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To Purchase or Not to Purchase? Drivers of Consumers' Preferences for Animal Welfare in Their Meat Choice

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Abstract: This study investigates the relevance of psychological constructs in determining consumer intention to buy and Willingness-To-Pay (WTP) for a processed meat product, cured ham, differentiated by the attributes of animal welfare, ham variety, and price. Data obtained from an online survey conducted in Germany was used to estimate an integrated choice and latent variable (ICLV) model, which is based on an extension of the Theory of Planned Behavior (TPB) framework. There are two consumer segments that are identified: one that is highly price sensitive in its product choice and one that gives roughly equal weight to the animal welfare, ham variety, and price attributes. The ICLV model shows consistency across the two groups regarding the importance of psychological constructs—moral norms, attitude, and perceived behavioral control—in explaining respondent intentions to buy cured ham and their stated product choice. Subjective norms, however, are only a significant determinant of consumer intention to buy cured ham for the price sensitive consumer group.

Keywords: animal welfare; cured ham; discrete choice experiment; latent construct model

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1. Introduction

Animal welfare is acknowledged at the national and global level [1,2] as a core element of sustainable development and has become a highly debated issue in media, politics, in the meat sector, and among consumers/citizens in many Western countries, including Germany [3–5]. German citizens generally take a critical stance regarding the rearing conditions of farm animals. In 2006, 78% of the population believed that farm animal welfare protection needed to be improved [6], with this figure rising to 83% in 2015 and to 87% in 2017 [7,8].

Complying with above-legal animal welfare (AW) standards can be linked to a considerable surge in costs along the whole value chain, though this is especially the case at the farm level. Farmers who adopt higher farm animal welfare (FAW) standards need to introduce FAW-improving technologies. Depending on the level of AW standards, these can induce high capital requirements (e.g., housing, new breeds), a need for additional land as well as high-level management and marketing skills, whilst reducing productivity and increasing price risk [9,10]. However, costs from complying with AW standards also occur further downstream in the value chain, for example, with respect to transportation and slaughtering, but also due to the need for market segregation along the whole value chain [11]. Though the need for government involvement (e.g., in form of regulation and subsidies) is increasingly acknowledged [1,12], the economic viability of high animal welfare husbandry systems also crucially depends on consumer willingness to pay a premium for welfare-enhanced meat products. It is therefore necessary to obtain an accurate assessment of the potential price premiums that consumers and specific consumer segments are willing to pay as well as insights into the determinants of consumer preferences in order to recognize the market potential for welfare-enhanced meat products and to identify relevant consumer-oriented measures.

The importance of these topics is reflected in the growing literature investigating different aspects of the complex issue of FAW [13–16], with many studies analysing consumer Willingness-To-Pay (WTP) for FAW [17] and the drivers of consumer purchasing and consumption of FAW products [13–17]. However, research that integrates information on consumer choices in an extant theoretical framework of consumer behavior is missing.

The majority of consumer research on FAW assesses the willingness of consumers to pay a premium for improving the welfare of farm animals. In their meta-analyses, Lagerkvist and Hess [18], and more recently Clark et al. [19], investigate respective studies and arrive at the conclusion that consumers have a positive, though small, WTP for livestock products characterized by higher animal welfare standards. While this holds regardless of animal type, the premium consumers are willing to pay is higher for beef and dairy products and is lower for pork. Variability is also found to exist between regions, even within Europe, with higher WTP estimates for Southern compared to Northern European countries. Furthermore, consumer WTP depends on socio-demographic variables, increasing with income and education and decreasing with age [19]. Recent studies largely confirm those previous findings and add interesting additional insights by broadening knowledge of the factors that influence the premium that consumers are willing to pay for FAW. Those include consumer experience with FAW products, the presence of competing labels, the way animal welfare practices are regulated, and how much the consumer likes the product [18–25]. Furthermore, while several DCE studies point to the existence of preference heterogeneity with respect to consumer WTP for FAW, there are only a few studies that consider behavioral factors as drivers of heterogeneity in preferences [26,27].

A separate stream of literature explicitly explores behavioral factors as determinants of consumer preferences towards farm animal welfare products [28–33] without however, investigating consumer choice or WTP. Several of those studies are based on the Theory of Planned Behavior (TPB) model and extend this framework beyond its classical elements—attitude, social norm perceived behavioral control, and behavioral intention—by constructs such as trust, knowledge, and moral norms [28–30] to explain consumer intention to consider FAW in their purchasing or consumption. Those studies, in general, confirm the relevance of the classical TPB constructs and highlight the relevance of additional psychological constructs, such as moral norms as significant predictors of purchase intention for FAW meat.

Our study adds a theory-driven analysis to the literature that integrates the analysis of consumer meat choices with an investigation of the psychological factors influencing consumer preferences in an Integrated Choice and Latent Variable (ICLV) model. Applying latent class analysis with respect to our choice data and estimating a multi-group ICLV model allows for a better understanding of consumer choice processes and of the drivers of consumer preference heterogeneity with respect to animal welfare labeled meat products. While ICLV models have been applied in the context of transportation [34] mode choice since 1998 [34], they have only recently been introduced in the consumer research literature [35]. To the best of our knowledge, no previous study has applied multi-group ICLV.

The key objectives of the paper are (1) to derive and test an extension of the TPB using a multi-group ICLV model and thereby (2) to gain a better understanding of the drivers of consumer choice and the sources of preference heterogeneity. Furthermore, given the increasing relevance of multi-level FAW labels in the market, we aim towards (3) obtaining insights into consumer WTP for different levels of FAW. For this reason, we extend previous research by considering a two-level FAW label, more specifically, the entry level (1-star) and the premium level (2-star) "For More Animal Protection (Für mehr Tierschutz)" label. Cured ham was selected as the study object, as it is one of the most frequently consumed processed meat products in Germany [36,37].

2. Theory Framework and Research Hypotheses

The ICLV model used in this study combines Discrete Choice Experiments (DCE) and Latent Variable Model (LVM). The ICLV model provides a comprehensive framework to test an extension of the theory of planned behavior and thereby the drivers of product choice and the sources of preference heterogeneity [38]. DCE has its theoretical foundation in Random Utility Theory (RUT) [39] and Lancasterian consumer theory [40] which assumes that the product's attributes determine the utility that consumers derive from the product [40]. The utility U_{ijt} that an individual i derives from a choice alternative (product) j in a choice task t can be decomposed in an observed utility component V_{ijt} and a random unobserved error term ε_{ijt} [39].

$$U_{ijt} = V_{ijt} + \varepsilon_{ijt} = \beta_i x_{ijt} + \varepsilon_{ijt} \quad j = 0, 1, \ldots J; t = 1, 2, \ldots, T \tag{1}$$

The observable component is determined by x_{ijt}, the attribute levels of alternative j in choice set t, and a vector of coefficients β_i, which represents an individual's preference. The stochastic component is assumed to be independently and identically distributed (IID) over alternatives and individuals [41]. Among a given set of alternatives, consumers choose the product that maximizes their utility [39].

Considering preference heterogeneity in a population of individuals and gaining insights into the drivers of consumer choices have been key extensions in DCE research over the last two decades. The classic approach to accounting for preference heterogeneity with respect to product characteristics is to apply a random parameter mixed logit choice model specification [41–43]. In this approach, the utilities of the alternative attributes are allowed to vary randomly among respondents according to pre-specified distributions (i.e., usually normal distribution). An alternative method to incorporate unobserved heterogeneity in respondent preferences is the Latent Class Model. In this approach, it is not a continuous but rather a discrete distribution of the random parameters that is assumed. Heterogeneity is captured by membership to a specific class while preference homogeneity is assumed within a class. However, both approaches provide no information on the driving forces behind preference heterogeneity and thus no answer to the question "why we want what we want [38]". Thus, this representation of consumer choice ignores that individual preferences not only depend on the extrinsic and intrinsic characteristics of the products to be purchased but also on the fact that non-product-related characteristics such as attitudes and norms play an important role in explaining variations in consumer behavior [27,44].

To overcome those limitations, an increasing number of studies extend their analysis to better understand and explain the divers and complex causes of preference heterogeneity (e.g., Louviere et al. [45]; Hess [46]) by including, for example, psychological factors in the DCE and interacting them with the attribute levels. However, latent constructs such as attitude are not directly measurable and, thus, including them as explanatory variables in DCE can lead to measurement errors and a risk of endogeneity bias [47]. Other studies followed the approach by Boxall and Adamowicz [48] and estimated Latent Class Models in a first step while investigating the determinants of class membership by a latent segmentation model (multinominal logit model) in a second step [49]. Though this latter approach explains class membership (e.g., by psychological factors), it does not explain observable behavior.

ICLV overcomes those deficiencies by explicitly taking the latent behavioral constructs in the modelling framework into account and thereby enhancing the representation of the decision-making process [50,51]. ICLV models have especially been applied in the context of transportation [34] mode choice (see review by Bouscasse [34]). The key strength of ICLV models is to provide a tool to better understand how behavior is formed and enables the integration of behavioral theories and discrete choice models.

The theoretical framework applied in this study is an extension of Ajzen's Theory [52] of Planned Behavior (TPB): one of the most frequently applied models for explaining behavior, including food related behavior [53]. Thus, the TPB forms the basis for the LVM that

is derived. According to the TPB, behavior is determined by the intention of an individual to pursue the behavior. Behavioral intention itself is influenced by three latent constructs: attitude, subjective norms, and perceived behavioral control (PBC). Attitude provides information regarding an individual's evaluation of the positive and negative consequences associated with the behavior and can—according to Crites et al. [54]—be differentiated by cognitive and affective dimensions. Subjective norms refer to the "the perceived social pressure to perform or not to perform the behavior" in question ([52], p. 188) while PBC considers the level of control an individual has over pursuing a specific behavior [52]. The consideration of PBC proves to be especially relevant if the behavior being investigated is influenced by factors that are not entirely under the person's control [55]. Regarding the purchase of animal-friendly meat and meat products, this is likely to be the case due to the lack of availability of specifically desired products (e.g., a specific variety of a cured ham) in the store visited and due to the considerably higher prices for those products compared to their respective counterparts without an animal welfare label. Based on the TPB, the following five hypotheses can be formulated:

Hypothesis 1 (H1): *A behavioral intention to buy cured ham with an AW label positively affects the decision to buy cured ham with an AW label.*

Hypothesis 2 (H2): *A favourable attitude towards AW labelled cured ham positively affects the behavioral intention to buy cured ham with an AW label.*

Hypothesis 3 (H3): *Subjective norms that are in favour of AW labelled cured ham positively affect the behavioral intention to buy cured ham with an AW label.*

Hypothesis 4 (H4): *A high perceived behavioral control with respect to buying AW labelled cured ham positively affects the behavioral intention to buy cured ham with an FAW label.*

A number of extensions of the TPB have been suggested to the subject area of investigation. The present study extends the TPB with the construct of moral norms [56,57]. A moral norm is defined as a belief that something is right or wrong for performing a specific behavior and refers to a feeling of obligation that people hold with respect to a certain behavior [56,57]. According to Fretschner [58], moral norms form a person's attitude towards the behavior. Dean et al. [59] also show at the example of organic products that they are important drivers of an individual's attitude. Beldad and Hegner [28], who investigated intentions of Dutch consumers to purchase meat products with a FAW label, reveal the relevance of moral norms in predicting purchase intention. This finding is confirmed in the study by McEachern et al. [30], who focused on Scottish shoppers. Thus, literature reveals that consumers have become increasingly conscious of the moral implications of their food (meat) consumption. In particular, the view that farm animals deserve moral considerations has generated widespread public attention [28]. Thus, an additional hypothesis can be derived based on the suggested extension:

Hypothesis 5 (H5): *Personal moral norms that are in favour of AW labelled cured ham positively affect attitudes with respect to AW labelled cured ham.*

The five hypotheses lead us to the structural model illustrated in Figure 1.

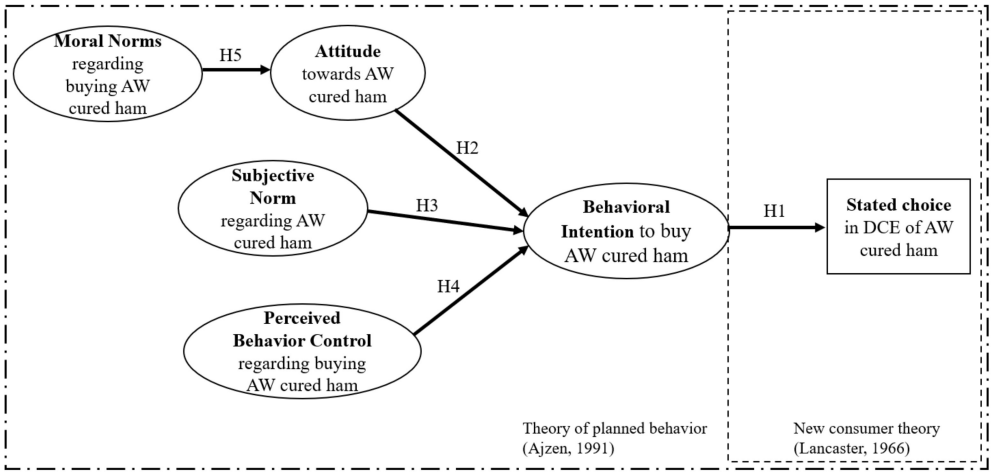

Figure 1. Structural model for consumer purchasing decision of AW labelled cured ham.

3. Methodology, Data and Analysis

3.1. Choice Experimental Design

In this study, three attributes were defined in the DCE: (1) animal welfare, (2) variety of cured ham, and (3) price (see Table 1). For the first attribute, three levels of animal welfare were distinguished: the minimal level of animal welfare as defined in legislation and the two graded labels "For More Animal Protection" (Für mehr Tierschutz) (i.e., 1-star, 2-star) from the German Animal Protection Society (German Tierschutzbund). At the time of study, the label "Für mehr Tierschutz" was the most prevalent animal welfare label in the German meat market. The entry level (1-star) and the premium level (2-star) "For More Animal Protection" labels were introduced into the German meat and animal product market in 2013 and have since been further developed via a multi-stakeholder approach (participation of research, agriculture, marketing, retail, and various societal groups). Species-specific criteria were used to set requirements at the level of animal husbandry (e.g., stocking densities, access to materials for investigation, and manipulation), transportation (e.g., distance and time of transport), and slaughtering, which go beyond legal standards and are more stringent for the premium compared to the entry level (e.g., stocking density for fattening pigs of at least 1.1 m^2 per pig at the entry level and of at least 1.5 m^2 per pig at the premium level; for comparison, the legal requirement is 0.75 m^2 per pig) [60]. (For a more detailed overview see Appendix A).

Table 1. Attributes and levels used in the DCE.

Attributes	Level 1	Level 2	Level 3	Level 4
Animal welfare labelling	None	One-star AW label	Two-star AW label	
Variety of cured ham	Generic ham	PGI-labelled Holsteiner Katenschinken	PGI-labelled Schwarzwälder Schinken	
Prices	EUR 1.29	EUR 1.79	EUR 2.29	EUR 2.79

Regarding the second attribute—the variety of cured ham—three attribute levels were considered: the generically named Bauernschinken (farmer ham), Holsteiner Katenschinken cured hams, and Schwarzwälder Schinken cured hams. The latter two levels carry Protected Geographical Indication (PGI) labels and thus could be perceived as competing labels. Finally, four price levels were defined that reflect the 2018 market price range for 80 g of cured ham found in German supermarkets at the time of the study (EUR 1.29;

EUR 1.79; EUR 2.29; EUR 2.79). Survey participants could see the animal welfare labels as well as the PGI label in the DCE without being provided with further information regarding the underlying criteria of the labels' certification. This best corresponds to the situation consumers face when grocery shopping.

Respondents were asked to imagine themselves in the supermarket where they usually buy food and to assume that the cured hams they are able to select from are all of their preferred brand. Furthermore, to reduce the risk of social desirability bias, which is especially prevalent in hypothetical purchase experiments, a cheap talk script was applied [61,62]. The survey respondents were requested, when making a purchase decision, to take into account their typical budget to spend at the supermarket and to assume that this purchase will reduce the amount of money that they have available for other purchases.

A D-efficient design with zero prior parameter values (i.e., D-optimal orthogonal design) was generated using NGENE version 1.1 [63]. The design had 120 choice profiles that were blocked into 20 scenario sets of 6 choice tasks each. Respondents were randomly assigned to 1 of the 20 scenario sets. Each choice task consisted of three alternatives (options 1–3 depicted three varieties of cured ham), which differed in the respective levels of the three attributes alongside an opt-out option (option 4, a no-buy alternative). The latter option 4 ensured that participants did not choose a cured ham they would not normally purchase. In order to make the choice experiment as tangible as possible, the products with their respective attribute levels were visualized with high resolution pictures (see Figure 2).

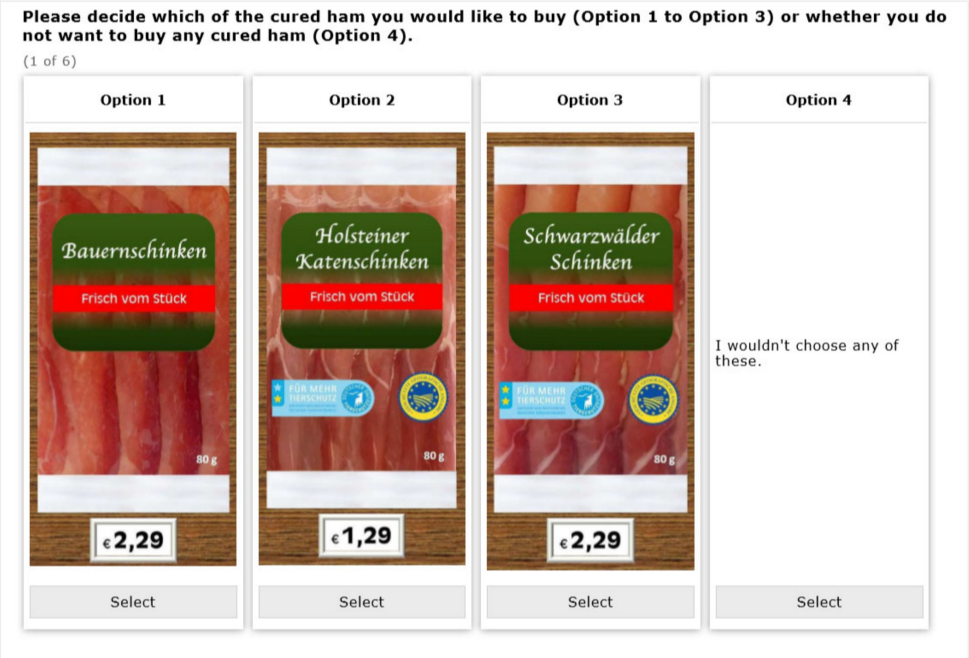

Figure 2. Example of a cured ham DCE.

3.2. Definition of Measurement System of the LVM

In order to test the theoretical model derived in Figure 1, the five structural variables —attitude, subjective norms, perceived behavioral control, behavioral intention, and moral norms—were set up in the form of reflective constructs. These constructs were defined by three variables for each but attitude, which was defined by six points. The scales for all of the constructs were derived from previous literature. An overview of the variables for each of the constructs and the respective scientific source is provided in Table 2. All items were measured on a seven-point Likert scale.

Table 2. Measurement of latent constructs used in the Integrated Choice and Latent Variable (ICLV) model.

Construct	Items	References
Attitude (ATT) *	Buying cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards makes me feel: Unsatisfied/satisfied [Code: ATT1]. Unhappy/happy [Code: ATT2]. Bad/good [Code: ATT3]. I think that buying cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards is: Meaningless/meaningful [Code: ATT4]. Harmful/beneficial [Code: ATT5]. Unimportant/important [Code: ATT6].	Adapted from Povey et al. [64]; Fishbein and Ajzen [65]
Subjective Norms (SN) **	Most people who are important to me would like me to buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards [Code: SN1]. My close friends and family expect me to buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards [Code: SN2]. Most of my close friends and family generally buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards [Code: SN3].	Ajzen [52]; Fishbein and Ajzen [65]
Perceived Behavioral Control (PBC) **	Whether or not I buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards on a regular basis is completely up to me [Code: PBC1]. I am confident that I can buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards on a regular basis [Code: PBC2]. For me, buying cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards on a regular basis is easy [Code: PBC3].	Ajzen [52]
Behavioral Intention (BI) **	I intend to buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards on a regular basis [CODE: BI1]. I will make an effort to buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards on a regular basis [CODE: BI2]. In the future, when you buy cured ham, how often will you buy cured ham produced in line with higher animal welfare standards? [CODE: BI3]	Adapted from Fishbein and Ajzen [65]
Moral Norms (MN) **	Buying cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards: Would feel like I am making a personal contribution to something better [Code: MN1]. Would feel like the morally right thing to do [Code: MN2]. Makes me feel like a better person [Code: MN3].	Dean et al. [59]; Arvola et al. [66]

* Measurement on a 7-point bipolar scale, ** measurement on a seven-point Likert Scale from strongly disagree (1) to strongly agree (7).

3.3. Sampling and Data Collection

Data were collected via an online survey in Germany in the summer of 2018 through a market research company. Respondents received a small payment for completing the questionnaire.

The survey started with three screening questions as well as some questions with respect to socio-demographic variables. Regarding the former questions, only people living in Germany, who were at least co-responsible for food shopping in their household, and who had bought cured ham in the last three months could take part in the survey. In the second part of the survey, the participants were asked to complete the DCE for cured ham, while the third section of the survey covered questions referring to the constructs of an extended Theory of Planned Behavior (TPB) [52]. The final section of the questionnaire requested information on certain additional socio-demographic variables, such as income. Prior to the final section of the questionnaire, consumer evaluations of a modified EU food quality label were investigated. The information from this part of the survey is not considered in the present study.

3.4. Data Analysis

The DCE data were first analyzed using a hierarchical Bayesian mixed logit model [41]. The Bayesian estimation approach accounts for preference heterogeneity among respondents at the individual level [41], thus allowing for the estimation of individual level coefficients of each attribute. This Bayesian approach consists of two stages that are performed in an iterative process [67,68]. At the first stage, the individual-level parameters are calculated via an assumed multivariate normal distribution characterized by a vector of mean values and a matrix of covariances. In the second stage, given an individual-level parameter, respondent probabilities of choosing specific products can be further estimated by a traditional logit model [67,68]. For the attributes 'ham variety' and 'AW label', utilities were calculated based on part-worth utilities for each attribute level. The price attribute was set as a linear term. Accordingly, a single utility score for the price attribute was obtained.

Based on the findings of the DCE analysis, we further simulated individual-level normalized utilities over all ham varieties, the two AW labels, and prices that were then entered into the ICLV model.

For marketing purposes, it is of relevance to know whether consumer segments exist, with consumer preferences that are heterogeneous between segments but that are homogeneous within the same segments. This allows companies to customize products and marketing strategies for each segment. Following the procedure implemented by Boxall and Adamowicz [48], we applied standard Latent Class Analysis (LCA) to categorize respondents into classes that share unobserved characteristics that affect their choices: in our study, the choice of cured ham. Thus, the preferences of respondents are assumed to differ between but be similar within classes [41,48]. Class membership for each respondent is used in estimating a multi-group ICLV model. The model in turn enables the investigation of whether consumer segments that differ according to their purchase behavior are also distinct with respect to the psychographic variables that drive their intention to buy and their stated purchase behavior with respect to AW labeled ham. Individual-level normalized utilities over all ham varieties that enter the multi-group ICLV are calculated as described above.

In order to estimate the ICLV model, we followed a two-step procedure [69–71] by first assessing the reliability, convergent, and discriminant validity as well as the goodness of fit of the measurement model and next examining the structural model.

4. Results

A total of 900 persons were recruited to participate in the survey. After excluding those not living in Germany, not being at least partially responsible for their household food shopping, and not having purchased cured ham in the last three months resulted in a valid sample of 401 responses that were used for the further analysis. This sample is

close to being representative in terms of gender and age [72], while it is biased in favour of respondents living in rural areas [73] and who are better educated [74], wealthier, and have more children than the German average [74]. Table 3 summarizes the sample characteristics.

Table 3. Sample structure and descriptive analysis.

Total N	**900**
Valid N	**401**
Qualified N % (Valid N/Total N)	**0.45**
Gender	
Female (%)	48.88
Male (%)	51.12
Average age	43.77
Living area	
Rural area (%)	38.40
Urban medium town (%)	22.94
City (%)	38.65
Education	
Lower secondary/primary education or below (%)	16.96
Upper secondary education (%)	16.21
University or college entrance qualification (e.g., A-levels, vocational certificate, technical diploma) (%)	39.90
Bachelor's degree or equivalent level (%)	11.97
Master, Postgraduate, or doctoral degree (%)	14.96
Household size	2.41
Number of children (<18 year) in a household	0.47
Household monthly net income	
HHI< EUR 900 (%)	3.74
EUR 900 $\leq$ HHI < EUR 1300 (%)	7.98
EUR 1300 $\leq$ HHI < EUR 2000 (%)	16.21
EUR 2000 $\leq$ HHI < EUR 3600 (%)	38.90
EUR 3600 $\leq$ HHI < EUR 5000 (%)	18.70
EUR 5000 $\leq$ HHI (%)	7.98
Preferred not to provide information (%)	6.48

Table 4 presents the results of the mixed logit model applying Bayesian estimation and of the Latent Class Analysis and provides information on the average importance scores for the attributes of animal welfare, cured ham variety, and price as well as on the average utility associated with the attribute levels considered in the analysis. In the present study, the DCE choice data was effect-coded [75], and the average utilities reported in Table 4 are zero-centered, implying that attribute levels with a positive (negative) average utility value are preference increasing (decreasing) relative to other attribute levels with a lower positive (negative) value and are even more so relative to an attribute level with a negative (positive) average utility value. The final row shows the average utility of the opt-out option, calculated as the mean value of the individual specific constants.

Table 4. Hierarchical Bayesian mixed logit model and LCA of the DCE data.

Model	**Mixed Logit Model**			**Latent Class Analysis**					
N	**401**								
				Group 1: Product and Process Quality Supporters			**Group 2: Price Sensitive Consumers**		
Segment Size				**62%**			**38%**		
	Avg. Imprt. [a] (S.D.)	**Avg. Utilities [b] (S.D.)**	**WTP**	**Imprt. [c] (%)**	**Utilities (S.E.)**	**WTP**	**Imprt. [c] (%)**	**Utilites (S.E.)**	**WTP**
Variety of cured ham	28.06 (16.91)			31.21			7.80		
Generic ham		−14.31 (41.73)	−0.71		−39.68 (0.04)	−1.33		−0.02(0.08)	0.00
Holsteiner Katenschinken		−11.38 (34.65)	−0.56		−14.28 (0.05)	−0.48		−11.67 (0.09)	−0.13
Schwarzwälder Schinken		25.69 (37.20)	1.27		53.96 (0.04)	1.81		11.69(0.08)	0.13
Animal welfare labelling	22.32 (14.05)			38.93			4.34		
None		−34.03 (31.59)	−1.68		−77.63 (0.05)	−2.60		−6.67 (0.08)	−0.08
One star AW label		17.82 (16.01)	0.88		38.48 (0.04)	1.29		0.33 (0.09)	0.00
Two stars AW label		16.22 (24.40)	0.80		39.15 (0.04)	1.31		6.34 (0.08)	0.07
Price	49.62 (24.35)	−40.57 (37.57)		29.86	−29.86 (0.03)		87.87	−87.67 (0.09)	
NONE		−139.97 (192.85)			−363.06 (0.18)			60.68 (0.12)	

[a] Avg. Imprt. = Average importance in percentage. [b] Average utilites (Avg. Util.) are zero-centered. Standard deviations (S.D.) in parenthesis. [c] Imprt. (%) = Attribute importance in percentage.

The results of the mixed logit model indicate that price is by far the most important attribute (Avg. Imprt. = 49.62). Variety follows, though with a considerable distance (Avg. Imprt. = 28.06), while animal welfare labelling is the least important (Avg. Imprt. = 22.32) of the three attributes considered in the DCE. Based on the estimated average utilities, we can see that Schwarzwälder Schinken is preferred relative to Holsteiner Katenschinken and even more so compared to generic ham. As expected, results show respondents prefer a cured ham with an AW label compared to an unlabeled product. Interestingly however, average utility is almost identical for the one- and two-star labels. Finally, the results reveal that, as expected, utility declines with increases in price.

To choose the optimal number of latent segments derived from Latent Class Analysis, the model fit criteria shown in Appendix B—Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), Chi-square, and log-likelihood measures—were used. A two-segment solution (Appendix B and Table 4) was selected. Although the indicators further improve as more classes are added, the differences between the two- and three-class models are smaller in comparison to the move from a one- to two-class model. Furthermore, model interpretability is considered to be as important as the statistical tests [76] and best for the two-segment model. In addition, this solution secures a large enough sample size for each segment, with class 1 accounting for 62% and class 2 for 38% of the consumer sample. As revealed in Table 4, attribute importance scores considerably differ between the two segments. For members of class 1, referred to from here on as *Product and Process Quality Supporters*, the three attributes are of similar importance (attribute importance 31.21 for ham variety, 38.93 for AW label and 29.86 for price), while for class 2, price is by far the most important attribute, as revealed by an importance score of 87.87%. Accordingly, we refer to this latter group as *Price Sensitive Consumers.* This group reveals a positive coefficient for the constant that implies that if the products in the choice task do not closely align with their preferences, which most likely implies that they do not have an acceptable (low) price, respondents are in favour of the opt-out alternative. In contrast, findings for participants from the first segment indicate a high negative value for the constant. Thus, those consumers are in favour of making a choice and dislike the opt-out option. Regarding the utility linked to different attribute levels, we find similarities and differences between the two groups. Consumers from both segments prefer Schwarzwälder Schinken compared to the other two ham varieties. However, while generic ham is the least preferred among the *Product and Process Quality Supporters*, Holsteiner Katenschinken is the least preferred among the *Price Sensitive Consumers*. Considering the attribute levels for FAW, consumers from both class 1 and class 2 prefer ham with an AW label. Furthermore, the findings show that the *Product and Process Quality Supporters* obtain high above-average utility from both AW labels although utility is only slightly higher for the two-star label. In contrast, the *Price Sensitive Consumers* value the two-star label to a considerably higher degree than the one-star label. At this point, however, it must be noted that this second class attached little importance to AW information in the first place (the share of attribute importance equals 4.34%). As expected, the price coefficient is negative in both groups, with a considerably stronger magnitude in Group 2.

In the next step, we investigated the extent to which the five behavioral constructs derived in the theoretical part of the paper influenced the consumer choice of ham for both of the previously identified consumer segments. The properties of the items behind the five constructs of the SEM are analyzed with respect to their distributional characteristics (means, standard deviations, skewness, and kurtosis). An overview of the descriptive statistics for all of the items that enter the ICLV is provided in Table 5, with the items being coded based on the abbreviations used in Table 2.

Table 5. Descriptive statistics and factor loading for the behavioral construct items for both consumer segments.

		Group 1 Product and Process Quality Supporters *N* = 249					Group 2 Price Sensitive Consumers *N* = 152					Comparison Group 1/Group 2	
Construct	**Item Code**	**M**	**SD**	**S**	**K**	**Std. Factor Loadings**	**M**	**SD**	**S**	**K**	**Std. Factor Loadings**	**Mean Diff.**	**Sig.**
Attitude	ATT1	6.03	0.97	−1.01	0.97	0.78 ***	5.49	1.26	−0.88	0.88	0.76 ***	0.54	***
	ATT4	5.95	1.21	−1.5	2.77	0.81 ***	5.28	1.47	−1.03	0.96	0.78 ***	0.67	***
	ATT5	5.95	1.29	−1.56	2.59	0.63 ***	5.53	1.22	−0.5	−0.18	0.78 ***	0.42	***
	ATT6	6.09	1.18	−1.39	1.72	0.80 ***	5.34	1.49	−0.7	0.02	0.80 ***	0.76	***
Subjective Norm	SN1	4.47	1.62	−0.43	−0.09	0.86 ***	3.59	1.58	−0.25	−0.51	0.94 ***	0.88	***
	SN2	4.08	1.67	−0.25	−0.47	0.79 ***	3.32	1.65	−0.13	−1.06	0.90 ***	0.75	***
	SN3	4.40	1.41	−0.38	0.17	0.76 ***	3.53	1.57	−0.06	−0.46	0.80 ***	0.87	***
Perceived Behavior Control	PBC2	5.33	1.31	−0.65	0.22	0.88 ***	4.50	1.44	−0.35	0.35	0.88 ***	0.83	**
	PBC3	5.02	1.44	−0.50	−0.02	0.76 ***	4.26	1.50	−0.32	−0.06	0.76 ***	0.76	***
Behavioral Intention	BI1	5.39	1.33	−0.74	0.41	0.89 ***	4.47	1.52	−0.32	0.05	0.90 ***	0.92	***
	BI2	5.60	1.27	−0.81	0.5	0.88 ***	4.53	1.65	−0.64	−0.09	0.82 ***	1.07	***
	BI3	5.12	1.19	−0.57	0.73	0.84 ***	4.34	1.30	−0.02	0.47	0.85 ***	0.78	***
Moral Norm	MN1	5.53	1.40	−1,00	0.79	0.89 ***	4.68	1.69	−0.61	−0.13	0.94 ***	0.85	***
	MN2	5.67	1.34	−0.99	0.79	0.86 ***	4.86	1.60	−0.74	0.33	0.91 ***	0.81	***
	MN3	5.09	1.48	−0.55	0.01	0.72 ***	4.37	1.66	−0.47	−0.17	0.84 ***	0.72	***

, *; $p < 0.01, 0.001$. Note: M = Mean; SD = Standard deviation; S = Skewness; K = Kurtosis; We did not consider item 2 and item 3 of Attitude (ATT) or item 1 of PBC in both groups in this table, as they do not enter the following ICLV modelling procedure due to the fact that their low factor loadings (i.e., 0.55 and 0.63 for ATT2 and ATT3 and 0.56 for PBC1 in Cluster 1 and 0.59 and 0.61 for ATT2 and ATT3 and 0.50 for PBC1 in Cluster 2) deviate considerably from the threshold value of 0.7.

The mean values of the four items defining attitude are well above 5 in both groups, indicating that on average, respondents have a positive attitude towards buying AW labelled cured ham though values are significantly higher for the *Product and Process Quality Supporters* (ranging from 5.95 for ATT4 and ATT5 to 6.09 ATT6) compared to the *Price Sensitive Consumers* (5.28 for ATT2 to 5.53 for ATT5). Members of both segments perceive little social pressure to buy cured ham with an AW label, and this is even less of an issue for the *Price Sensitive Consumers* (values ranging from 3.32 for SN2 to 3.59 for SN1) compared to the *Product and Process Quality Supporters* (values ranging from 4.08 for SN2 to 4.47 for SN1). Both consumer segments indicate having some control over the decision to purchase cured ham in line with higher animal welfare standards; however, *Product and Process Quality Supporters* perceive having a higher level of control (5.33 for PBC2 and 5.02 for PBC3) compared to the *Price Sensitive Consumers* (4.50 for PBC2 and 4.26 for PBC3). In line with the values for PBC in the former consumer segments, we found values that were well above 5 for behavioral intention in most cases as well as for moral norms, and in the latter group of consumers, we found values well below 5 (*Price Sensitive Consumer* values ranging from 5.12 for BI3 to 5.60 for BI2 and 5.09 for MN3 to 5.67 for MN2; *Product and Process Quality Supporter* values ranging from 4.34 for BI3 to 4.53 for BI2 and 4.37 for MN3 to 4.86 for MN2). Applying mean comparison for all items used in the ICLV model between the two consumer segments (see Table 5, last two columns) reveals significantly higher values for all items in the *Product and Process Quality Supporters* group compared to the *Price Sensitive Consumers* group.

Confirmatory Factor Analysis (CFA) revealed sufficient factor loadings (close or well above 0.7) for all of the original items of all of the constructs depicted in Table 2 but not for item 2 and item 3 of attitude (ATT) or for item 1 of PBC in both groups (see note Table 5). In order to overcome those shortcomings, a four-item construct was defined for ATT with the exclusion of ATT2: "Buying cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards makes me feel unhappy/happy", and ATT3: "Buying cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards makes me feel bad/good", and a two-indicator construct was defined for PBP excluding the indicator PBC1: "Whether or not I buy cured ham produced in line with higher animal welfare standards instead of cured ham in accordance with legal standards on a regular basis is completely up to me". Results for the adjusted constructs are displayed in Table 5. Table 6 confirms reliability and convergent validity for all of the behavioral factors with values for Composite Reliability (CR) and Average Variance Extracted (AVE) all being well above the threshold values of 0.7, 0.6, and 0.5 [77,78]. Discriminant validity was measured according to Fornell and Larcker [79] by comparing the square root of the AVE of a construct and the correlations of the respective construct with all other constructs. If the latter is larger than the former, discriminant validity is confirmed. Table 6 indicates that sufficient differentiation between the constructs exists for all behavioral constructs in case of Cluster 2. With respect to Cluster 1, this does not hold for attitude with moral norms and attitude with behavioral intention. In the first case, the square root of the average variance extracted is equal to the correlation between the two constructs (Square root of AVE of MN = 0.82; correlation ATT & MN = 0.82) and thus can still be considered acceptable. In the second case, it exceeds the correlation between the constructs (Square root of AVE of ATT = 0.76; correlation ATT & BI = 0.85). From theory, a close association between the two constructs was expected (see also Crites et al. [54] and Lorenz et al. [80]). Furthermore, measures of the overall fit of the measurement model (RMSEA = 0.046; CFI = 0.961; TLI = 0.964; chi-square Test of Model Fit = 290.915, d.f. = 204; *p*-value = 0.000) suggest a good model fit. For a good model fit, the Root Mean Squared Error of Approximation (RMSEA) should be less than 0.05, and the values for the Comparative Fit Index (CFI) and for the Tucker–Lewis Index (TLI) should exceed a threshold value of 0.95 (Byrne, 2012).

Table 6. Reliability and discriminant validity statistics for measurement models for both consumer segments.

	Group 1 Product and Process Quality Supporters *N* = 249						**Group 2 Price Sensitive Consumers *N* = 152**					
Construct	**Cron-Bach's Alpha**	**CR**	**AVE**	**Sqrt. of AVE**	**Highest Corr. Coef. with Other Construct**	**Correlated Relationship**	**Cron-Bach's Alpha**	**CR**	**AVE**	**Sqrt. of AVE**	**Highest Corr. Coef. with Other Construct**	**Correlated Relationship**
Attitude	0.88	0.84	0.58	0.76	0.85	ATT-BI	0.88	0.86	0.61	0.78	0.60	ATT-PBC
Subjective Norm	0.84	0.84	0.64	0.8	0.60	SN-PBC	0.92	0.91	0.78	0.88	0.80	SN-PBC
Perceived Behavior Control	0.80	0.80	0.67	0.82	0.80	PBC-BI	0.79	0.80	0.67	0.82	0.80	PBC-SN
Behavioral Intention	0.91	0.90	0.76	0.87	0.85	BI-ATT	0.89	0.89	0.73	0.85	0.69	BI-PBC
Moral Norm	0.86	0.86	0.68	0.82	0.82	ATT-MN	0.92	0.92	0.80	0.89	0.54	MN-PBC

As for the estimation of a multi-group model, a common model structure is necessary; the derived model specification was accepted, and the structural model was estimated.

The ICLV model allows latent constructs to be identified as a function of the indicators and to capture the causal relationships between explanatory variables and the latent constructs. By simultaneously integrating DCE and LVM, the latent constructs can be treated as explanatory variables in the functions of the stated cured ham choices. Thus, for the estimation of the ICLV model, the results from the DCE should be added. As indicated above, for each attribute level, we arrived at individual utility scores; this holds for the attribute of FAW as well as for ham variety. In contrast, a single utility score for the price attribute was obtained, as the price levels entered the Latent Class model as a linear term. Based on the information derived from the DCE data, we calculated the utility arising from consuming a product with a one-star FAW label for each of the three cured ham varieties for each participant. The same calculation was performed with respect to the two-star FAW label across all three cured ham varieties. Thus, we obtained six utility measures for six configured cured ham products (3 cured ham varieties × 2 animal welfare labels) for each participant. We estimated an ICLV model, inserting the mean utility over those six utility measures. Thus, in this model, we considered the average utility an individual obtains from buying cured ham in line with higher animal welfare standards over all three of the different ham varieties.

A standard method for estimating an ICLV model is through the covariance based Maximum Likelihood estimation of the model parameters with standard errors and a mean- and variance-adjusted chi-square test statistic [81] so that divergencies between the observed variance–covariance matrix of measured indicators and the theoretically derived model is minimized in an iterative process. The Maximum Likelihood method assumes a normal distribution for all of the items included in the ICLV model. Table 5 reveals that the values for skewness and kurtosis of all items considered in the model are below the proposed threshold values with respect to the assumption of normality (for skewness < ±2; for kurtosis < ±7) [77,82].

Table 7 shows that the estimates of the multi-group ICLV that support the derived model with a good overall model fit (CFI = 0.969; TLI = 0.965; RMSEA = 0.040) [83,84]. The findings indicate that the model has a high explanatory power for both consumer segments with respect to attitude ($R^2_{Attitude-Group\ 1}$ = 0.68 and $R^2_{Attitude-Group\ 2}$ = 0.60) and even more so regarding behavioral intention ($R^2_{Behavioural\ Intention-Group\ 1}$ = 0.89 and $R^2_{Behavioural\ Intention-Group\ 2}$ = 0.76). In contrast, only about 10% of the variance in stated choice can be explained by the model ($R^2_{Stated\ Choice-Group\ 1}$ = 0.08 and $R^2_{Stated\ Choice-Group\ 2}$ = 0.12) (see Table 7). For the *Price Sensitive Consumers*, all of the assumed relationships of the derived extended TPB framework are confirmed. As is revealed in Table 7 and Figure 3, attitude (H2: $\beta_{Attitude-Group\ 2} = 0.52, p < 0.001$), subjective norm (H3: $\beta_{Subjective\ Norm-Group\ 2} = 0.27, p < 0.001$), and perceived behavioral control (H4: $\beta_{PBC-Group\ 2} = 0.29, p < 0.05$) are all significant predictors of consumer behavioral intention to consume cured ham with higher animal welfare standards, which again, significantly determines the stated choice of AW ham (H1: $\beta_{Stated\ Choice-Group\ 2} = 0.36, p < 0.001$). Furthermore, as hypothesized, personal consumer moral norms towards AW labeled cured ham is a significant determinant of attitude in this group (H5: $\beta_{Moral\ Norms-Group\ 2} = 0.77, p < 0.001$). For the first consumer segment—the *Product and Process Quality Supporters*—all but one of those relationships are also confirmed (H2: $\beta_{\ Attitude-Group1} = 0.59, p < 0.001$; H4: $\beta_{\ PBC-Group1} = 0.48, p < 0.001$; H1: $\beta_{\ Behavioural\ Intention-Group\ 1} = 0.28, p < 0.01$; H5: $\beta_{\ Moral\ Norms-Group1} = 0.83, p < 0.001$). Subjective norms are not a significant determinant for the behavioral intention to buy AW labeled cured ham for this group ($\beta_{\ Subjective\ Norms-Group1} = 0.01$, p > *0.05)*. A multi-group SEM analysis applying the chi-square test between constrained and unconstrained models confirms a significant difference between the coefficients $\beta_{\ Subjective\ Norms-Group1}$ and $\beta_{\ Subjective\ Norms-Group2}$ while all of the other coefficients of the ICLV do not differ at a 10% level between the group of *Product and Process Quality Supporters* and the group of *Price Sensitive Consumers*.

Table 7. Results of the multi-group ICLV model for AW cured ham.

Group	Hypotheses	LVM Path	β	Testing Results	R^2	Model Fit Measures
Group 1: Product and Process Quality Supporters	H1	Behavioral Intention→ Stated Choice	0.28 **	Support	$R^2_{choice} = 0.08$, $R^2_{BI} = 0.89$, $R^2_{Att} = 0.68$	RMSEA = 0.040 CFI = 0.969 TLI = 0.965 Chi-Square Test of Model Fit = 275.320 d.f. = 208 p-value = 0.001
	H2	Attitude → Behavioral Intention	0.59 ***	Support		
	H3	Subjective Norms → Behavioral Intention	0.01	Not Support		
	H4	Perceived Behavioral Control → Behavioral Intention	0.48 ***	Support		
	H5	Moral Norms → Attitude	0.83 ***	Support		
Group 2: Price Sensitive Consumers	H1	Behavioral Intention → Stated Choice	0.36 ***	Support	$R^2_{choice} = 0.12$, $R^2_{BI} = 0.76$, $R^2_{Att} = 0.60$	
	H2	Attitude → Behavioral Intention	0.52 ***	Support		
	H3	Subjective Norms → Behavioral Intention	0.27 ***	Support		
	H4	Perceived Behavioral Control → Behavioral Intention	0.29 *	Support		
	H5	Moral Norms → Attitude	0.77 ***	Support		

*, **, ***; $p < 0.05, 0.01, 0.001$.

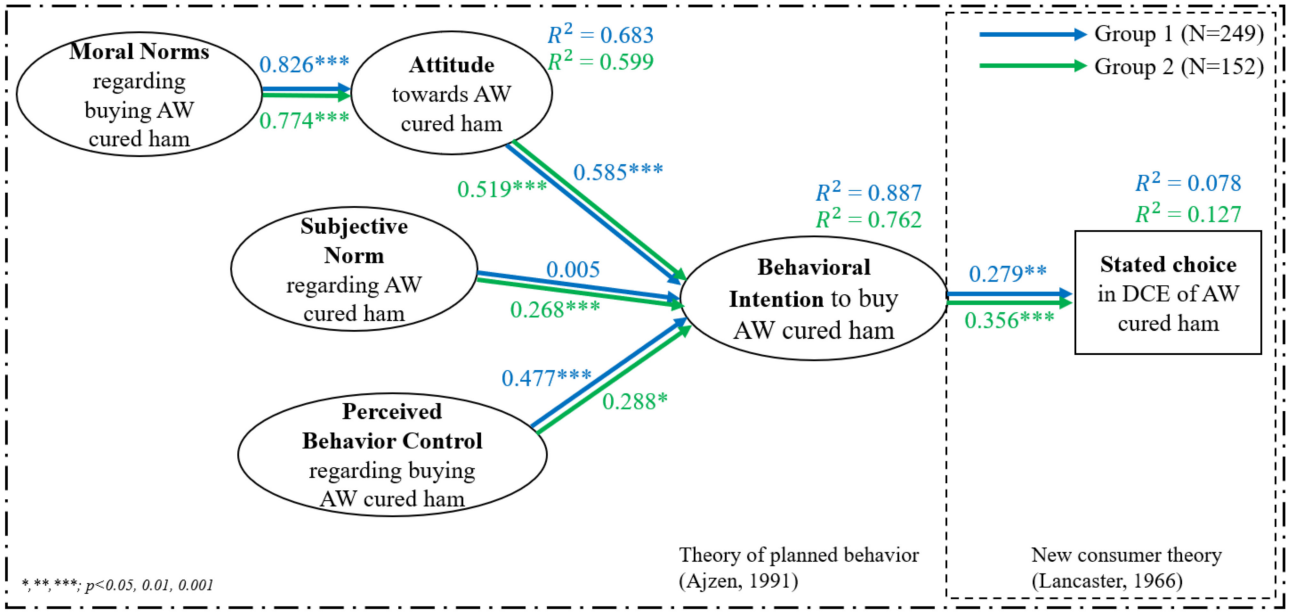

Figure 3. Results of the multi-group ICLV model for AW cured ham.

5. Discussion

The present study uses an extension of the TPB to investigate the role of a two-tier AW label in the purchasing decisions for German consumers for cured ham. More specifically, we test an extension of the TPB model and thus investigate the extent to which attitudes, social norms, perceived behavior control, and personal moral norms influence consumer choice by applying an Integrated Choice and Latent Variable (ICLV) model. The analysis of the DCE choice data reveals that two segments of consumers can be differentiated: *Product and Process Quality Supporters* and *Price Sensitive Consumers*. The first segment that accounts for 62% of all consumers attaches about equal weight to the three attributes of ham variety, FAW, and price, while the second segment (38% of the sample) is strongly price-oriented in its purchasing decisions with rather little interest in the product or process characteristics. Other studies support the finding of the existence of consumer heterogeneity regarding their purchase decision of meat products differentiated by FAW. Identified segments in those studies differ depending on the product and the country investigated and the number and kind of FAW as well as the competing attributes that were considered (e.g., Grunert et al. [85]; Eldesouky et al. [23]; Xu et al. [86]; Sonoda et al. [87]; de Jonge et al. [88]).

Focusing on the relevance of the different attribute levels, our findings indicate that consumers prefer PGI labelled products compared to generic products though some heterogeneity exists. More specifically, we show that consumers are strongly in favour of PGI labelled Schwarzwälder Schinken compared to the other varieties in both consumer segments. We also reveal that the *Product and Process Quality Supporters*, and thus the larger segment and the one that attaches value to ham variety in the first place, also favour the other PGI ham—Katenschinken—compared to generic ham though to a much lower extent compared to the PGI Schwarzwälder Schinken. Thus, for this segment, our results are in line with the findings from Aprile et al. [89], Caputo et al. [90], and Maza et al. [91] that PGI labeled ham is preferred by consumers compared to generic ham. However, our study goes beyond previous analysis in that we considered two different PGI labelled ham varieties and thus can show that it is not the PGI label per se that forms consumer preference for a ham. This result becomes even more obvious for the second cluster. *Price Sensitive Consumers*, though having a preference for PGI labeled Schwarzwälder Schinken, dislike the PGI labeled Katenschinken compared to the generic cured ham. Regarding the attribute levels for FAW, our results confirm previous findings that consumers prefer

animal products that carry an AW label compared to those without any label [87,92,93]. This holds for both consumer segments. More interestingly, we notice that the *Product and Process Quality Supporters*, and thus those consumers who attach value to the attribute FAW, hardly differentiate between a one-star and a two-star AW label. This is in line with the findings by Trudel and Cotte [94], who found that consumers value ethically produced T-shirts compared to a standard T-shirts but do not differentiate between different levels of ethical production. Thus, for this consumer group, increasing levels of FAW did not lead to higher partworth utilities and thus also did not lead to the willingness to pay higher price premiums. An explanation for our findings might be that we did not provide any additional explanation of the two-tier label. This is in line with a normal supermarket setting. Nevertheless, it might have resulted in a lack of knowledge regarding the differences between the labels and thus the issue of comprehensibility [33]. The comparably high value consumers assigned to the one-star AW label, however, could also be due to the compromise effect [95], which proposes that an alternative gains attractiveness when the situation becomes a compromise or a middle option. In contrast to the *Product and Process Quality Supporters*, the *Price Sensitive Consumers* have a higher WTP for the two-star AW label compared to the one-star AW label. However, in the market, this hardly plays any role, as they attach little importance to the attribute of FAW in the first place (the share of attribute importance equals 4.34%). Finally, turning to the price attribute levels, our results reveal a negative price elasticity for the demand for the consumers of both segments, though with a considerably higher price sensitivity in the second cluster.

To better understand the drivers of consumer purchase decisions, we investigated the extent to which behavioral constructs influence stated choices. Descriptive findings reveal significant differences between the *Price Sensitive Consumers* and the *Product and Process Quality Supporters* in that the latter have a more positive attitude, reveal higher levels of subjective as well as moral norms, perceive higher control over their behavior, and a higher level of intention to buy AW labeled cured ham. Thus, differences in the purchase decisions as revealed by the DCE is in fact mirrored in the behavioral constructs.

Based on the results of a multi-group ICLV model, we show that all but one of our hypotheses derived from the extended TPB model are confirmed. More specifically, consumer attitudes impact their intention to buy AW labeled cured ham and, consistent with previous findings, have the strongest influence on intention (e.g., Hoeksma et al. [96]; Rex et al. [97]; Jamieson et al. [29]; Spence et al. [98]). In addition, as predicted by the TPB and as shown in earlier AW related work [96], perceived behavioral control has a significant impact on consumer intention to buy cured ham characterized by higher FAW standards. Furthermore, our results regarding the relevance of moral norms in forming attitudes are confirmed for both consumer segments. Thus, in line with previous studies, we found that moral norms are a significant predictor of attitude [59,66,99,100]. While the findings regarding the relevance of attitude, perceived behavioral control, and moral norms hold for both consumer segments, subjective norms are only a significant predictor of intention for the *Price Sensitive Consumers* segment. This finding indicates that though the perceived social pressure to buy AW labeled cured ham is stronger in the segment of *Product and Process Quality Supporters*, it is not driving the behavioral intentions of the respondents. In this group, the latter is determined by their attitude and perceived behavioral control over the behavior. Finally, the analysis reveals that intention significantly influences behavior.

The ICLV model explains a high proportion of variance with respect to the constructs attitude and intention for both subgroups. In contrast, the explanatory power of the model with respect to stated choice is low. The latter might reflect the well-known attitude–behavior gap, which implies that individuals with a highly positive intention, here the intention to buy cured ham produced with higher animal welfare standards, might not necessarily make their purchasing decision accordingly [101–106]. Carrington et al. [101] suggest that there are a number of moderators and mediators influencing the relationship between intention and behavior exist. The situational factor could be one of them and would refer to the ham varieties and prices available in the shopping experiment in our

DCE [101]. A lack of understanding and comprehension of the labels [107–109] might explain why a positive attitude and intention with respect to buying cured ham with higher AW standards might not lead to the purchase of a product with an unknown AW label. Furthermore, social desirability bias, which implies that respondents feel social pressure to answer in a way that they perceive to be socially acceptable, is likely a larger issue with respect to the measurement of attitude and intention than with respect to the DCE results, which is somewhat closer to the situation in the grocery store [101].

Using a sample from across the German population, thus considering consumers with a large variety of socio-demographic and psychographic characteristics, increases the external validity of our findings and thus can be considered as a strength of the current study. Furthermore, combining DCE with LVM allows for more comprehensive insights. However, as with all empirical studies, some limitations must be acknowledged. First, a potential drawback of this study is the hypothetical nature of the choices. To reduce this problem, we used a cheap talk script [110], included an opt-out alternative, and visualized the options based on high resolution pictures. Nevertheless, we are aware that this does not completely eliminate bias [61]. Second, a further extension of the framework might be desirable given the public good characteristics of FAW [4]. In this respect, extension of the framework through the construct "perceived effectiveness" might be a promising avenue to follow, as consumers who feel that their purchase decisions have little impact on the overall well-being of farm animals might abstain from buying those products. Finally, extending the analysis by considering socio-demographics, purchase habits such as previous purchase experience regarding AW labeled products (e.g., Cao et al. [20]) as well as consumer understanding and comprehension of the investigated labels could provide additional insight into the understanding of consumer purchase behavior with respect to AW labeled products.

6. Conclusions

We derived and tested a model based on an extension of the TPB and combines DCE and a Latent Variable Model, thereby allowing for a better understanding of consumer choice processes with respect to animal welfare labeled meat products. Our results confirm a preference heterogeneity in our sample of 401 German consumers based on their stated purchase decisions, resulting in a larger group of *Product and Process Quality Supporters* who are interested in product and process qualities other than price and a smaller group of *Price Sensitive Consumers,* who almost exclusively focus on price.

The personal determinants of attitude, perceived behavioral control, and personal moral norms proved to be important in both consumer segments, and subjective norms were seen to be of additional importance in the *Price Sensitive Consumer* segment in the determination of consumer intention to buy and their stated choice with respect to AW labeled products. Thus, interventions that address those personal or social norms seem promising for stimulating the demand for AW labeled meat. Furthermore, as the two consumer segments considerably differ by personal and social determinants, those interventions are also promising because they could induce a reallocation of consumers from the latter into the former group.

The DCE findings indicate that the *Product and Process Quality Supporters* and thus those consumers who consider FAW in their purchase decisions perceived both of the AW labels similarly. Thus, they did not reward higher AW standards with a willingness to pay a higher premium. Further research is needed to better understand whether this lack of differentiation is due to a lack of comprehension of the AW labels, which could be overcome by promotional campaigns revealing the differences between the labels or whether other reasons lie behind this outcome.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Animal welfare standards for fattening pigs—Comparison of the 2-level Label "Für mehr Tierschutz" and legal requirements.

	Für Mehr Tierschutz 2-Star	**Für Mehr Tierschutz 1-Star**	**Legal Requirements**
Stock size	Maximum of 3000 fattening places	Maximum of 3000 fattening places	No requirements
Outdoor climate	Outdoor access	Access to different climate zones	No requirements
Stocking density (Pigs with a weight 50–110 kg)	1.5 m^2/animal	1.1 m^2/animal New enterprises 1.3 m^2/animal	0.75 m^2/animal
Castration of male piglets	With anaesthesia and analgesia	With anaesthesia and analgesia	Castration without anaesthesia is legally prohibited since 1 January 2021
Tail docking	Not allowed	Not allowed (Exceptional cases one third of the tail can be docked)	Allowed
Resting	(Straw) bedding on solid lying surface	Bedding on solid lying surface	No requirements
Light	Direct contact due to outdoor access	Contact with daylight through translucent side panels of the stable	Translucent area in the stable —Complemented by lighting schemes when required
Manipulable materials	Long-stalk straw or similar material	Straw or similar organic material	No requirements
Slatted floor	Only permitted in the activity area, not in the resting area	Requirements for new enterprises with outdoor climate stables: Slatted floors prohibited in the resting area	No requirements
Thermal regulation	Choice between indoor and outdoor area. Additional cooling options (e.g., water spraying) have to be available	Cooling options (e.g., water spraying) have to be available	No detailed requirements
Transportation to slaughterhouses	Maximum 200 km, and 4 h (exceptions possible)	Maximum 200 km and 4 h (exceptions possible)	Maximum 8 h

Source: Deutscher Tierschutzbund [60].

Appendix B

Table A2. Summary of fit measures for chosing the optimal number of segments.

Null Log-Likelihood = −3335.42				
Number of Groups	**Log-Likelihood**	**AIC**	**BIC**	**Chi-Square**
2	−2530.57	5087.15	5162.36	1609.70
3	−2371.02	4782.05	4897.76	1928.80
4	−2289.93	4633.86	4790.08	2090.99
5	−2247.43	4562.87	4759.58	2175.98

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