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Consumer Preferences for High Welfare Meat in Germany: Self-service Counter or Service Counter?

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ABSTRACT

Many people view animal welfare standards in the agricultural industry as critical and some consumers would prefer to buy high welfare meat. In order to successfully introduce high welfare meat products onto the market, some important marketing decisions must be made. Due to limited shelf space in retail outlets, niche products like high welfare meat cannot be placed both at the self-service counter and at the service counter. In order to analyze where to place it best an online survey of 642 German consumers was conducted. By means of factor and cluster analyses, consumers' animal welfare attitudes and their preference for a point of purchase were combined. The different target groups were joint using cross tabulation analysis. The results reveal that consumers in the target group show a more positive attitude to the service counter.

Keywords: Service counter; self-service counter; retail; animal welfare; consumer research

1   Introduction

Meat is one of the most important animal products throughout the world (Godfray et al., 2010). However, demand is not on the increase in Europe. In countries like Germany, France or Switzerland, the demand for meat has stagnated or is even decreasing (FAO 2009). Reasons may be, e.g. the perception of risk caused by several food scandals or an increasing awareness of animal welfare standards (Lippke and Sniehotta, 2003; Spiller and Schulze, 2008). Nowadays, consumers pay more attention to information such as the origin and processing details of the meat they buy (Röhr et al., 2005). Many people view animal welfare standards in the agricultural industry as critical (Verbeke and Viaene, 1999) and consumer surveys reveal that consumers would prefer to buy high welfare meat[*], with some target groups willing to pay a supplement (Lagerkvist and Hess, 2011). Nevertheless, for most customers the main factor driving sales of fresh and processed meat such as ham or sausage is price and not quality (de Jonge and van Trijp, 2013). The high price of animal welfare or organic meat is often identified as being the main reason why the market share of these types of products is only marginal (McEachern and Schröder, 2002; Padel and Foster, 2005; Plaßmann and Hamm, 2009).

High welfare meat is already available in the UK, the Netherlands, Switzerland, the USA and Germany and is distinguished by special labels but it is (still) a niche market in most countries. Looking more closely at Germany, the demand for such products is estimated at 20 % by consumer surveys (Schulze et al., 2008a). There are already several different labels for high welfare meat, e.g. the label "Tierschutz-kontrolliert" (launched 2012) or the label "Für mehr Tierschutz" (launched 2013), but the market share is low – for

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[*] By the term high welfare meat we mean meat that is produced to higher standards than legal minimum.

both fresh meat and even lower for processed meat. This demonstrates how challenging it is to launch these kinds of products into retail.

In order to successfully introduce high welfare meat products onto the market, some important marketing decisions must be made to meet consumers' needs and thus establish an efficient range of products (Amine and Cadenat, 2003). One central question is that of where to best place high welfare meat: at the service counter or at the self-service counter? In most countries both of these distribution channels are employed in meat marketing, but due to limited shelf space in supermarkets, typically it is not possible to use both channels for the same product. Product proliferation results in a larger variety of products than is possible to accommodate on the shelves (Carlotti et al., 2006). Retailers must decide whether these products will improve profit margins; therefore, it is crucial to place products as good as possible (Hübner and Kuhn, 2012). Thus, it seems obvious that the retail sector will not be able to introduce high welfare meat products through both channels – especially because shelf space on a service counter or in refrigerated display cases is even more limited (FTC, 2003).

Consequently, retailers that offer meat and meat products via both counters must decide which channel will be more appropriate for high welfare fresh and processed meat. The two counters have different target groups and different images in the minds of consumers, with the service counter usually being associated with premium food quality (Schulze and Spiller, 2007). Furthermore, meat at the self-service counter is often less expensive than at the service counter. Another issue is that spoilage rates are higher at the self-service counter than at the service counter as sales figures are lower (personal communications with retailers).

This paper makes a particular contribution to improving the introduction of high welfare meat as a niche product in retail. An online survey of 642 German consumers was conducted to find out at which counter consumers would rather buy high welfare meat. Data on consumers' animal welfare attitudes and their preferred point of purchase were combined. This information will help retailers identify the optimal placement for high welfare meat in order to achieve the best sales. The results are not only important for German retailers and marketers as there are also both distribution channels in other countries as well. Furthermore, the introduction of animal welfare is a main topic in many Northwestern European countries.

After presenting the current state of research two hypotheses will be derived. In the then following sections, the methodology and the results will be described. Hereafter, a discussion section follows. The article ends with conclusions.

2   State of research

2.1   Points of sale for meat

Meat can be bought at different points of sale. In nearly all OECD countries, and also in more and more developing countries, the main distribution channel for fresh meat is the supermarket (Reardon, 2010): In Germany, the importance of supermarkets for meat sales is increasing steadily so that the share is now over 80 %. Specialized shops like butchers or open markets are decreasing (LfL 2013). A similar pattern can be seen in other countries. In Canada, supermarkets play even a more important role. 93 % of Canadian meat consumers buy their meat mostly in supermarkets, while only 10 % buy meat at the butcher's (ALMA, 2012). Roerink (2013) observes in her study of 1,452 respondents a similar pattern for consumers in the USA. Reasons for the trend towards buying meat from the supermarket are multidimensional. Many customers in different countries think meat from the butcher is more expensive and that a more limited range of cuts of meat is offered than at the supermarket (Ngapo et al., 2003). Additionally, it is quicker and more convenient to buy meat at the same establishment as the rest of the products (the "one stop shop", Maruyama and Wu, 2014). In many other countries, in particular developing countries, the supermarket is gaining more and more importance (cf. "supermarket revolution", Reardon et al., 2010), as seen e.g. in Argentina (Rodriguez et al., 2002), this supports the increasing importance of this distribution channel. Figure 1 shows the three most important points of sale for meat in most industrial countries the supermarket being the most important one, especially in Germany.
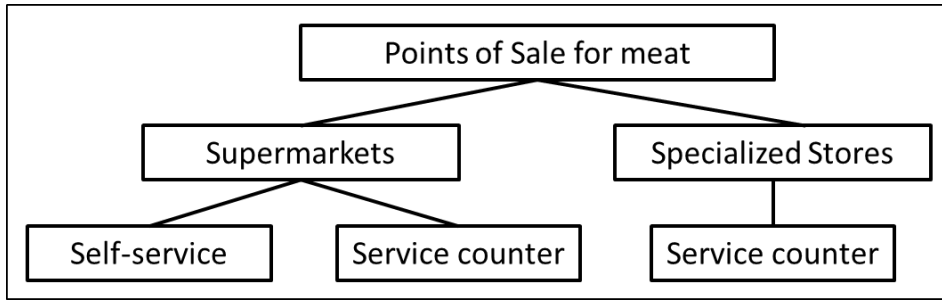
Figure 1. Points of sale for meat *(Source: own presentation)*

The differentiation of points of sale is driven by different types of consumers. Grunert (2006) analyzes different trends in the consumption of meat and buying behavior for meat and defines one trend as "fast and efficient shopping in supermarkets". Another mentioned trend is "the buying of information-intensive specialized products in specific retail outlets" (ibid). For consumers who do not attach high importance to the meat they purchase, who are primarily focused on price (de Jonge and van Trijp, 2013) and are guided by their own experience (Verbeke and Vackier, 2004), pre-packaged meat at the self-service counter is a good concept: Here, they can choose their meat on their own and do not have to wait for service staff. This kind of purchase is quicker, thus the most mentioned argument for the self-service counter is the economy of time (ALMA, 2012). Besides the time pressure factor, the lower price anticipated for meat, both fresh and processed meat, at the self-service counter is another argument for many consumers (Schulze and Spiller, 2007; Weyer, 2005).

In addition to a self-service counter, many supermarkets also offer meat at the service counter. In Germany, both channels are used and valued by customers but the proportion of service counter sales is declining. Nowadays, fresh meat from the service counter has a decreasing market share of 45 %. It is even less for processed meat (25 %) (LfL, 2013; Figure 2 and 3). A survey by Smith and Burns (1997) in the USA concluded that only 4 % of respondents buy meat exclusively at the service counter. They therefore reason that self-service counters and service counters cannot be substituted for one another but that consumers use them in a supplementary manner. Schulze and Spiller (2007) characterized German consumers of meat into the typical self-service counter buyer and the typical service counter buyer. While the time factor is an argument for the self-service counter as already stated by ALMA (2012), the better quality of meat anticipated at the service counter (Weindlmaier, 1980) as well as advice from the counter staff (Balling, 1990), e.g. on how to prepare the meat, are motives for consumers to buy their meat at the service counter. Furthermore, Schulze and Spiller (2007) found that consumers in the service counter target group receive a higher income and are not as price-sensitive as respondents who prefer to shop at the self-service counter.

2.2   Distribution of fresh and processed meat at retail counters

Literature shows that a target group for animal welfare products exists and that consumers are willing to pay a supplement (Lagerkvist and Hess, 2011). Of course, not all consumers are willing and able to pay a higher price for meat. Therefore, supermarkets also need to offer conventional meat at lower prices and will not be able to concentrate on high welfare meat. If they did, they would run the risk of losing price-oriented consumers, as they would have to shift shelf space away from conventional products to accommodate high welfare meat products. Due to space constraints, in most cases supermarkets will also not offer high welfare meat products at two counters, the self-service counter and the service counter (Carlotti et al., 2006). Currently, neither fresh nor processed high welfare meat is sold at the service counter on a large scale in Germany.

So far, little research has been done to answer the question of where high welfare meat should be best placed. Only one survey from Germany by Beck et al. (2007) allowed some first conclusions to be drawn about buying behavior for a meat product that is higher in price and has undergone a special production process – in this case organic salted meat. The example demonstrates that customers prefer meat products that require some explanation to be placed at the service counter. A reason can be that they will indeed be more likely to be sold from there, as at the service counter the staff is able to promote the product by pointing out its advantages. This also corresponds with the observation that it is mainly consumers who are interested in higher quality and less in price who buy at the service counter (Schulze and Spiller, 2007).

As there is no data available concerning points of sale for high welfare meat, we focus on conventionally produced meat. There is little literature that focuses on the different approaches of how to place

processed meat in retail. Nevertheless, some German surveys indicate consumers buy more fresh meat at the service counter than processed meat (LfL, 2013). The percentages of sales for the different channels for fresh and processed meat in Germany are shown in Figure 2 and 3: For fresh meat the supermarkets dominate with 82 %, while at least 13 % of the meat is sold at a specialized store; 5 % are sold at further market places like the internet or farm gates. Similar observations can be seen for processed meat, but the share of products sold at the service counter is lot less (25 %) than for fresh meat (45 %) (LfL, 2013).
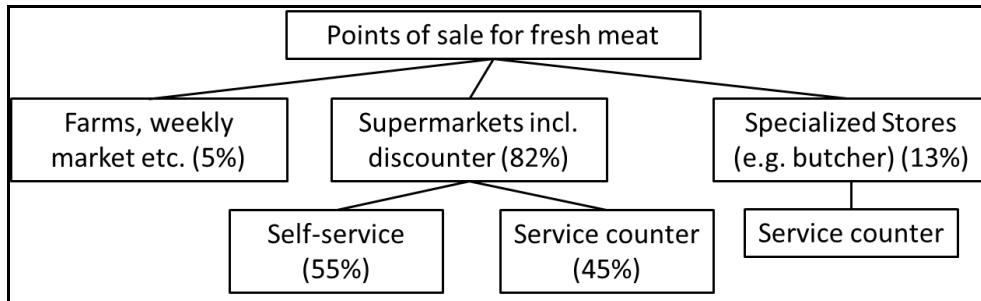
Figure 2. Market shares of the different points of sale for fresh meat in Germany, 2012
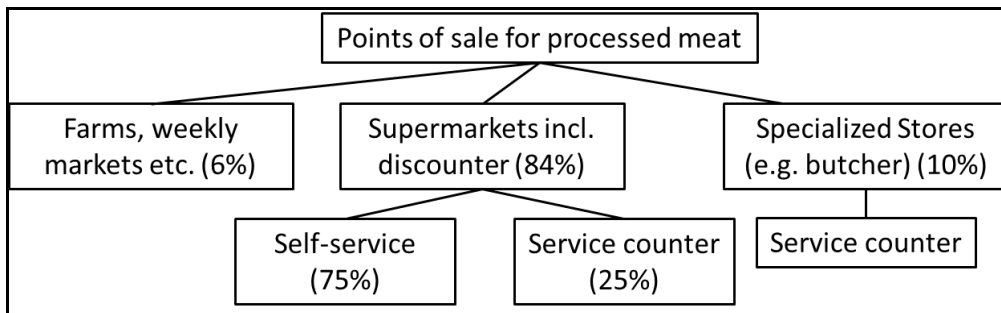Source: Own presentation based on AMI, cited by LfL, 2013

Figure 3. Market shares of the different points of sale for processed meat in Germany, 2012
Source: Own presentation based on AMI, cited by LfL 2013

Due to the lack of research concerning the best placement of high welfare meat in retail the aim of this paper is to examine where high welfare meat and high welfare processed meat should be placed in the supermarket: at the self-service counter or at the service counter. Based on the presented literature, the following hypotheses can be developed:

1. High welfare meat is better placed at the service counter (Beck et al., 2007).
2. For processed meat, the service counter is not as important as it is for fresh meat (LfL, 2013).

In order to test the two hypotheses, an online survey of German meat consumers was conducted. The aim was to get insights into attitudes and buying behaviors regarding labeled meat and labeled processed meat with the focus on animal welfare. Due to the fact that nearly no high welfare meat is available in German retail stores, we use stated preferences to answer these questions.

3 Methodology

In August 2012, 642 German household decision makers were asked about their buying behavior regarding meat and processed meat. Besides this, animal welfare and an animal welfare label for meat and processed meat products were also discussed. Responses to statements were given using 7-point (-3 to +3) Likert scales. The statements were partly taken from a questionnaire by Schulze et al. (2008a) and partly developed by the authors, as there were no previously tested scales available. The participants were recruited with the help of an online access panel. The sample was subdivided into two groups: 318 respondents were surveyed about their fresh meat consumption, whereas the remaining 324 respondents received analogous questions relating to processed meat.

Quotas were set for age, income and sex of the household decision maker to represent the characteristics of the German population.

SPSS Version 20 was used to carry out the data analysis. First, explorative factor analyses were conducted in order to reduce the complexity and number of statements concerning attitudes regarding animal welfare and the attitudes regarding service and self-service counter. Afterwards, four cluster analyses were carried out, two analogues for each sub-sample. Animal welfare cluster analyses were carried out in order to categorize consumers according to their interest in buying animal welfare products using the factors from the factor analyses concerning animal welfare. The other two cluster analyses had the aim of grouping the consumers regarding their preferred point of sale: service counter or self-service counter. For these two analyses, the factors from the factor analyses concerning the preferences for the counters and the single statement "How is your meat shopping split into service counter and self-service counter?" were used. Finally, the result of the two cluster analyses for animal welfare and for counter preferences were combined using cross tabulation analysis, resulting in one cross-tabulation for fresh meat and one for processed meat.

4 Results of the factor and cluster analyses

4.1 Sample description

The samples were representative for the quotas that were set to represent age and income characteristics. Additionally, the proportion of male to female household decision makers in the samples represented the distribution in Germany (men: fresh meat sub-sample: 28.9 % [n=291], processed meat sub-sample: 29.6 % [n=289]; women: fresh meat sub-sample: 71.1 %, processed meat sub-sample: 70.4 %). The average age was 46 years in both sub-samples. 27.6 % of the participants in the fresh meat sub-sample and 25.1 % in the processed meat sub-sample had a university degree. Table 1 gives more detailed information about the characteristics of both sub-samples.

Table 1.
Characterization of the sub-samples

Variable	Share fresh meat sub-sample	Share processed meat sub-sample	Share Germany[†]
Sample size	318	324	
Gender of the household decision maker			
Male	28.9 %	29.6 %	30 %
Female	71.1 %	70.4 %	70 %
Age			
18 to 39 years	33.7 %	38.1 %	33 %
41 to 59 years	42.6 %	35.3 %	35 %
60 years or older	23.7 %	26.6 %	32 %
Income			
Net income < 900 €/month	11.9 %	14.8 %	13 %
901 to 1500 €/month	24.8 %	22.5 %	24 %
1501 to 2600 €/month	32.8 %	30.9 %	32 %
2601 to 4500 €/month	22.5 %	23.8 %	23 %
Net income > 4500 €/month	8.0 %	8.0 %	8 %
Children under 18 years	75 %	79 %	-
Cohabiting / married	64 %	67 %	-
Education			
University degree	27.6 %	25.1 %	-

Source: authors' calculation; Federal Statistical Office (2011)

[†] Data is provided for the set quotas.

To ascertain that the panelists buy meat, they were asked about their buying and consumption habits. Vegetarians were screened out. All remaining respondents stated to consume meat at least once a week.

4.2 Factor analyses

To reduce the complexity of the results and to facilitate their interpretation, factor analyses for both sub-samples were carried out. Tables 2 and 3 show the results of the factor analyses sorted according to the survey on fresh meat and the survey on processed meat. The factor analyses for both sub-samples yielded respectively five factors:

- Animal welfare (AW)
- Perceived farm animal welfare situation
- Knowledge of and influence on livestock farming
- Pro service counter (SC)
- Pro self-service counter (SSC)

The factor analyses of both sub-samples have a high Kaiser-Meyer-Olkin criterion (KMO = 0.864 for the fresh meat sub-sample and 0.829 for the processed meat sub-sample) (Kaiser, 1974). The Cronbach's alpha values for the fresh meat sub-sample are between 0.611 and 0.942. Overall, three factors have a Cronbach's alpha value < 0.7 (see Tables 2 and 3). The explained total variance is 70.1 % for the fresh meat sub-sample and 73.7 % for the processed meat sub-sample respectively. Since the factors are comprised of similar constituents, the statements for both sub-samples can be considered to be comparable. The factors can therefore be used for further analogous analyses.

The statements relating to the factors "Perceived farm animal welfare situation" and "Knowledge of and influence on livestock farming" are identical for both sub-samples. Emotional statements dominate the factor "Animal welfare" in the processed meat sub-sample, whereas there are more items referring to buying behavior in the fresh meat sub-sample. The statements for this factor have higher loadings in the fresh meat sub-sample than in the processed meat survey. Two additional quality-based statements are loaded in the factor "Pro service counter", which are not found in the same factor in the fresh meat sub-sample. The factor "Pro self-service counter" focuses on shelf life and practicability for the fresh meat sub-sample, whereas for the processed meat sub-sample, this factor especially identifies a higher level of information to be important as well as the shelf life.

In the next step, two cluster analyses were conducted for each sub-sample, one for "Attitudes towards animal welfare" and one for "Attitudes towards the preference for service counter or self-service counter". The results of these analyses are presented separately.

Table 2.

Results of the factor analysis of the fresh meat sub-sample

Factors and the corresponding variables for fresh meat	Mean	Std.dev.	Factor loading
Animal welfare (Cronbach's alpha: 0.942)			
I would like to have more information about livestock farming when purchasing meat.[1]	1.01	1.550	0.775
I strongly disapprove of livestock farming in big factory farms.[1]	1.29	1.490	0.760
If I knew which meat originates from happy animals I would only buy this meat.[1]	1.02	1.587	0.722
It makes me angry when thinking about how animals are kept in agriculture today.[1]	0.94	1.691	0.706
For me, animal welfare is a selection criterion when buying meat.[1]	0.69	1.581	0.700
I have a problem with meat that originates from factory farms. [1,4]	1.02	1.558	0.683
I would change my buying behavior if there was meat on offer that was labeled with an animal welfare label as well as the usual meat on offer in my supermarket.[1]	0.75	1.632	0.681
I find it disgusting how many animals are kept indoors in modern agriculture.[1]	1.09	1.566	0.654
Factory farming is bad for animal welfare.[1]	1.62	1.433	0.648
When doing the shopping, I think about animal welfare. [1,4]	0.13	1.665	0.638
I am interested in the living conditions of the animals that provide the meat I purchase.[1]	0.61	1.498	0.619
To be honest, I spend a lot of time thinking about animal welfare. [1,4]	-0.32	1.703	0.616
I would like to buy more meat from livestock reared in appropriate conditions, but I can seldom find any.[1]	0.73	1.543	0.588
If possible, I buy meat from animals that are treated properly.[1]	1.08	1.374	0.584
In order to buy "high welfare meat" I would also go to the service counter.[1]	1.11	1.632	0.584
Perceived farm animal welfare situation (Cronbach's alpha: 0.797)			
In agriculture, animal welfare has greatly improved in recent years.[1]	0.48	1.292	0.857
In this country, sufficient attention is paid to animal welfare in livestock farming.[1]	-0.23	1.403	0.773
Knowledge of and influence on livestock farming (Cronbach's alpha: 0.611)			
I am knowledgeable about the conditions in which animals are kept in German agriculture.[1]	0.48	1.350	0.789
Through my buying behavior, I have an influence on the mode of production in agriculture.[1]	0.59	1.636	0.643
Pro service counter (Cronbach's alpha: 0.869)			
...higher quality[2]	0.96	1.004	0.754
...fresher[2]	1.00	1.108	0.732
...healthier[2]	0.53	0.894	0.687
...more trustworthy[2]	0.93	1.094	0.678
...tastier[2]	0.86	1.050	0.659
Pro self-service counter (Cronbach's alpha: 0.767)			
Self-service counter meat has a longer shelf life.[3]	-0.08	1.434	0.833
...more likely to have a longer shelf life.[2]	-0.30	1.178	0.776
It's good that self-service counter meat has a longer shelf life. [1]	0.10	1.426	0.545
The packaging of self-service counter meat is more practical. [3]	0.40	1.509	0.521
KMO (Kaiser-Meyer-Olkin) = 0.864; explained total variance = 70.10%			

[1]Scale from -3 "Not correct at all" to +3 "Fully correct"
[2]Scale from -3 "Self-service counter meat is much…" to 0 "Indifferent" to +3 "Service counter meat is much…"
[3]Scale from -3 "I totally disagree" to +3 "I totally agree"
[4]Statement was recoded
n = 324

Source: authors' calculation

Table 3.
Results of the factor analysis of the processed meat sub-sample

Factors and the corresponding variables for processed meat	Mean	Std.dev.	Factor loading
Animal welfare (Cronbach's alpha: 0.939)			
It makes me angry when thinking about how animals are kept in agriculture today.[1]	0.73	1.546	0.822
I find it sad that nowadays so many animals are kept in the narrowest of spaces so that we can buy cheap meat.[1]	1.42	1.404	0.809
Factory farming is bad for animal welfare.[1]	1.42	1.441	0.792
I strongly disapprove of livestock farming in big factory farms.[1]	1.01	1.596	0.784
I find it disgusting how many animals are kept indoors in modern agriculture.[1]	0.93	1.538	0.749
For me, animal welfare is a selection criterion when buying meat.[1]	0.36	1.571	0.725
If I knew which processed meat originates from happy animals I would only buy this processed meat.[1]	0.72	1.616	0.714
In order to buy "high welfare processed meat" I would also go to the service counter.[1]	0.93	1.743	0.640
I have a problem with processed meat that originates from factory farms. [1,4]	0.72	1.487	0.609
I would like to have more information about livestock farming when purchasing processed meat.[1]	0.51	1.616	0.600
I would change my buying behavior if there was processed meat on offer that was labeled with an animal welfare label as well as the usual processed meat on offer in my supermarket.[1]	0.25	1.597	0.597
To be honest, I spend a lot of time thinking about animal welfare. [1,4]	-0.28	1.685	0.558
Perceived farm animal welfare situation (Cronbach's alpha: 0.668)			
In agriculture, animal welfare has greatly improved in recent years.[1]	0.49	1.142	0.8672
In this country, sufficient attention is paid to animal welfare in livestock farming.[1]	-0.21	1.278	0.8672
Knowledge of and influence on livestock farming (Cronbach's alpha: 0.620)			
I am knowledgeable about the conditions in which animals are kept in German agriculture.[1]	0.45	1.369	0.8523
Through my buying behavior, I have an influence on the mode of production in agriculture.[1]	0.73	1.546	0.8523
Pro service counter (Cronbach's alpha: 0.858)			
...higher quality[2]	0.85	1.072	0.794
...fresher[2]	0.98	1.254	0.788
...more trustworthy[2]	0.58	1.227	0.732
...tastier[2]	0.82	1.152	0.720
Processed meat from the service counter looks more delicious than processed meat from the self-service counter.[3]	0.34	1.324	0.666
...healthier[2]	0.33	0.908	0.649
Processed meat from the self-service counter often contains flavor enhancer.[3]	0.66	1.254	0.606
Pro self-service counter (Cronbach's alpha: 0.710)			
I can examine self-service counter processed meat products more carefully.[3]	0.50	1.298	0.824
There is useful information on the packaging of processed meat products.[3]	0.52	1.286	0.770
Self-service counter processed meat products have a longer shelf life.[3]	0.58	1.429	0.649
KMO (Kaiser-Meyer-Olkin) = 0.829; explained total variance = 73.70 %			

[1]Scale from -3 "Not correct at all" to +3 "Fully correct"
[2]Scale from -3 "Self-service counter meat is much…" to 0 "Indifferent" to +3 "Service counter meat is much…"
[3]Scale from -3 "I totally disagree" to +3 "I totally agree"
[4]Statement was recoded
n = 318

Source: authors' calculation

4.3   Cluster analysis "Attitudes towards animal welfare"

As suggested by Schulze et al. (2008b), the cluster analysis was conducted in several steps. First, the single linkage method was used. In each data set, three outliers were identified and deleted. Next, the optimal number of clusters was determined using Ward's hierarchical clustering method. Based on the results of a scree test, a dendrogram and plausibility considerations, a three cluster solution was chosen. The solution was refined by applying the K-means algorithm. 8.25 % of the fresh meat buyers and 12.97 % of the processed meat buyers were reassigned. The F-values for all factors are significant at the 1 % level. For eta, there was an average value of 0.716 (0.73 for the animal welfare clusters of the processed meat sub-sample) and for eta-squared 0.51 (0.53 for the processed meat sub-sample). Hence, 51.47 % and 53.33 % of the variance can be explained by differences between the clusters.

Next, a discriminant analysis was conducted. It showed that 98.1 % of cases in the fresh meat sub-sample and 96.2 % in the processed meat sub-sample were correctly allocated. Analysis of variance (ANOVA) was used to describe the clusters. Finally, post hoc tests were carried out in order to identify significant differences between the means of the clusters (Everitt, 1998). The results of these last analyses are presented in Tables A and B in the appendix. They show the results of the cluster analyses for "Attitudes towards animal welfare" including the variables describing the factors. For simplification, these clusters are named "AW clusters". The first cluster is the largest. In the fresh meat sub-sample, 133 cases (42.6 %) are allocated to this cluster, while 148 cases (53.1 %) are allocated in the processed meat sub-sample. Animal welfare is not an important issue for this group (μ_{FM} = -0.84; μ_{PM} = -0.69)[‡]. For the factor "Perceived farm animal welfare situation" there is only a slight positive tendency (μ_{FM} = 0.13; μ_{PM} = 0.04). The factor "Knowledge of and influence on livestock farming" is assigned the most negative attitude (μ_{FM} = -0.73; μ_{PM} = -0.55). Hence, this cluster can be named the "AW indifferent".

The second cluster contains 88 cases (28.2 %) for the fresh meat sub-sample and 64 cases (22.9 %) for processed meat sub-sample, making it the smallest cluster. For the factor "Animal welfare" there is a general attitude of agreement (μ_{FM} = 0.39; μ_{PM} = 0.42). The factor "Perceived farm animal welfare situation" achieves the highest factor mean values for both sub-samples (μ_{FM} = 0.74; μ_{PM} = 0.91). The respondents in this cluster are most likely to be of the opinion that the level of animal welfare in German agriculture is high and that it is given enough attention. The members of this cluster also think they have good knowledge about livestock farming in Germany which results in the highest factor mean value in both sub-samples (μ_{FM} = 0.85; μ_{PM} = 0.8). Thus, this cluster can be characterized as the "AW pragmatists".

The last cluster contains 91 (29.2 %) cases for the fresh meat sub-sample and 67 (24 %) cases for the processed meat sub-sample. It contains the highest mean values for "Animal welfare" with μ_{FM} = 0.88 for the fresh meat sub-sample and μ_{PM} = 1.07 for the processed meat sub-sample. The cluster members regard "Perceived farm animal welfare situation" with skepticism, which results in the most negative factor mean values (μ_{FM} = -0.98; μ_{PM} = -0.88). The factor "Knowledge of and influence on the livestock farming" is less pronounced than in cluster two (μ_{FM} = 0.29; μ_{PM} = 0.48) and the statements relating to "Perceived farm animal welfare situation" have the most negative factor mean values. Hence, this cluster can be named "AW enthusiasts".

4.4   Cluster analysis for "Attitudes towards the preference for service counter or self-service counter"

In addition to the cluster analyses for "Attitudes towards animal welfare", the respondents were divided into groups in order to find out if they prefer buying meat and processed meat at the self-service counter or at the service counter. The approach was analogous to the cluster analyses described previously. By means of the single-linkage method, three outliers were deleted from the fresh meat sub-sample and twelve from the processed meat sub-sample. A scree test, a dendrogram and plausibility considerations, together with Ward's method, yielded an optimal cluster number of three for each analysis. K-means cluster analysis led to a regrouping of 7.39 % of all cases in the fresh meat sub-sample, while in the processed meat sub-sample one case was regrouped. The F-values of all factors and the single statement "How is your meat shopping split into service counter and self-service counter?" are highly significant at the 1 %-level. An eta value of 0.66 (0.63 for the processed meat sub-sample) was calculated. Based on eta-squared, 47.5 % (52.63 % for the processed meat sub-sample) of the cluster factors and the single statement can be explained by differences between the clusters. A discriminant analysis shows that 96.5 % or 98.5 % of all cases are correctly allocated. An ANOVA and post-hoc tests were also conducted analogously to the first two cluster analyses. Tables 6 and 7 show the results of these analyses.

[‡] FM = fresh meat survey; PM = processed meat survey

Table 6.
Food counter clusters for the fresh meat sub-sample

	Cluster A$_{FM}$: SSC fans	Cluster B$_{FM}$: Combiners	Cluster C$_{FM}$: SC fans
Cluster size (n)	69	147	68
in %	24.3	51.8	23.9
Factor 1$_{FM}$: Pro service counter***	**-0.70^{bc}**	**-0.06^{ac}**	**0.91^{ab}**
	(0.624)	**(0.78)**	**(0.999)**
...higher quality[1]***	0.46^{bc}	0.93^{ac}	1.65^{ab}
	(0.759)	(1.05)	(1.062)
...fresher[1]***	0.41^{bc}	0.93^{ac}	1.85^{ab}
	(0.754)	(1.05)	(0.966)
...healthier[1]***	0.19^{bc}	0.41^{ac}	1.16^{ab}
	(0.493)	(0.73)	(1.192)
...more trustworthy[1]***	0.25^{bc}	0.87^{ac}	1.84^{ab}
	(0.695)	(0.97)	(1.002)
...tastier[1]***	0.30^{bc}	0.80^{ac}	1.59^{ab}
	(0.692)	(0.96)	(1.054)
Factor 2$_{FM}$: Pro self-service counter***	**0.55^{bc}**	**0.14^{ac}**	**-0.80^{ab}**
	(0.905)	**(0.78)**	**(1.007)**
SSC meat has a longer shelf life.[2]***	0.23^{c}	0.16^{c}	-0.85^{ab}
	(1.487)	(1.26)	(1.448)
...is more likely to have a longer shelf life[1]***	0.97^{bc}	0.52^{ac}	-0.16^{ab}
	(0.939)	(1.11)	(1.300)
It's good that self-service counter meat has a longer shelf life.[3]***	0.86^{bc}	0.26^{ac}	-0.99^{ab}
	(1.309)	(1.135)	(1.419)
The packaging of self-service counter meat is more practical.[2]***	1.17^{bc}	0.52^{ac}	-0.60^{ab}
	(1.306)	(1.32)	(1.517)
How is your meat shopping split into service counter and self-service counter?[4] ***	**-1.96^{bc}**	**0.10^{ac}**	**2.25^{ab}**
	(0.716)	**(0.565)**	**(0.608)**

Significance level: *** = p $\leq$ 0.001, ** = p $\leq$ 0.01, * = p $\leq$ 0.05; mean value; (standard deviation); letters mark a significant difference between groups (Tamhane's post hoc test T2 at a significance level 0.05)
[1]Scale from -3 "Not correct at all" to +3 "Fully correct"
[2]Scale from -3 "I totally disagree" to +3 "I totally agree"
[3]Scale from -2 "No, never" to +2 "Yes, definitely"
[4]Scale from -3 "Always self-service counter" to +3 "Always service counter"
SSC = Self-service counter
SC = Service counter
FM = Fresh meat

Source: authors' calculation

Table 7.
Food counter clusters for the processed meat sub-sample

	Cluster A$_{PM}$: SSC fans	Cluster B$_{PM}$: Combiners	Cluster C$_{PM}$: SC fans
Cluster size (n)	108	96	59
in %	41.1	36.5	22.4
Factor 1$_{PM}$: Pro service counter*	**-0.40**[bc]	**-0.16**[ac]	**1.11**[ab]
	(0.607)	**(0.702)**	**(0.739)**
...higher quality[1] ***	0.46[bc]	0.93[ac]	1.65[ab]
	(0.759)	(1.05)	(1.062)
...fresher[1]***	0.41[bc]	0.93[ac]	1.85[ab]
	(0.754)	(1.05)	(0,966)
...healthier[1]***	0.19[bc]	0.41[ac]	1.16[ab]
	(0.493)	(0.73)	(1.192)
...more trustworthy[1]***	0.25[bc]	0.87[ac]	1.84
	(0.695)	(0.97)	(1.002)
...tastier[1]***	0.30[bc]	0.80[ac]	1.59[ab]
	(0.692)	(0.96)	(1.054)
Factor 2$_{PM}$: Pro self-service counter*	**0.37**[bc]	**0.03**[ac]	**-0.61**[ab]
	(0.819)	**(0.866)**	**(0.855)**
I can examine self-service counter processed meat products more carefully.[2]***	0.99[bc]	0.46[ac]	-0.24[ab]
	(1.106)	(1.187)	(1.150)
There is useful information on the packaging of processed meat products.[2]***	0.79[c]	0.65[c]	-0.12[ab]
	(1.144)	(1.170)	(1.205)
Self-service counter processed meat products have a longer shelf life.[2]	1.12[bc]	0.70[a]	0.19[a]
	(1.125)	(1.282)	(1.420)
How is your meat shopping split into service counter and self-service counter?[3] *	**-1.92**[bc]	**0.13**[ac]	**1.73**[ab]
	(0.699)	**(0.548)**	**(0.691)**

Significance level: *** = p ≤ 0.001, ** = p ≤ 0.01, * = p ≤ 0.05; mean value; (standard deviation); letters mark a significant difference between groups (Tamhane's post hoc test T2 at a significance level 0.05)
[1]Scale from -3 "Not correct at all" to +3 "Fully correct"
[2]Scale from -3 "I totally disagree" to +3 "I totally agree"
[3]Scale from -3 "Always self-service counter" to +3 "Always service counter"
SSC = Self-service counter
SC = Service counter
PM = Processed meat

Source: authors' calculation

The three clusters differ in the factors "Pro service counter" and "Pro self-service counter" as well as the single statement "How is your meat shopping split into service counter and self-service counter?" (7-point Likert scale from 3 "Always service counter" to 0 "Equally divided" to +3 "Always self-service counter", henceforth named "Distribution SSC / SC") differed significantly in their mean values. The first cluster has a significantly negative mean value for the factor "Pro service counter" (μ_{FM} = -0.7; μ_{PM} = -0.4) and the single statement "Distribution SSC / SC" (μ_{FM} = -1.96; μ_{PM} = -1.92). For the factor "Pro self-service counter" this cluster has positive values (μ_F = 0.55; μ_W = 0.37) for both fresh and processed meat sub-samples. Hence, the first cluster can be characterized as "Self-service counter (SSC) fans".

The second cluster shows no clear tendency towards a positive or negative pronouncement for both these factors as well as for the single statement ("Pro service counter": μ_{FM} = -0.06; μ_{PM} = -0.16; "Pro self-service counter": μ_{FM} = 0.14; μ_{PM} = -0.03; "Distribution SSC / SC": μ_{FM} = 0.1; μ_{PM} = 0.13). Thus, this cluster is named "Combiners".

The third cluster shows a tendency towards the service counter for both fresh and processed meat sub-samples. The statement "Distribution SSC / SC" reveals that the respondents preferably buy at the service counter (μ_{FM} = 2.25; μ_{PM} = 1.73). The third cluster also has the most negative factor mean values for the factor "Pro self-service counter" (μ_{FM} = -0.80; μ_{PM} = -0.61), while having the most positive factor mean values with the factor "Pro service counter" (μ_{FM} = 0.91; μ_{PM} = 1.11). Therefore, this cluster will be described as "Service counter (SC) fans".

4.5 Cross tabulation analyses for fresh and processed meat consumers

Cross tabulations were calculated in order to compare the results of the "Attitudes towards animal welfare" and the "Attitudes towards the preference for service counter or self-service counter". The aim of the cross tabulation analysis was to detect at which counter potential high welfare meat buyers can be targeted more effectively. This was done twice: once for the fresh meat sub-sample and once for the processed meat sub-sample. The resulting relationships between the animal welfare clusters and the food counter clusters are shown in Tables 8 and 9.

Table 8.
Results of cross tabulation for the animal welfare and counter clusters (fresh meat)

			Counter cluster meat			
			Cluster A$_{FM}$: SSC fans	Cluster B$_{FM}$: Combiners	Cluster C$_{FM}$: SC fans	Total
AW cluster meat	Cluster A$_{FM}$: AW indifferent	%	37.0	48.7	14.3	100
		n	(44)	(58)	(17)	(119)
	Cluster B$_{FM}$: AW pragmatists	%	11.1	61.7	27.2	100
		n	(9)	(50)	(22)	(81)
	Cluster C$_{FM}$: AW enthusiasts	%	20.0	46.3	33.7	100
		n	(16)	(37)	(27)	(80)
	Total	%	24.6	51.8	23.6	100
		n	(69)	(145)	(66)	(280)

N = 280; Pearson's Chi-squared: 15.034; p = 0.000
AW = animal welfare; $_{FM}$ = fresh meat; target groups are highlighted in grey

Source: authors' calculation

For the fresh meat sub-sample, the target group consists of the AW pragmatists and AW enthusiasts (highlighted in grey in Table 8). This group has 161 consumers in total (81 plus 80) which is 57.5 % of the total number of 280 consumers. This share is considered as 100 % in the following calculations. Thus, averages are calculated for each counter cluster. On average, 15.5 % (calculation example: 11.1 % of the AW pragmatists plus 20.0 % of the AW enthusiast divided by two) of the AW pragmatists and AW enthusiasts preferably buy meat from the self-service counter. 54.0 % buy at both the service counter and self-service counter on average. 30.5 % buy their meat at the service counter. The results are significant on the 0.1 % level (p = 0.000).

Table 9.
Results of cross tabulation for the animal welfare and counter clusters (processed meat)

			Counter cluster processed meat			
			Cluster A$_{PM}$: SSC fans	Cluster B$_{PM}$: Combiners	Cluster C$_{PM}$: SC fans	Total
AW cluster processed meat	Cluster A$_{PM}$: AW indifferent	%	48.0	35.2	16.8	100
		n	(60)	(44)	(21)	(125)
	Cluster B$_{PM}$: AW pragmatists	%	29.8	40.4	29.8	100
		n	(17)	(23)	(17)	(57)
	Cluster C$_{PM}$: AW enthusiasts	%	41.1	33.9	25.0	100
		n	(23)	(19)	(14)	(56)
	Total	%	42.0	36.2	21.8	100
		n	(100)	(86)	(52)	(238)

N = 238; Pearson's Chi-squared: 3.669; p = 0.144
AW = animal welfare; $_{PM}$ = processed meat; target groups are highlighted in grey

Source: authors' calculation

For the processed meat sub-sample, the results are less clear and cannot be considered significant (p = 0.144). Again, the AW pragmatists together with the AW enthusiasts form the target group for high welfare processed meat (highlighted in grey in Table 9) with 113 consumers (57 plus 56) which is 47.5 % of the total number of 238 consumers. This target group is considered as 100 % hereafter. On average, 35.5 % of the AW pragmatists and AW enthusiasts prefer the self-service counter (calculation example: 29.8 % plus 41.1 % divided by two). 37.1 % buy at both the self-service and the service counter. 27.4 % opt mostly for the service counter.

5 Discussion

5.1 Discussion of the animal welfare clusters

This present study identifies strong differences in the attitudes of consumers that help classifying the target group for high welfare fresh and processed meat: We find that consumers can be clustered into sub-groups which we describe as "AW indifferent", "AW pragmatists" and the "AW enthusiasts". The AW indifferent account for 42.6 % in the fresh meat sub-sample and for 53.1 % in the processed meat sub-sample. The AW indifferent are less suitable as target group for high welfare meat as they show a negative attitude towards animal welfare (μ_{FM} = -0.84; μ_{PM} = -0.69). On contrary, the AW pragmatists and the AW enthusiasts are very suitable as target group for high welfare meat. In both sub-samples, the cluster have high factor mean values for the attitude towards animal welfare (μ_{FM} = 0.39 and μ_{PM} = 0.42 for the AW pragmatists; μ_{FM} = 0.88 and μ_{PM} = 1.07 for the AW enthusiasts). Nevertheless, both clusters in both sub-samples differ in their perceived farm animal welfare situation. The AW perceive the farm animal welfare positively (μ_{FM} = 0.74; μ_{PM} = 0.91) whereas the AW enthusiast have a negative perception (μ_{FM} = -0.98; μ_{PM} = -0.88). The AW pragmatists and the AW enthusiasts have in common that they have positive factor mean values for the knowledge and influence on livestock farming in both sub-samples welfare (μ_{FM} = 0.85 and μ_{PM} = 0.80 for the AW pragmatists; μ_{FM} = 0.29 and μ_{PM} = 0.48 for the AW enthusiasts) with respect to the AW indifferent who have negative factor mean values in both sub-samples (μ_{FM} = -0.73; μ_{PM} = -0.55). Due to these results, the AW pragmatists and the AW enthusiast are the target group for high welfare processed and fresh meat.

5.2 Discussion of the counter clusters

The cluster analyses for the food counter show strong differences concerning consumer attitudes as well. We find in both sub-samples the "SSC fans", the "Combiners" and the "SC fans". The SSC fans have a share of 24.3 % in the fresh meat sub-sample and 41.1 % in the processed meat sub-sample. In both sub-samples, the SSC fans prefer the self-service counter (μ_{FM} = 0.55; μ_{PM} = 0.37) most strongly compared to the other clusters, show the most negative factor mean values for the service counter (μ_{FM} = -0.70; μ_{PM} = -0.40) and do their shopping at the self-service counter (μ_{FM} = -1.96 and μ_{PM} = -1.92 for the cluster forming statement "How is your meat shopping split into service counter and self-service counter?"). Results fit to the market data presented in Figures 2 and 3. The Combiners account for the biggest group with 51.8 % (fresh meat sub-sample) and 36.5 % (processed meat sub-sample) do not reveal a specific preference for any of the counters (μ_{FM} = -0.06 and μ_{PM} = -0.16 for factor 1; μ_{FM} = 0.14 and μ_{PM} = 0.03 for factor 2; μ_{FM} = 0.10 and μ_{PM} = 0.13 for the cluster forming statement "How is your meat shopping split into service counter and self-service counter?"). The SC fans have the opposite results compared to the SSC fans: They show the most positive factor mean values for the service counter (μ_{FM} = 0.91; μ_{PM} = 1.11) and the most negative values for the self-service counter (μ_{FM} = -0.80; μ_{PM} = 0.61). They do their shopping preferably at the service counter (μ_{FM} = 2.25; μ_{PM} = 1.73). The SC fans have the smallest share of 23.9 % in the fresh meat sub-sample and also the smallest share in the processed meat sub-sample with 22.4 %. These shares are in line with data collected by LfL (2013) who state a share of 25 %.

5.3 Discussion of the cross tabulations and hypotheses

The results of the cross tabulation analysis show that the self-service counter and the service counter are both the places where the target group for high welfare meat can be found doing their shopping. 54.0 % of the fresh meat buyers buy both at the service counter and at the self-service counter and 30.5 % only buy fresh meat at the service counter. For the processed meat sub-sample, these proportions are 37.1 % and 27.4 %. Finally, it can be seen that the target group for high welfare meat can be achieved better with a presentation on the service counter as more consumers of the target group can be found there due to the cluster of the Combiners. The results concerning the fresh meat sub-sample presented here are in line with Beck et al. (2007) and Schulze and Spiller (2007) and confirm the first hypothesis: High welfare meat should be sold at the service counter, while the sales potential at self-service counter appears less promising.

For processed meat, there are slightly different results as the self-service counter appears to be an option as point of sale as well. Thus, also the second hypothesis – that, according to LfL (2013), for processed meat, the service counter is not as important as it is for fresh meat - has also been verified through these results. The results of the cross tabulation for the processed meat sub-sample are not significant as well (p = 0.144) and thus, no clear conclusion can be drawn. Selling the animal welfare products at the service counter and at the self-service counter might be an appropriate solution initially, as a clear preference could not be found for either one of the two counters. Regarding the processed meat buyers, 27.4 % can be directly targeted at the service counter. High welfare processed meat can also be placed successfully at the self-service counter where 35.5 % of the target group can be addressed. But according to Schulze and

Spiller (2007) as well as Weyer (2005), consumers expect to find cheaper meat at the self-service counter. Therefore, placing high welfare processed meat products at the service counter is recommended as well.

An important requirement to sell high welfare processed and fresh meat is that the staff must be trained properly in order to meet the demand for an explanation of the product (Schulze and Spiller, 2007).

6 Conclusions

Although in the literature a demand for high welfare meat has been shown to exist (Lagerkvist and Hess, 2011), there remains the challenge of improving the availability of these products. In order to optimize the distribution of high welfare meat, it is important to find out at which kind of counter such products are best placed. In many countries like Germany, the USA and Canada, retailers have both a self-service counter and a service counter for fresh and processed meat. Due to space limitations, it is often not possible for retailers to place conventionally produced meat and high welfare meat at both. Thus, supermarkets with both kinds of counters have to decide at which counter they should best place high welfare meat. This paper aims to find out where high welfare meat should best be placed in Germany.

As the results of the present study show, at the self-service counter, high welfare meat might not be sold very successfully. This is supported by the fact that currently, in Germany products carrying the animal welfare label "Für mehr Tierschutz" are not sold well on a large scale at the self-service counter. The label was introduced in some stores in January 2013 and sold at the self-service counter ending in disappointing results. In 2014, most retailers stopped the introduction of high welfare meat and delisted labelled products.

There might be several reasons for this. Firstly, customers who buy their meat at the self-service counter do not attach much importance to the meat they purchase. Secondly, customers expect low prices at the self-service counter (Schulze and Spiller, 2007; Weyer, 2005). Finally, lower quality is also expected (Schulze and Spiller, 2007). Consequently, to achieve long-term success and to establish the German animal welfare label we recommend that high welfare meat should be placed at the service counter as the results of the present research show that this is where the target group can be addressed best. So far, the service counter has not been tested for high welfare meat on a large scale.

Transferring these results to a broader context reveals that the introduction of niche products in retail in general is a challenge. As conventional products will not be substituted by the retailer, space restrictions in the supermarkets become problematic. The introduction of, e.g. products free of lactose or gluten and organic products, means doubling the shelf space which, of course, is not possible for each product. Products must be placed to maximize profit, or else the product will be delisted. Thus, market research is necessary in order to reduce the risks for retailers such as, for instance, a low turnover rate. Therefore, the introduction of those niche products needs to be prepared carefully concerning the whole marketing. Store tests would be an appropriate tool.

Apart from the question at which counter the products should be placed it is also necessary to communicate the advantages of the niche products, either by food package labelling at the self-service counter or by the staff at the service counter. Furthermore, advertising is crucial to boost the awareness of newly introduced products. The slow diffusion process of many sustainability labels is also due to low marketing budgets. Last but not least it is important to evaluate the willingness to pay in order to know at which price level the product can be sold successfully. Therefore, the results of this paper are an example for important marketing failures in the case of third party labels. Further research should analyze why marketing for label products can often be observed as unprofessional (e.g. free rider behaviors, small enterprises etc.).

Acknowledgements

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Appendix

Appendix A: Animal welfare clusters for the fresh meat sub-sample

	Cluster A[FM]: AW indifferent	Cluster B[FM]: AW pragmatists	Cluster C[FM]: AW enthusiasts
Size of the cluster, absolute and in (%)	133 (42.6)	88 (28.2)	91 (29.2)
Factor 1[FM]: Attitude towards animal welfare***	**-0.84[bc]** **(0.647)**	**0.39[ac]** **(0.580)**	**0.88[ab]** **(0.564)**
I would like to have more information about livestock farming when purchasing meat.[1]***	-0.10[bc] (1.313)	1.48[ac] (1.104)	2.21[ab] (0.888)
I strongly disapprove of livestock farming in big factory farms.[1]***	0.26[bc] (1.199)	1.84[ac] (1.092)	2.33[ab] (0.989)
If I knew which meat originates from happy animals I would only buy this meat.[1]***	-0.16[bc] (1.211)	1.70[ac] (1.176)	2.13[ab] (1.013)
It makes me angry when thinking about how animals are kept in agriculture today.[1]***	-0.14[bc] (1.393)	1.26[ac] (1.360)	2.25[ab] (1.131)
For me, animal welfare is a selection criterion when buying meat.[1]***	-0.35[bc] (1.231)	1.35[a] (1.194)	1.58[a] (1.375)
I have a problem with meat that originates from factory farms.[1,4]***	0.26[bc] (1.235)	1.16[ac] (1.625)	2.02[ab] (1.238)
I would change my buying behavior if there was meat on offer that was labeled with an animal welfare label as well as the usual meat on offer in my supermarket.[1]***	-0.34[bc] (1.353)	1.23[ac] (1.311)	1.93[ab] (1.083)
I find it disgusting how many animals are kept indoors in modern agriculture.[1]***	0.36[bc] (1.305)	1.28[ac] (1.389)	2.08[ab] (1.376)
Factory farming is bad for animal welfare.[1]***	0.90[bc] (1.331)	1.90[ac] (1.305)	2.43[ab] (1.024)
When doing the shopping, I think about animal welfare.[1,4]***	-0.73[bc] (1.219)	0.28[ac] (1.546)	1.22[ab] (1.569)
I am interested in the living conditions of the animals that provide the meat I purchase.[1]***	-0.41[bc] (1.088)	1.32[a] (1.150)	1.43[a] (1.318)
To be honest, I spend a lot of time thinking about animal welfare.[1,4]***	-0.61[bc] (1.341)	0.56[ac] (1.609)	1.52[ab] (1.368)
I would like to buy more meat from livestock reared in appropriate conditions, but I can seldom find any.[1]***	-0.15[bc] (1.145)	1.11[ac] (1.368)	1.75[ab] (1.305)
If possible, I buy meat from animals that are treated properly.[1]***	0.13[bc] (1.131)	1.80a (1.052)	1.78a (0.998)
In order to buy "high welfare meat" I would also go to the service counter.[1]***	-0.05 1.389	1.78 1.254	2.20 0.980
Factor 2[FM]: Perceived farm animal welfare situation***	**0.13[bc]** **(0.695)**	**0.74[ac]** **(0.646)**	**-0.98[ab]** **(0.834)**
In agriculture, animal welfare has greatly improved in recent years.[1]***	0.53[bc] (0.974)	1.36[ac] (0.925)	-0.53[ab] (1.294)
In this country, sufficient attention is paid to animal welfare in livestock farming.[1]***	0.04[bc] (0.965)	0.72[ac] (1.039)	-1.65[ab] (1.079)
Factor 3[FM]: Knowledge and influence on livestock farming***	**-0.73[bc]** **(0.733)**	**0.85[ac]** **(0.633)**	**0.29[ab]** **(0.750)**
Through my buying behavior, I have an influence on the mode of production in agriculture.[1]***	-0.56[ab] (1.189)	1.91[ac] (0.967)	1.07[ab] (1.459)
I am knowledgeable about the conditions in which animals are kept in German agriculture.[1]***	-0.23[ab] (1.230)	1.35[ac] (1.051)	0.76[ab] (1.119)

Significance level: *** = p ≤ 0.001, ** = p ≤ 0.01, * = p ≤ 0.05; **factor mean values (standard deviation);** mean value; (standard deviation); letters mark a significant difference between groups, e. g., "Factory farming is bad for animal welfare": group A is significantly different to group B ("b") and group C ("c") (Tamhane's post hoc test T2 at a significance level 0.05)
[1]Scale from -3 "Not correct at all" to +3 "Fully correct"
[4]Statement was recoded   Source: authors' calculation

Appenix B: Animal welfare clusters for the processed meat sub-sample

	Cluster A[PM]: AW indifferent	Cluster B[PM]: AW pragmatists	Cluster C[PM]: AW enthusiasts
Size of cluster, absolute and in (%)	148 (53.1)	64 (22.9)	67 (24.0)
Factor 1[PM]: Attitude towards animal welfare***	**-0.69[bc]** **(0.682)**	**0.42[ac]** **(0.618)**	**1.07[ab]** **(0.487)**
It makes me angry when thinking about how animals are kept in agriculture today.[1]***	-0.05[bc] (1.271)	0.92[ac] (1.349)	2.13[ab] (1.072)
I find it sad that nowadays so many animals are kept in the narrowest of spaces so that we can buy cheap meat.[1]***	0.56[bc] (1.252)	1.95[ac] (0.999)	2.69[ab] (0.608)
Factory farming is bad for animal welfare.[1]***	0.68[bc] (1.247)	1.92[ac] (1.212)	2.58[ab] (0.924)
I strongly disapprove of livestock farming in big factory farms.[1]***	0.18[bc] (1.340)	1.70[a] (1.341)	2.15[a] (1.317)
I find it disgusting how many animals are kept indoors in modern agriculture.[1]***	0.22[bc] (1.368)	1.25[ac] (1.553)	2.06[ab] (1.099)
For me, animal welfare is a selection criterion when buying processed meat.[1]***	-0.51[bc] (1.259)	0.84[ac] (1.158)	1.67[ab] (1.211)
If I knew which processed meat products originates from happy animals I would only buy this processed meat products.[1]***	-0.22[bc] (1.232)	1.38[ac] (1.303)	2.21[ab] (0.946)
In order to buy "high welfare processed meat" I would also go to the service counter.[1]***	0.12[c] 1.730	0.57 1.561	1.21[a] 1.760
I have a problem with meat that originates from factory farms.[1, 4]***	0.21[bc] (1.090)	1.22[ac] (1.588)	2.24[ab] (1.156)
I would like to have more information about livestock farming when purchasing processed meat product.[1]***	-0.24[bc] (1.296)	1.59[a] (1.205)	2.00[a] (1.000)
I would change my buying behavior if there was processed meat on offer that was labeled with an animal welfare label as well as the usual meat on offer in my supermarket.[1]***	-0.32[bc] (1.289)	1.06[ac] (1.296)	1.82[ab] (1.127)
To be honest, I spend a lot of time thinking about animal welfare.[1, 4]***	-0.60[bc] (1.329)	0.58[ac] (1.499)	1.81[ab] (1.282)
Factor 2[PM]: Perceived farm animal welfare situation (conf.)***	**0.04[bc]** **(0.772)**	**0.91[ac]** **(0.631)**	**-0.88[ab]** **(0.824)**
In agriculture, animal welfare has greatly improved in recent years.[1]***	0.43[bc] (0.919)	1.44[ac] (0.852)	-0.25[ab] (1.146)
In this country, sufficient attention is paid to animal welfare in livestock farming.[1]***	-0.05[bc] (0.999)	0.73[ac] (1.043)	-1.31[ab] (1.003)
Factor 3[PM]: Knowledge and influence on livestock farming (conf.)***	**-0.55[bc]** **(0.773)**	**0.80[a]** **(0.698)**	**0.48[a]** **(0.777)**
Through my buying behavior, I have an influence on the mode of production in agriculture.[1]***	-0.41[bc] (1.256)	1.45a (1.246)	1.15a (1.209)
I am knowledgeable about the conditions in which animals are kept in German agriculture.[1]***	-0.12[bc] (1.256)	1.38[ac] (0.900)	0.88[ab] (1.200)

Significance level: *** = p ≤ 0.001, ** = p ≤ 0.01, * = p ≤ 0.05; **factor mean values (standard deviation);** mean value; (standard deviation); letters mark a significant difference between groups, e. g., "Factory farming is bad for animal welfare": group A is significant different to group B ("b") and group C ("c") (Tamhane's post hoc test T2 at a significance level 0.05)

[1]Scale from -3 "Not correct at all" to +3 "Fully correct"

[4]Statement was recoded

Source: authors' calculation