in multiple ways, e.g. considering different products or product categories, comparing consumers in different national contexts, adapting the list of food values according to a specific research topic, or using them for segmentation. Our contribution adds to existing research in that it investigates the food values in a new national context and with a larger sample than that used in the initial study by Lusk and Briggeman (2009). Furthermore, we can show that different groups of consumers exist, regarding the importance attached to specific food values, and as such can be attributed to particular needs and demands. We also compare consumers' preferences for organic and local food between these groups, as organic and local food are perceived as healthier, tastier and environmentally friendlier as their counterparts. These findings are relevant for marketers to develop target-specific measures and for policy makers to understand the heterogeneous characteristics of consumers when developing and implementing policy measures aiming at healthier as well as more climate- and environmental-friendly food choices.

Literature review

This section gives an overview on some recent studies applying the food values approach by Lusk and Briggeman (2009), but we also include studies that measure food choice motives using other validated scales, such as the food choice questionnaire by Steptoe et al. (1995). The aim of this section is to reveal some general tendencies in what motivates people to choose food and how groups of consumers differ with respect to the relative importance they attach to food values or food choice motives. We focus on studies

from Western, industrialized countries to allow for a better embedding of our own findings in the last section of this paper.

Lusk and Briggeman (2009) identified safety, nutrition, taste, and price as the most important food values in the USA. When comparing consumers who have previously purchased organic food and those who have not, the authors revealed significant differences between the importance attached to taste, naturalness, price, convenience, origin, and environmental impact (Lusk and Briggeman 2009 appendix). In addition, the authors identified four consumer segments that differ in the relative importance they attach to the food values. The majority (82%) of the members of the society-centered cluster had previously purchased organic food, while the share was only 41% in the self-centered cluster. A large French study assessed food choice motives using 63-item-questionnaire that covered nine higher level dimensions. The authors revealed that taste was the most important food choice motive, followed by health. The cluster analysis revealed that "taste" was a very strong food choice motive across all consumer segments   The "green organic food eaters" cluster scored high on the dimensions "absence of contaminants" and "health" and was more concerned about "ethics and environment" as well as "local and traditional production" than the other segments identified in this study (Baudry et al. 2017).

Bazzani et al. (2018) compared the relative importance of the food values between consumers in the USA and Norway and revealed large similarities. Respondents in both countries rated safety as the most important value, while convenience and novelty (replaced tradition in this study) were rated as the least important values. Interestingly, price was ranked as the second-most important value in the USA, but only as the fifth-most important value in Norway. The authors also found that the value origin was one of the least important, contradicting the vast amount of literature on consumers' increasing preference for locally produced food (Feldmann and Hamm 2015). Recently, Cerroni et al. (2022) replicated the survey by Bazzani et al. (2018) to discover whether the Covid-19 pandemic had an impact on consumers' food values and additionally challenged the proposition that food values are stable and not situation-specific. The authors revealed that food values did not change substantially during the pandemic. However, they could identify a considerable decrease in importance of the food value safety and some changes in certain sociodemographic groups (Cerroni et al. 2022).

Concerning object-specificity, Liepa (2018) examined food values for the purchase of baby food as opposed to adult food in Norway and revealed that consumers use different value sets, when confronted with different types of products. Consumers ranked safety, nutrition, taste, and fairness highest in the case of baby food, but ranked taste, nutrition, and environmental impact highest when considering food for their own consumption. The author concluded that consumers regard food values related to safe food as more important when choosing food for babies, while food values related to sustainability are more important in

food choices for their own consumption. Concerning situation-specificity, Verain et al. (2022), who applied the food choice questionnaire developed by Steptoe et al. (1995), suggest that food choice motives are context-specific, in that it matters whether people eat alone vs in groups, out of home vs at home, or snacking vs having a main meal. Nevertheless, they also uncovered the overall high relative importance of self-centered motives, for example taste, and the low relative importance of society-centered motives across all contexts.

A recent systematic review of literature on food values by Femi-Oladunni et al. (2022) identified 36 papers that applied the food value approach by Lusk and Briggeman (2009) of which most studies were conducted in the US American context, but none in Germany. We aim at closing this gap to gain deeper insights into the food values that are important to German consumers and into the main differences that exist between consumer groups in Germany.

Theoretical background

Values are defined in numerous different ways, but Schwartz and Bilsky (1987) identified five common features that are recurring in the relevant literature on values: Values (1) are concepts or beliefs, (2) refer to desirable end states or behaviors, (3) go beyond specific situations, (4) guide selection or evaluation of behavior and events, and (5) can be ordered by their relative importance (Schwartz and Bilsky 1987, p. 551). The role of values for understanding consumer preferences and behavior has long been acknowledged. Different methodologies exist to investigate the relationship between values and consumer behavior, to compare and contrast values, as well as to segment consumers according to their values (e.g. Rokeach's Value Survey (1968), Values and Lifestyle Survey by Mitchell (1983), the List of Values by Kahle (1983), and the Schwartz Value Survey (1996)).

Rokeach's value survey contains instrumental values, values that help to achieve a particular end, as well as terminal values, goals that one wants to achieve during a lifetime. Hence, values deal with modes of conduct as well as so-called "end-states of existence". Having a certain value encompasses believing that a specific mode of conduct or end-state of existence is personally and socially preferable to alternative modes of conduct or end-states of existence. According to Rokeach (1968), a value becomes a standard or criterion, once it has been internalized, and as such is drawn on when guiding actions, when developing and maintaining attitudes toward relevant objects and situations, when justifying one's own and others' actions and attitudes, or when comparing oneself with others. A value refers to a single belief that does not relate to a specific object and as such can be distinguished from attitudes.

In contrast to a value, an attitude is object- or situation-specific (cf. Fishbein's multi-attribute theory). An attitude is defined by Rokeach (1968) as an organization of several beliefs focused on a specific object (physical or social, concrete or abstract) or situation, predisposing one to respond in some preferential

manner. Some of these beliefs about an object or situation are based on facts, while others result from evaluation (Rokeach 1968). Prior research by Stotland et al. (1959) has revealed that in case of a mismatch between attitudes and values people tend to adjust the attitudes to match their values. Hence, values are more stable within a person's cognitive system (Kamakura and Novak 1992). Additionally, it appears that values are less numerous, more central, and more immediately related to motivations than are attitudes (Kamaruka and Novak 1992). The arousal of feelings of self-dissatisfaction or self-satisfaction motivates value change or value stability. Value change is initiated to reduce feelings of self-dissatisfaction, which are caused by the existence of inconsistencies in a person's belief system. In contrast, value stability is a result of the reinforcement of one's personal belief system due to a high level of self-satisfaction (Rokeach and Ball-Rokeach 1989).

Consumers rarely purchase a product only because of its functional aspects, but they rather hope to get some greater benefit from the purchase. In terms of the means-end chain approach, products serve as the means for achieving valued ends. Relating a specific product or a service to a rather abstract value increases the ease of storing and remembering it. From a marketing perspective this is important, because it enables marketers to enhance the value of their product or service (Kahle and Kennedy 1988). Kahle and Kennedy (1988) refer to food as one example, stating that how a food fits into a person's lifestyle partly dictates its purchase. Another example, which is still up-to-date, is the purchase of cars, as only few people purchase cars only for transportation, but rather to express their self-identity. The authors conclude that values provide more information on the nature of consumers than mere demographics.

Schwartz (2012) states that "although the nature of values and their structure may be universal, individuals and groups differ substantially in the relative importance they attribute to the values" (Schwartz 2012, p.3). As pointed out by Rokeach (1973), it is very rare that any situation encountered in life will activate a single value, since most situations will involve a conflict among several values to be resolved in accordance to the person's value priorities, or value system. Hence, individuals and groups have different value "priorities" or "hierarchies", which are also referred to as value systems. Segments defined by value systems rather than a single value will be more reliable and will have greater interpretability. Individuals belonging to a particular segment share the same value system, which is represented by a set of unobservable utilities, U_{js}, assigned to the $j= 1, 2, ... , 11$ value descriptions (j is corresponding to the eleven food values applied in this study here). The relative importance weights for each value description provide the researcher with an objective assessment of the value priorities within each segment. The higher the level of re-expression of values the more stable they will be (Kahle and Kennedy 1988). However, values are fairly remote from particular decisions made by consumers. Hence, decisions are also affected by many other more immediate (but also less stable) environmental influences, such as price, sales promotions, exposure to advertising messages, and so on.

We decided to choose values for the segmentation of consumers in our study, because (1) the concept of values has been reported to be the main independent variable in the study of social attitudes and behavior, (2) values have considerable power in explaining variations in people's behaviors, and (3) values are more stable over time than preferences (Lusk and Briggeman 2009). We closely follow the approach of Lusk and Briggeman (2009) in our study, who propose a set eleven values that specifically relate to consumers' food choices. They were guided by the idea of "identifying people's beliefs regarding the preferability of competing outcomes resulting from food purchase and consumption" (Lusk and Briggeman 2009, p. 185).

Methodology

Data for this study was collected via an online access panel from November 9th to November 19th, 2020, in Bavaria, the largest federal state in Germany in terms of area. Only respondents who were at least partly responsible for grocery shopping and those older than 18 years of age were allowed to participate. Quotas were specified for gender, age, education, employment status and household size to obtain a sample that is as close to the general population as possible. The final sample consisted of 1020 respondents. A table presenting the sociodemographic characteristics can be found in the appendix (appendix A).

Our methodological approach is based on the set of eleven values that relate to consumers' food choices, proposed by Lusk and Briggeman in 2009. As mentioned above, these can be classified into self-centered values (i.e. naturalness, taste, price, convenience, appearance, nutrition, and safety) and society-centered values (i.e. tradition, origin, fairness, and environmental impact). Short descriptions of the food values can be found in table 1 in the results section. These descriptions were also shown to the participants during the survey. The food values and the descriptions were translated into German for the purpose of this study.

We applied Best Worst Scaling (BWS) to elicit consumers' importance ranking of the food values and applied a count-based procedure to analyze the data and thereby followed the approach of Lusk and Briggeman, presented in the appendix of their study (Lusk and Briggeman 2009). According to Adamsen et al. (2013) BWS is one option to overcome reliability issues that are common in simple rating scales, such as Likert scales which have been widely applied in market research studies to examine consumers' (dis)agreement on multiple items. In the context of food values, socially desirable responses are expected, as this is a topic on which a strong public opinions exist (i.e. food values related to sustainability might be over-reported, while self-centered values, such as price, taste and convenience might be under-reported).

BWS involves a series of tradeoffs between attributes or items through which respondents' preferences are revealed. As such BWS belongs to the conjoint analysis techniques and can be attributed to the same random utility framework like discrete choice experiments (Adamsen et al. 2013). We applied a balanced incomplete block design (BIBD), yielding eleven choice-sets each including six food values. A BIBD was chosen,

because it is the most widely used design for count-based analyses and theoretical proof for the use of other experimental designs has not been reported (Mueller Loose and Lockshin 2013).

In BWS, respondents are repeatedly asked to choose the best (or most attractive) and the worst (or least attractive) out of options/attributes/items in a choice set. In a count-based analysis, individual best-worse scores are calculated for each food value by taking the difference between the number of times that food value was selected as the most important and the number of times it was chosen as the least important across all choice sets. The highest possible score for each food value is +6 and the lowest possible score is -6, as all food values appeared six times in the BWS task. Lusk and Briggeman (2009 appendix) stated that the count-based analysis yields similar results to those achieved through MNL and RPL modelling. While the count-based approach is more straightforward yet methodologically less appealing, the resulting individual best-worst scores can be used for latent class clustering analysis and hence build the basis for consumer segmentation.

A latent class cluster analysis was carried out in Stata 16 to determine consumer segments based on respondents' individual best-worst scores. The main reason for using a latent class approach, as opposed to standard cluster analysis techniques (such as k-means), is the fact that it is a model-based clustering approach. Through the use of a statistical model, the choice of the cluster criterion is less arbitrary and, at the same time, it is taken into account that there is uncertainty concerning the probability of class membership for each object. The basic LC cluster model has the following form:

$$f(y_i|\theta) = \sum_{k=1}^{K} \pi_k f_k(y_i|\theta_k).$$

Here, y_i denotes an object's scores on a set of observed variables, K is the number of clusters, and π_k denotes the prior probability of belonging to latent class or cluster k or, equivalently, the size of cluster k. Alternative labels for the y's are indicators, dependent variables, outcome variables, outputs, endogenous variables, or items. As can be seen, the distribution of y_i given the model parameters θ, $f(y_i|\theta)$, is assumed to be a mixture of classes-specific densities, $f_k(y_i|\theta_k)$ (Vermunt and Magidson 2002). We specified the items in our study as being continuous, which comes along with a Gaussian density function when conducting a latent class cluster analysis in Stata.

It is usually recommended to select the number of clusters (or latent classes) achieving the lowest Bayesian information criterion (BIC). In case the BIC measure decreases without reaching a minimal turning point, a BIC plot can be considered to determine an appropriate number of clusters (Fraley and Raftery 1998). We investigated BIC values for all cluster solutions between two and twelve; a minimum was reached at eleven clusters (BIC=48516.74). Our BIC plot yielded elbows at the two (BIC=49164.57) and at the four cluster

solution (BIC=48984.72). Four clusters were chosen, because this solution resulted in values that allowed for a plausible interpretation.

Marginal means were computed in Stata 16 to describe the main differences between clusters regarding the relative importance of food values. They are to be interpreted as the estimated mean for each item in each class. In addition, respondents were allocated to clusters based on their marginal predicted probabilities for each of our four latent classes. Mean comparisons and significance tests were applied to better describe the clusters considering sociodemographic characteristics and variables that measure consumers' preferences for organic and local food purchases.

Results

General description of the food values

The count-based analysis revealed that taste was on average considered as the most important food value, while safety and naturalness follow by far on places 2 and 3. Appearance, tradition, and convenience are the three food values that were regarded as least important. The most important as well as the least important food value belong to the group of self-centered values, whereas society-centered values are situated in the mid-range of all food values, showing rather little importance on average.

Table 1: Mean values of individual best-worst scores and standard deviations for all food values, n=1020

		Best-worse scores	
Food values	Description	Mean	SD
Taste	extent to which consumption of the food is appealing to the senses	1.78	2.17
Safety	extent to which consumption of food will not cause illness	1.02	2.26
Naturalness	extent to which food is produced without modern technologies	0.95	2.12
Price	the price that is paid for the food	0.67	3.01
Origin	where the agricultural commodities were grown	0.54	2.14
Nutrition	amount and type of fat, protein, vitamins, etc.	0.50	2.36
Env. impact	effect of food production on the environment	0.05	1.95
Fairness	the extent to which all parties involved in the production of the food equally benefit	-0.14	1.93
Appearance	extent to which food looks appealing	-1.04	2.03
Tradition	preserving traditional consumption patterns	-1.74	2.26
Convenience	ease with which food is cooked and/or consumed	-2.59	2.48

Pearson correlation coefficients as well as the corresponding significance levels are reported in table 2. As none of the correlations is above 0.5, each food value appears to represent a unique construct. However, there are some food values that seem to be related, e.g. convenience and price or taste and appearance. The

correlations between the society-centered food values origin, fairness, environmental impact, and naturalness, show positive coefficients. Interestingly, safety holds negative correlation coefficients with all food values, whereby the correlations with nutrition, naturalness and environmental impact are not significant. This finding shows that consumers who believe that safety is important are less likely to believe that the other food values are important as well. Considering consumers' growing preferences for local food, it is interesting to see that safety and origin are negatively correlated, while origin is positively correlated with the food values environmental impact, fairness, and naturalness (table 2).

Table 2: Pearson correlations between food values (* significant at p=0.05, ** significant at p=0.01)

	Taste	2	3	4	5	6	7	8	9	10
Safety (2)	-.174**	1								
Naturalness (3)	-.163**	-.018	1							
Price (4)	.028	-.147**	-.402**	1						
Origin (5)	-.274**	-.142**	.111**	-.351**	1					
Nutrition (6)	-.065*	-.061	.009	-.125**	-.074*	1				
Env. impact (7)	-.298**	-.004	.126**	-.314**	.248**	-.056	1			
Fairness (8)	-.204**	-.084**	.095**	-.329**	.217**	-.161**	.348**	1		
Appearance (9)	.144**	-.071*	-.146**	-.021	-.156**	-.144**	-.272**	-.186**	1	
Tradition (10)	-.089**	-.162**	-.067*	-.042	.047	-.221**	-.192**	-.090**	-.136**	1
Convenience (11)	.043	-.112**	-.306**	.219**	-.369**	-.143**	-.282**	-.277**	.026	-.075*

Consumer segmentation based on food values

The latent class cluster analysis resulted in four consumer segments (table 3). The first segment comprises consumers, whose members place relatively high importance on the so-called society-centered values origin, naturalness, environmental impact, and fairness and is therefore called the societal impact-centered cluster. The second group consists of health-concerned consumers, as nutrition, safety, and naturalness are rated as relatively important. Group 3 comprises the price-sensitive consumers, who perceive price by far as the most important value and group 4 is the hedonic segment, whose members rate taste as most important, closely followed by price. Although taste is the overall most important food value in our study, it is only of minor importance in the societal impact-centered and the price-sensitive segment as compared to the health-concerned and hedonic segments. While the health-concerned and the price-sensitive consumers also rate most of the self-centered values as comparatively important, the respondents belonging to the hedonic segment are additionally characterized by the very low importance the place on the society-centered values. Therefore, they are in stark contrast to the societal impact-centered (short: society-centered) segment (table 3).

Table 3: Marginal means and standard errors in brackets of the four consumer segments revealed through latent class cluster analysis (marginal means with the highest absolute value across all groups are marked in bold)

	Group 1 "society-centered" 29.61%, n=302	Group 2 "health-concerned" 34.22%, n=349	Group 3 "price-sensitive" 20.49%, n=209	Group 4 "hedonic" 15.69%, n=160
Taste	0.371 (0.135)	2.695 (0.318)	1.237 (0.204)	**3.071 (0.222)**
Safety	0.913 (0.195)	**1.576 (0.167)**	0.570 (0.206)	0.628 (0.218)
Naturalness	**1.752 (0.143)**	1.596 (0.169)	-0.104 (0.155)	-0.512 (0.180)
Price	-1.360 (0.140)	-0.667 (0.168)	**4.293 (0.232)**	2.640 (0.277)
Origin	**2.234 (0.168)**	0.246 (0.170)	0.011 (0.161)	-1.283 (0.189)
Nutrition	-0.020 (0.239)	**1.488 (0.181)**	0.165 (0.200)	-0.200 (0.228)
Env. impact	**1.501 (0.155)**	-0.043 (0.122)	-0.289 (0.151)	-1.958 (0.210)
Fairness	**1.258 (0.182)**	-0.384 (0.119)	-0.639 (0.150)	-1.556 (0.168)
Appearance	**-1.633 (0.133)**	-0.951 (0.151)	-1.395 (0.184)	0.285 (0.204)
Tradition	-1.463 (0.151)	**-2.254 (0.163)**	-1.734 (0.208)	-1.170 (0.262)
Convenience	**-3.553 (0.147)**	-3.304 (0.182)	-2.115 (0.211)	0.055 (0.221)

Table 4 summarizes additional variables that we used to characterizes and describe the four consumer segments. The societal impact-centered consumer segment consists of older people, who are more likely retired and do not have children living in their household. They show on average the highest agreement towards the statements that they mainly purchase organic food (3.56) and that they mainly purchase local food (3.92). 91.4% of the consumers belonging to group 1 state that they have purchased organic food before and 84.1% state that they have purchased organic food within the previous ten days. The health-concerned consumers are also more organic-minded than the groups of price-sensitive and hedonic consumers. However, the share of consumers, who purchase organic food within the last ten days is significantly lower in the health-concerned than in the societal impact-centered group (76.1% vs. 84.1%). Health-concerned consumers are on average younger than the consumers in the societal impact-centered group and the share of consumers with a qualification for university entrance is significantly larger than in the other segments (25.5%). Slightly more than half of the health-concerned consumers have a full-time employment (52.4%), which is significantly less than in the hedonic group (61.9%). A comparatively high share of health-concerned consumers is in the largest income category (23.2%), this share is significantly higher than in the price-sensitive group (11.0%) and in the hedonic group (11.9%). Nevertheless, the share of consumers in

full-time employment is significantly higher (61.9%) in the hedonic segment as compared to the other three groups. The price-sensitive and the hedonic segments do not significantly differ from each other concerning the share of consumers that has ever purchased organic food (57.4% and 57.5%) and the share of consumers that has purchased organic food within the last ten days (52.5% and 45.7%). The hedonic consumers show the lowest mean values for the agreement towards purchasing mainly organic (2.21) and mainly local food (2.93) compared to the other three segments.

Table 4: Differences concerning sociodemographic characteristics and other relevant variables.
(Note: Different superscript letters indicate significant differences between the groups on a 0.05 level)

	Group 1 "society-centered"	Group 2 "health-concerned"	Group 3 "price-sensitive"	Group 4 "hedonic"
Age (mean and SD)	50.52 [a] (16.69)	46.81 [b] (15.10)	47.33 [a,b] (15.85)	44.46 [b] (13.84)
General qualification for university entrance	23.5% [a,b]	25.5% [b]	17.7% [a]	19.4% [a,b]
Full-time employment	46.0% [a]	52.4% [a]	45.9% [a]	61.9% [b]
Retirement	29.8% [a]	19.8% [b]	23.4% [a,b]	11.9% [c]
Income (3000-4000€)	17.2% [a,b,c]	18.3% [c]	12.0% [b]	22.5% [a,c]
Income (>4000€)	21.5% [a]	23.2% [a]	11.0% [b]	11.9% [b]
Households without children (percent yes)	77.7% [a]	67.2% [b]	61.2% [b]	60.4% [b]
Purchase mainly organic food[1] (mean and SD)[3]	3.56 [a] (0.88)	3.12 [b] (0.82)	2.64 [c] (0.88)	2.21 [d] (0.97)
Purchase mainly local food[2] (mean and SD)[3]	3.92 [a] (0.77)	3.49 [b] (0.78)	3.26 [c] (0.75)	2.93 [d] (0.89)
Ever purchased organic food (percent yes)	91.4% [a]	88.8% [a]	57.4% [b]	57.5% [b]
Purchased organic food in the last ten days (percent yes)	84.1% [a]	76.1% [b]	52.5% [c]	45.7% [c]

[1] $F_{(3, 1016)} = 98.784$, $p < 0.01$, eta² = 0.226

[2] $F_{(3, 1016)} = 63.853$, $p < 0.01$, eta² = 0.159

[3] These two variables (purchase mainly organic food and purchase mainly local food) were measured on a five-point likert scale (from 1 "disagree" to 5 "agree").

Discussion and implications

This contribution shows the superior importance of taste for respondents in our study. Safety and naturalness hold place two and three, while price is in fourth place, closely followed by origin. While we expected that taste would be rated as one of the most important food values due to the findings of other recent studies on food values and food choice motives, we did not expect to see such a clear first place. In some other studies, the food value safety was perceived as most important by consumers (Lusk and Briggeman 2009; Bazzani et al. 2018).

The comparison of Bazzani et al. (2018) between US and Norwegian consumers revealed a notable difference concerning the food value price. While price held the second place in the US sample, it was in sixth place in the Norwegian sample. Linking these results to the findings from our study leads to the assumption that price might be of less importance in Western European countries in general. In this respect, our findings contradict the general perception that German consumers are especially price-sensitive when it comes to food choices. Furthermore, naturalness was of higher importance to the Norwegian consumers than to the US consumers (Bazzani et al. 2018), also corresponding to our results from Germany, where naturalness holds the third place. These comparisons point out, that there are more similarities between Norway and Germany than between these two European countries and the USA. However, more research in different national settings is necessary to gain deeper insights into country-specific differences.

While the discussion of food values based on averages across the whole sample allows for a good overview and an easy comparison with results from other studies, the interpretation of segments enables deeper insights. We revealed four consumer segments that are very different from each other with regard to the food values. Considering for example taste, the food value that is of superior importance on average in the entire sample, it is regarded as rather unimportant in the societal impact-centered as well as in the price-sensitive segment. Furthermore, the segmentation shows that there is a fairly large group of consumers, who attach a lot of importance to society-centered, respectively ethical, food values. However, the society-centered values play only a very minor role in the other three segments. The finding that fairness and environmental impact are only important to one particular group of consumers is worrying and leads us to the conclusion that even more awareness needs to be raised concerning the impact of food production and consumption on the environment as well as social inequity. The rather low importance of society-centered values confirms findings from other studies (cf. Bazzani et al. 2018, Verain et al. 2021).

The largest segment in our study is the group of health-concerned consumers, who rate the food values safety, nutrition and naturalness as very important. This finding implies that there is a strong demand for healthy and natural food that needs to be taken into account by marketers. But also policy makers should keep in mind that consumers' demand for safe food needs to be met through the enhancement of

transparency along the entire food supply chain as well as the enforcement, control, and communication of clear production and processing standards. The fairly strong preferences of societal impact-centered and health-concerned consumers for organic and local food reveal that organic as well as local food is perceived as more natural, environmentally friendly and fair on the one hand, but also as healthier and safer than conventional food products. Hence, it is not surprising that the hedonic consumer segment shows significantly lower preferences for local and organic food, since these consumers rank the corresponding food values fairly low. In addition, the price-sensitive segment is less inclined to purchase organic food, which probably goes back to their lower incomes and the general perception that organic food is more expensive.

Lusk and Briggeman (2009 appendix) also identified four consumer segments, which are similar to those that we found in our study. However, the food value rankings for each segment differ in some aspects, e.g. our health-concerned segment attaches almost equally high importance to the food values safety, nutrition, and naturalness, while safety is the superior food value in the respective segment by Lusk and Briggeman (2009 appendix). Likewise, our societal impact-centered group of consumers regards origin and fairness as important, while these food values are irrelevant to the society-centered consumers in their study. Nevertheless, the society-centered segment in the study by Lusk and Briggeman (2009 appendix) also shows higher preferences for organic food compared to the other clusters. While Lusk and Briggeman (2009 appendix) could not find any additional differences between clusters with regard to sociodemographic characteristics, except for location and the number of children (higher in the "taste and price" segment), the segments in our study differ with regard to age, education, employment, income, number of children, and organic as well as local food preferences. Since we have only surveyed consumers from Southern Germany (Bavaria), we recommend to carry out the same study across the whole of Germany to discover region-specific differences.

Furthermore, the monitoring of food values across time would help to shed more light on whether food values are indeed more stable measurements as suggested by theory or similarly situation- and object-specific as food choice motives and as suggested by some recent research (cf. Cerroni et al. 2022). In future research, it would be also interesting to investigate how the universal human values – terminal as well as instrumental – relate to the food values, i.e. whether certain universal values lead to a higher relative importance of specific food values or not.

References

Adamsen, J. M., Rundle-Thiele, S., and Whitty, J. A. (2013). Best-worst scaling... reflections on presentation, analysis, and lessons learnt from case 3 BWS experiments. *Market & Social Research,* Vol. 21 (1).

Bazzani, C., Gustavsen, G.W., Nayga, R.M., and Rickertsen. K. (2018). A comparative study of food values between the United States and Norway. *European Review of Agricultural Economics,* Vol. 45 (2), pp. 239-272.

Baudry, J., Péneau, S., Allès, B., Touvier, M., Hercberg, S., Galan, P., et al. (2017). Food choice motives when purchasing in organic and conventional consumer clusters: Focus on sustainable concerns (The NutriNet-Santé Cohort Study). *Nutrients,* Vol. 9 (2).

Cerroni, S., Nayga, Jr, R. M., Pappalardo, G., and Yang, W. (2022). Malleability of food values amid the COVID-19 pandemic. *European Review of Agricultural Economics,* Vol. 49 (2), pp. 472-498.

Clark, M. A., Springmann, M., Hill, J., and Tilman, D. (2019). Multiple health and environmental impacts of foods. *Proceedings of the National Academy of Sciences,* Vol. 116 (46), 23357-23362.

Feldmann, C., and Hamm, U. (2015). Consumers' perceptions and preferences for local food: A review. *Food quality and preference,* Vol. 40, pp. 152-164.

Femi-Oladunni, O. A., Ruiz-Palomino, P., Martínez-Ruiz, M. P., and Muro-Rodríguez, A. I. (2022). A Review of the Literature on Food Values and Their Potential Implications for Consumers' Food Decision Processes. *Sustainability,* Vol. 14 (1).

Fraley, C., and Raftery, A. E. (1998). How many clusters? Which clustering method? Answers via model-based cluster analysis. *The computer journal,* Vol. 41 (8), pp. 578-588.

Kahle, L. R. (1983). Social Values and Social Change: Adaptation to Life in America. New York, NY: Praeger Publishers.

Kahle, L. R., and Kennedy, P. (1988). Using the list of values (LOV) to understand consumers. *Journal of Services Marketing,* Vol. 2 (4), pp. 49-56.

Kamakura, W. A., and Novak, T. P. (1992). Value-system segmentation: Exploring the meaning of LOV. *Journal of consumer research,* Vol. 19 (1), pp. 119-132.

Liepa, L. (2018). Applying best-worst scaling methodology to elicit food values for baby food and adult food (Master's thesis, Norwegian University of Life Sciences, Ås).

Lusk, J.L., and Briggeman, B.C. (2009). Food Values. *American Journal of Agricultural Economics,* Vol. 91 (1), pp. 184-196.

Mitchell, A. (1983). The nine American lifestyles. New York: Warner.

Mueller Loose, S., and Lockshin, L. (2013). Testing the robustness of best worst scaling for cross-national segmentation with different numbers of choice sets. *Food Quality and Preference,* Vol. 27, pp. 230-242.

Rokeach, M. (1968). A theory of organization and change within value-attitude systems. Journal of social issues, Vol. 24 (1), pp. 13-33.

Rokeach, M. (1973). The nature of human values. Free press.

Rokeach, M., and Ball-Rokeach, S. J. (1989). Stability and change in American value priorities, 1968–1981. *American psychologist,* Vol. 44 (5).

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in experimental social psychology,* Vol. 25, pp. 1-65.

Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online readings in Psychology and Culture,* Vol. 2 (1), pp. 2307-0919.

Schwartz, S. H., and Bilsky, W. (1987). Toward a universal psychological structure of human values. Journal of personality and social psychology, Vol. 53 (3), pp. 550-562.

Steptoe, A., Pollard, T. M., and Wardle, J. (1995). Development of a measure of the motives underlying the selection of food: the food choice questionnaire. *Appetite,* Vol. 25 (3), pp. 267-284.

Stotland, E. (1959). Determinants of attraction to groups. *The Journal of Social Psychology,* Vol. 49 (1), pp. 71-80.

Verain, M. C., Snoek, H. M., Onwezen, M. C., Reinders, M. J., and Bouwman, E. P. (2021). Sustainable food choice motives: The development and cross-country validation of the Sustainable Food Choice Questionnaire (SUS-FCQ). *Food Quality and Preference,* Vol. 93, 104267.

Vermunt, J. K., and Magidson, J. (2002). Latent class cluster analysis. In J. Hagenaars, and A. McCutcheon (Eds.), *Applied latent class analysis.* (pp. 89-106). Cambridge: Cambridge University Press.

Appendix A

Sociodemographic characteristics of the sample (n=1020)

Sample		
n		1020
Gender	female	51
(%)	male	49
Age group	18-34	26
(%)	35-49	30
	50-64	26
	65+	19
Occupation	Employed	51
(%)	Retired	22
	Part-time employed	12
	Other (e.g.homemaker, in school, unemployed)	15
Education	Secondary school	49
(%)	University	28
	General qualification for university entrance	22
	No degree or still in school	1
Household	1	26
(%)	2	41
	3	17
	4	13
	>4	3
Income (€)	<1.000	5
(%)	1.000≤1.500	8
	1.500≤2.000	12
	2.000≤2.500	14
	2.500≤3.000	14
	3.000≤4.000	17
	>4.000	18
	not indicated	12