AGRICULTURAL AND FOOD SCIENCE

Agricultural and Food Science (2025) 34: 184–201
https://doi.org/10.23986/afsci.159890

Citizens' attitudes, concern and familiarity with animal production explaining the purchase intention for animal-welfare-labeled pork

Katriina Heinola[1], Janne Kaseva[2,] Terhi Latvala[1] and Jarkko Kristian Niemi[3]

[1] Natural Resources Institute, Latokartanonkaari 9, 00790 Helsinki, Finland

[2] Natural Resources Institute, Tietotie 4, 31600 Jokioinen, Finland

[3] Natural Resources Institute, Kampusranta 9, 60320 Seinäjoki, Finland

e-mail: katriina.heinola@luke.fi

This study uses a modified Theory of Planned Behavior (TPB) to explore how the ethical concern and familiarity with animal farming as proxies for self-identity and consumption strategies of 'boycotting' and 'buycotting', influence citizens' intentions for purchasing and paying a premium for welfare-labeled pork. A survey was conducted with 400 Finnish respondents, and structural equation modeling was used to analyze the relationships within TPB constructs, including above-mentioned modifications of self-identity and consumption strategies, across different socioeconomic subgroups and the full sample. The findings indicate that attitudes toward farm animal welfare, ethical concerns, and familiarity with animal farming are the strongest predictors of purchasing intentions for welfare-labeled pork. While most respondents expressed a willingness to pay more for AW-labeled products, the role of boycotting emerged as more significant than buycotting, particularly among women and those sharing grocery shopping responsibilities. Social norms and perceived behavioral control showed limited influence in the full sample but were significant for specific groups, such as higher-educated consumers and middle-aged respondents. These results provide valuable insights into consumer motivations, particularly the role of self-identification with ethical concerns, and offer strategic opportunities for marketers and policymakers to promote ethical consumption and strengthen the market potential of welfare-labeled products.

Key words: etcal consumption, theory of planned behavior (TPB), boycotting, buycotting

Introduction

European citizens are concerned about animal welfare (AW) (European Commission 2016). In response, voluntary farm animal welfare schemes have been developed as market-based solutions to improve AW and increase awareness of welfare practices, giving consumers an opportunity to support welfare improvements by paying a premium and choosing products which verifiably pay attention to AW. Sustainability increasingly affects consumers' choices, along with products' price, brand, and physical quality attributes. In Finland, public debate around farm animal welfare has been particularly active, especially in relation to pig farming. Although the Animal Welfare Act (693/2023) was revised recently, concerns such as the use of pain relief during castration and the confinement of sows had already sparked national discussion well before the legislative update. These developments reflect a broader societal shift toward ethically motivated consumption and highlight the relevance of understanding consumer behavior in the Finnish context.

An attitude towards a consumption-related issue can manifest in various ways, such as protesting, supporting, or reacting for or against specific practices. In the context of animal welfare, some consumers engage in anti-consumption (e.g., vegetarians avoiding animal products), while others support AW by purchasing high-welfare-labeled products or demanding their availability. These behaviors reflect two distinct ethical consumption strategies: boycotting (avoiding unethical products) and buycotting (actively supporting ethical alternatives). Although studies have focused on behavior for and against consumption, "buycotting" as a consumption strategy has been addressed rarely (Malek et al. 2018, Niva and Jallinoja 2018, Armstrong Soule and Sekhon 2019). Hence, this study contributes to the literature by explicitly examining both boycotting and buycotting as strategies for promoting for farm animal welfare.

Meta-analyses show that consumers are generally willing to pay a premium for sustainable food products and improved farm animal welfare, which is influenced by demographic factors, region, information provision, and product attributes (Lagerkvist and Hess 2011, Clark et al. 2017, Li and Kallas 2021). Stated preference methods assess

Received 17 March 2025 / Accepted 12 September 2025
The Scientific Agricultural Society of Finland

willingness to pay in hypothetical contexts (Johnston et al. 2017). Recent studies further support these findings across different markets: consumers in Europe and China have shown a willingness to pay a premium for animal welfare-labelled pork, although preferences vary by country and consumer segment (Denver et al. 2023, Liang et al. 2023, Gross et al. 2021). More broadly, Gorton et al. (2023) found that animal welfare labels and cause-related marketing can influence consumer preferences and WTP across meat products, though responses vary by consumer segment.

Extended models of Theory of Planned Behavior (TPB) have been widely used to explain ethical consumption, highlighting the role of attitudes, moral values serve and social norms in shaping behavioral intentions (Yeh and Hartmann 2021, Harrison 2025). Trust in labels, perceived behavioral control, and product availability also influence ethical choices, while barriers such as price sensitivity and lack of clear information can hinder action (Gracia 2013, Jamieson et al. 2015, Washio et al. 2020). Furthermore, building on the TPB framework, Hoeksma et al. (2017) integrated the Value-Belief-Norm theory, emphasizing the role of personal norms in motivating high AW meat purchases. Chang and Chen (2022) introduced the concept of moral affection, which strengthens positive attitudes toward AW-labelled dairy products. Consumers' awareness of AW attributes and their familiarity with animal farming have been shown to increase the likelihood of purchasing labeled products (Clark et al. 2016, Slack et al. 2023), yet information gaps remain a major obstacle (Toma et al. 2012, Reczek et al. 2022).

Understanding consumers' concern for AW and the psychological constructs that determine the choice of high AW products is essential for the development of the market for AW-labeled products. While previous research has explored ethical motivations for and against consumption, the dual role of boycotting and buycotting in shaping purchase intentions remains underexplored. This study addresses this gap by applying an extended TPB framework and structural equation modeling to examine six hypotheses related to attitudes, subjective norms, perceived behavioral control, ethical concern, and familiarity with animal farming—representing self-identity and the motivation to act for or against animal welfare. Furthermore, understanding how consumers identify with a specific type of ethical consumer can provide valuable insights for the marketing of high AW products, as this identity aligns with their self-concept and ethical principles.

Theoretical framework: Theory of Planned Behavior

Core Determinants and Extensions of the Theory of Planned Behavior

The TPB is an extension of the theory of reasoned action developed by Ajzen (1985). The purpose of the theory is to understand and predict motivational influences on behavior and to explain why a person engages in a behavior (Ajzen 1985). The basic form of the theory involved three independent determinants: attitude towards an intended behavior; subjective norm; and perceived behavioral control. Previous studies have introduced several modifications to the theory of planned behavior, such as self-identity (Gracia 2013), moral and personal norms (Hoeksma et al. 2017, Shin et al. 2018, Kos Koklic et al. 2019, Liu et al. 2020), self-efficacy (Nystrand and Olsen 2020) and previous experience (Gracia 2013). These elements can overlap. Hoeksma (et al. 2017) recommended incorporating personal norms into the theory, as personal norms were found to explain intentions most effectively. Gracia (2013) introduced the concept of self-identification with ethical issues related to animal welfare, while Carfora et al. (2019) explored the 'green consumer' identity and emphasized the need for further research in this area.

Next, examined determinants of intended behavior, six hypotheses that were used to test them and reasoning related to the determinants are explained briefly. The first determinant, *attitude* towards an intended behavior, refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior. If a person considers that behavior has desirable consequences, a favorable attitude towards an intended behavior will be formed. This study examines a broader conceptualization, where consumers' general attitude toward pig welfare and AW-labelled-products is considered a potential associated with the intention to purchase AW-labeled pork. Prior research has shown that general ethical and sustainability-related attitudes, such as concern for animal welfare, are positively associated with consumers' intentions and behaviors related to ethical food consumption (Vermeir and Verbeke 2006). Although such attitudes are broader in scope than specific behavioral intentions, they have been found to be significant correlates of both actual and intended purchasing of ethically produced food products, including animal-friendly options.

Since AW-labeled pork is not available in Finland, consumers have limited opportunities to form attitudes specifically toward its purchase. In this context, broader attitudes toward pig welfare may serve as a key factor in

shaping hypothetical purchase intentions, making them a relevant proxy for interest in AW-labeled products. This approach is further supported by Schwartz's (1992) theory of basic human values, which shows that broad values such as universalism—concern for the welfare of others—can shape attitudes and intentions, making them relevant predictors of ethical consumption behavior. Consumers' attitude toward animal welfare and animal welfare-labelled has a positive impact on purchasing and paying intention. The first hypothesis (H) was therefore as follows:

Hypothesis 1 (H1). *Citizens' positive attitude toward animal welfare is associated with a stronger intention to purchase AW-labeled pork.*

The second determinant, *subjective norm,* is a measure of the perceived degree of pressure from external sources to perform the behavior of interest. The subjective norm includes the influence of family members or friends, other external persons, and even social media influence. The third determinant, *perceived behavioral control* (PBC), indicates the ease with which a consumer can consume a certain product, or whether its consumption is difficult. A consumer must have the necessary resources such as time, money, understanding, and availability. Hence, based on what is expected by TPB, and in accordance with the previous literature, the following research hypotheses were defined:

Hypothesis 2 (H2). *Higher subjective norm is associated with a stronger intention to purchase AW-labeled pork.*

Hypothesis 3 (H3*). Higher perceived behavioral control over purchasing AW-labeled products is associated with a stronger intention purchase AW-labeled pork*

Concern and familiarity with animal farming measuring self-identity

Self-identity refers to the process of asking questions such as "Who am I?" and " Who do I want to be?". In the context of consuming high animal welfare (high AW) products, self-identity relates to the extent to which an individual perceives themselves as someone who engages in actions that promote animal welfare (Holt et al. 2018). Consumption can symbolically reflect a person's unique values (Catellani 2015). Concerns for animal welfare can thus serve as an indicator of self-identity, especially in contexts where products labeled with higher animal welfare standards are not yet widely available (such as in Finland). Environmental identity, understood as a multidimensional construct, includes a sense of connection to nature and the belief that nature is part of the self (Clayton and Opotow 2003). For individuals with a strong environmental identity, concerns for the environment become more self-focused rather than altruistic. Similarly, concerns for animal welfare can be viewed as an extension of this self-identity. The effects of self-identity are shaped by past experiences and knowledge about the subjects involved in the behavior, as well as the degree of ethical concern (Van der Werff et al. 2014). Since purchasing high animal welfare products is an ethical decision, driven not solely by self-interest, it is important to include a measure of ethical and moral concerns (Gracia 2013). Studies have shown that the predictive power of self-identity and ethical concern on ethical purchasing intentions and environmental behavior is significant (Gracia 2013, Lareya 2017, Carfora et al. 2019, Chan et al. 2020). Therefore, in this study, the level of concern for and familiarity with animal production (based on experience and subjective knowledge) were used as measures of self-identity. Accordingly, the fourth and fifth research hypotheses were formulated as follows*:*

Hypothesis 4 (H4). *Citizens' higher level of ethical concern for production animals is associated with a stronger intention to purchase AW-labeled pork.*

Hypothesis 5 (H5). *Citizens´ higher level of familiarity with production animals is associated with a stronger intention purchase AW-labeled pork.*

Consumption strategies: Buycotting and boycotting for ethical issues

It is each consumer's voluntary choice to either completely avoid certain foods or just limit the consumption of specific products or brands. This phenomenon is called anti-consumption, the opposite of consumption (Kashiv 2019). In addition, consumers' food consumption can be defined as either favoring their buying decisions (buycotting) or not buying a specific food, or brand (boycotting, Hoffman and Hutter 2012). In this context, buycotting and boycotting offer new dimensions to TPB by reflecting not only consumers' attitudes and social norms, but also their desire to influence market practices based on ethical, or animal welfare concerns. Consumer responses and protests have been studied in relation to especially corporate irresponsible behavior (van den Broek et al. 2017) and through boycotts (Niva and Jallinoja 2018). In relation to food consumption, animal and human health along

with environmental and religious issues are the most common reason for protesting and boycotting (Hirschman and Touzani 2016, Malek et al. 2018, Novo Vázquez and García-Espejo 2021). A behavioral response is revealed by complaining towards a company or towards a market by leaving. A non-behavioral response leads to either inactivity or a change of attitude, which leads to either a repeat of the purchase or behavioral loyalty (Villacé-Molinero et al. 2016). Thomas et al. (2019) found three profiles for expressing their support for animal welfare: a group, which occasionally limited animal products (ambivalent omnivores); a lifestyle activist group limiting animal products and engaging in political action; and radical vegetarian groups. This behavior highlights the role of ethics in consumption, especially regarding animal welfare products, thus providing a deeper understanding of consumer intentions and actions. The consumer can implement different consumption strategies either in public by belonging to a particular group or by following an individual approach to influencing (silent statement, Leipämaa-Leskinen et al. 2017). Because consumption strategies involve deliberate behavioral choices, they can directly influence purchasing decisions without necessarily passing through attitudinal change first. Animal welfare and AW-labeled products can be promoted by purchasing them, or animal welfare-related topics can be discussed in public channels or with friends. The ambition of this study was to involve a practical element in the TPB and offer a novel explanation for purchase intention: If a consumer tends to react and speak out loud, can this indicate a predisposition to purchasing behavior for AW-labeled products? In line with this, the last hypothesis was defined as follows:

Hypothesis 6 (H6). *Consumption strategy is associated with* the *intention to purchase AW-labeled pork. The strategy of boycotting AW-labeled products is negatively associated with the intention to purchase AW-labeled pork, whereas the strategy of buycotting is positively associated with it.*

In contrast with the classical economic theory, TPB is not based on rational choices. Buying intention for AW has been studied in the frame of TPB only in a few studies (Gracia 2013, Hoeksma et al. 2017) and more generally related to ethical consumption (e.g. Scalco et al. 2017). In relation to the intention to buy, the most powerful elements have been self-identification with ethical issues and concern (Gracia 2013), attitude and self-identity (Lareya 2017), knowledge of AW (Liang et al. 2022), and support for AW self-rated knowledge and level of concern for animal welfare (Temple and Manteca 2020). The dependent variable or the construct being explained is the behavioral intention. The intention to purchase was examined by the integrated question of buying intention and intention to pay for AW-labelled pork. The intention exists, if the price is reasonable for the consumer. Previous studies provide examples of using willingness to pay to predict buying behavior (Lopez-Mosquerra et al. 2014). Figure 1 shows the elements of extension of the TPB that were used in this study.

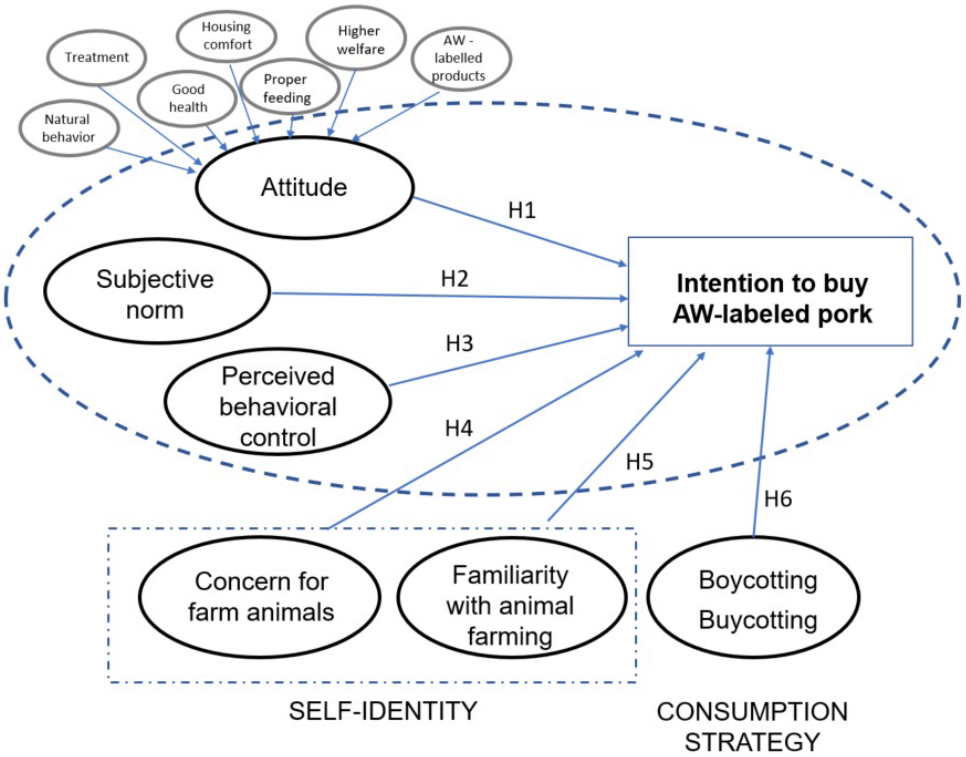

Fig. 1. Extended Theory of Planned Behavior applied in this study, including additional components of ethical concern and connections with animal farming, representing the self-identity and consumption strategies of boycotting and buycotting animal welfare (AW). The factor of attitude was also explained by seven factors related to the basic needs of animals such as proper feeding, comfort in housing, good health, natural behavior, appropriate treatment, higher pig welfare and attitude towards buying AW-labelled products.

Material and methods

Survey procedure and experimental design

The relationships between the TBP constructs were investigated among members of the Finnish public through structural equation modeling. The data were a random sample representing the population of Finland (Table 1). The data is available as supplementary material (Appendix 1). The data were collected via an online survey by the market research agency Makery Ltd. between 5 and 16 October 2018 and delivered to the researchers in an anonymous format. The market research agency invited its online panel members to voluntarily respond to the survey. Before starting the survey, the purpose of the study, intended use of data, data privacy and confidentiality were explained to the respondents. The participants were given an opportunity to ask questions before they decided whether to respond to the survey. Based on the evaluation of research instrument and guidelines of National Advisory Board on Research Ethics (2009), it was concluded that an ethical approval was not needed. The respondents were recruited from an existing online panel via an email invitation that the market research company sent to their pre-registered panel members. To ensure the validity and clarity of questions, the survey was pre-tested before data collection first by a group of researchers not involved in the survey, then by experts of a stakeholder advisory group and finally by 50 citizens that were recruited by a market research company

In the questionnaire (Appendix 2), opinions about the development and current level of animal welfare and the attitude toward increased animal welfare requirements were ascertained. The questions pertaining to the attitude toward purchasing and the subjective norm and perceived control behavior-related statements were then presented, followed by consumption strategies. Items on the questionnaire were mainly measured on 5-point Likert scales. Unless otherwise stated, the items were statements and respondents could react by indicating their agreement on a scale ranging from “completely disagree” to “completely agree.” Finally, the demographic variables and contact with animal production were ascertained.

The model was examined individually for certain sociodemographic groups, including gender, age and income groups, place of residence, occupational status, and responsibility for household´s grocery shopping, which may reflect individual autonomy in food-related decisions and thus influence WTP. These investigations were selected based on previous studies which suggested that the WTP declines with a person’s age and increases with income and education (Lagerkvist and Hess 2011, Clark et al. 2017) and that rural residents may express less concern for animal welfare (Clark et al. 2016). Finally, the sub-group of AW-labelled product buyers only was tested.

Sample

The sample was representative of adult population of Finland. The sample was nationally representative of the target group by gender, age and region. In total, 400 respondents participated in the survey. In Table 1, several variables describing the respondents’ socioeconomic status are shown. Over one-fourth (26%) of respondents were 18–34 years old, whereas one-third were 35–54 years old. The largest age cohort, comprising 41% of respondents, was those aged 55 and older. More than half the respondents lived in rural areas outside Uusimaa province, nearly one-fourth of respondents lived in the Helsinki capital area, and almost one fifth lived in urban municipalities and other Uusimaa regions excluding the Helsinki capital area. About half of the respondents had completed secondary education, and 36% had a university education. The annual average income per adult in the household was maximum €20 000 for 34% of the respondents, €30 000–€40 000 for 36%, and €40 000 or more for 13% of respondents. Half of the respondents worked either full-time, part-time, or as entrepreneurs, whereas one third were retired and almost one tenth were students.

While the sample was nationally representative of the target group by gender, age and region, representativeness was not tested for other aspects of the sample. Descriptive information in Table 1 suggests that there are no significant differences in most cases between the sample and the population of Finland. The sample likely has a bit too low number of respondents with basic education and a bit too high share of respondents with secondary education. However, the definition of education in our survey was not compatible with the one used in the official statistics. Representativeness of our sample regarding income level cannot be tested, because 17% of respondents did not disclose their income level.

Table 1. Descriptive statistics of the sample data compared to the Finnish population

Variable	Sample %	Population of Finland %
Female	51	51[1]
Male	49	49
Age classes, years: 18–34	26	25[1]
35–54	33	30
55 or older	41	44
Place of residence: Helsinki metropolitan area[2]	24	21[3]
Urban municipalities (at least 15 000 inhabitants) and other Uusimaa[4] excluding[2)]	58	58
Peri-urban and rural municipalities	18	21
Education: Basic education	11	23[5]
Secondary education	53	43
Higher than secondary education	36	34
Annual income per adult in the household: <20k	34	40[6]
20–40k	36	37
>40k	13	23
No information provided	17	
Occupational status: Employed	50	53[7]
Retiree	32	32
Student	9	5
Other than employed, retiree or a student	9	10

[1] Statistics Finland, Population structure. https://www.stat.fi/en/statistics/vaerak; [2] Helsinki Espoo, Vantaa, Kauniainen; [3] Statistics Finland. The key figures in the municipalities. https://www.stat.fi/tup/alue/kuntienavainluvut.html#?year=2023&active1=SSS; [4] Excluding Helsinki, Espoo, Vantaa, Kauniainen; [5] Statistics Finland. Education. https://www.stat.fi/til/kou_en.html; [6] Statistics Finland. Incomes https://www.stat.fi/tup/vaesto_tulot/index.html; [7] Statistics Finland. The main activity of the population on a monthly basis https://www.stat.fi/tup/kokeelliset-tilastot/vaeston-paaasiallinen-toiminta-kuukausittain/index.html

Measurement of constructs of extended TPB

The core components of the Theory of Planned Behavior (TPB) were integrated into the study framework alongside self-identity-related factors, including ethical concerns about animal welfare (AW) and familiarity with animal farming. Additionally, consumption strategies of buycotting and boycotting were examined. AW-labeled pork sirloin was chosen as the product. Pork is the most consumed meat in Finland. In 2017, the total meat consumption was 81.0 kilograms per person per year, including 19.4 kg of beef and veal, 33.4 kg of pork, and 24.9 kg of poultry meat (Luke 2024). In Finland, the Animal Welfare Act (693/2023) was revised in 2023, but welfare issues in pig farming, such as the use of pain relief, castration, and the confinement of sows, had sparked discussions years before the adoption of the new legislation. During the past years, animal welfare labelling initiatives have been introduced for pork in European countries such as Germany, Denmark, the Netherlands and Belgium (Euractive 2022), but not in Finland. Statements related to the elements of theory of planned behavior concerned AW-products in general, the lack of AW-labelled meat product in Finland and the need of having general view of AW, whereas the product was defined as pork sirloin. Furthermore, the intention was tested by the integrated question of buying and paying to highlight the consumers´ intention to pay for the market- based initiative. Based on previous studies, willingness to pay has predicted purchase intentions (Ayadi and Lapeyre 2014, Agyeman and Badugu 2017).

Attitudes toward AW were measured by asking about the importance of farm animal welfare and welfare indicators measured by Welfare Quality (WQ 2009) system (Table 2), the importance of additional welfare criteria, and by views about purchasing animal welfare products compared to conventional products (Table 2).

Table 2. The means and standard deviations of variables related to the components of attitudes towards AW measures measured by five-point Likert scale. Internal consistencies of the factors are measured by Cronbach's alpha (Alpha), and converged validity by average variance extracted (AVE) and composite reliability (CR)

Variable	Symbol	Mean	S.d.	Alpha	AVE	CR	Source
Attitude towards animal welfare indicators *(1=not at all important, …, 5=very important.)*							Welfare Quality® 2009
The animal does not experience prolonged hunger or thirst	Feed_1	4.63	(0.680)	0.92	0.84	0.90	
The animal is fed species-specific and health-promoting feed	Feed_2	4.58	(0.681)				
The animal has a comfortable place to rest	Comf_1	4.40	(0.759)	0.94	0.94	0.93	
The animal is kept in comfortable temperature conditions	Comf_2	4.45	(0.720)				
Ease of movement	Comf_3	4.50	(0.721)				
Freedom from injuries	Health_1	4.56	(0.694)	0.89	0.75	0.87	
Freedom from diseases	Health_2	4.59	(0.669)				
Freedom from the pain of mutilation or treatment	Health_3	4.46	(0.758)				
Possibility for species-specific eating behavior and feed (e.g., pasture)	Beh_1	4.43	(0.767)	0.89	0.73	0.86	
Possibility for social interaction	Beh_2	4.31	(0.818)				
Possibility for nursing and taking care of offspring	Beh_3	4.28	(0.906)				
A good relationship between the animal and animal keeper	Trea_1	4.30	(0.844)	0.90	0.83	0.89	
Possibility to feel positive emotions	Trea_2	4.30	(0.863)				
Attitude towards higher animal welfare measures and index *(1=not at all important, …, 5=very important.)*							
Additional space	Wel_1	4.05	(0.873)	0.94	0.66	0.91	
Free farrowing	Wel_2	3.96	(0.921)				
Free gestation	Wel_3	3.79	(0.954)				
Outdoor access	Wel_4	3.97	(1.00)				
High-quality rooting material available	Wel_5	3.99	(0.91)				
Handling training for animal handlers	Wel_6	4.27	(0.85)				
Preventive healthcare	Wel_7	4.23	(0.83)				
Welfare index	Wel_8	3.99	(0.90)				
Attitude towards purchasing							modified from, Hoeksma et al. (2017)
I perceive buying animal-welfare-labeled products as (*1=very unpleasant, …, 5=very pleasant)*	Att_1	3.99	0.88	0.95	0.86	0.94	
I perceive buying animal-welfare-labeled products as (*1=very bad, …, 5=very good)*	Att_2	4.02	0.87				
I perceive buying animal-welfare-labeled products as (*1=very negative, …, 5=very positive)*	Att_3	4.06	0.87				

Table 3. The means and standard deviations of variables related to perceived behavioral control and subjective norm measured by five-point Likert scale. Internal consistencies of the factors are measured by Cronbach's alpha (Alpha), and converged validity by average variance extracted (AVE) and composite reliability (CR). Variables that were not included in the final model are in italics.

Variable	Symbol	Mean	S.d.	Alpha	AVE	CR	Source
Perceived behavioural control *(1=Strongly disagree, …, 5=Strongly agree)*							
The decision to buy AW-labeled products is entirely up to me	PBC_1	4.04	0.97	0.68	0.43	0.49	Gracia (2013)
I don't think I will notice the AW-labeled products in the store	PBC_2	2.71	1.11				
I believe that I understand how AW-labeled products differ from conventional products	PBC_3	3.89	0.91				Kettunen (2016)
I believe that purchasing AW-labeled products will improve animal welfare	PBC_4	3.84	0.96				Lopez-Mosquera et al. (2014)
I believe that AW-labeled products are too expensive for me to buy	PBC_5	2.95	1.10				modified from Gracia (2013)
I would not travel any further than to my current grocery store to get AW-labeled products	PBC_6	3.63	1.09				
Subjective norm *(1=Strongly disagree, …, 5=Strongly agree)*							
My family members think I should buy AW-labeled products	SN_1	3.20	1.16	0.91	0.83	0.48	
People important to me think I should buy AW-labeled products	SN_2	3.10	1.13				Gracia (2013),
I don't consider other people's opinions when I make purchasing decisions related to AW-labeled products	SN_3	3.73	1.20				Modified from Gracia (2013)

Statements measuring PBC and the social norm (Table 3) as well as the statements related to familiarity with animal farming and ethical concerns (Table 4) were adopted and modified from the previous literature. To test boycotting, measurements related to the frequency of avoiding and complaining about products because of animal welfare issues were specified. Buycotting was measured by the frequency of actions supporting AW-labeled products.

The intention to purchase AW-labeled pork was examined with question after defining the AW label measures in the AW label: "*Would you be interested in buying AW-labeled pork sirloin produced in Finland? If yes, how much more expensive could the product be than conventional pork (about €8.50 per kilogram)?"* Eight options ("I would not buy", 0%, 10%, 25%, 40%, 50%, 75%, or 100%) were given. An actual price with the percentage increase was provided to make the question comprehensible. This approach was chosen to enhance respondent comprehension and reduce hypothetical bias by presenting realistic and concrete price intervals. The response variable of WTP was formed by measuring WTP a scale of 0–7 (from "I would not buy" to 100%). Purchase intention reflects the likelihood of buying AW-labeled pork, while WTP measures the premium consumers are willing to pay for it. WTP was elicited using a structured choice format where respondents selected from predefined percentage-based price increments over conventional pork (€8.50 kg^{-1}). This categorical approach allows for capturing decision thresholds rather than assuming a continuous valuation process. While WTP is often measured as a continuous monetary value in economic valuation studies, this study primarily follows the framework of the TPB, focusing on the psychological and behavioral determinants influencing WTP decisions. The elicitation method aligns with this perspective by assessing respondents' attitudes, PBC, soscial norm, self-identity and consumption strategies in relation to their willingness to pay, rather than solely emphasizing financial valuation. This distinction is important, as the study aims to understand why individuals express a willingness to pay more for AW-labeled pork, rather than just quantifying their price sensitivity. The group of non-buyers was included in the model to provide the citizen´s point of view, where the boycotting may occur. However, a specification for the group of AW-labelled product buyers only (paying 0–100 % more) was also tested.

Table 4. The means and standard deviations of variables related to perceived behavioral control and subjective norm. Internal consistencies of the factors are measured by Cronbach's alpha (Alpha), and converged validity by average variance extracted (AVE) and composite reliability (CR). Variables that were not included in the final model are in italics.

Variable	Symbol	Mean	S.d.	Alpha	AVE	CR	Source
Self-identity *Familiarity and connections with animal farming and subjective knowledge.*							Gracia (2013)
How much do you consider that you know about animal production? *(Likert scale, 1=None, ... 5=A lot)*	Fam_1	2.75	0.84	0.69	0.42	0.48	
Do you have connections with production animals through animal farms? *No, undirect, direct (45%, 40% and 16%)*[1]	Fam_2	–	–				
Have you visited a poultry, pig, cattle or sheep farm in the past five years? *No, yes (68% and 32%)*[1]	Fam_3	–	–				
Ethical concern (1= Strongly disagree, 5=Strongly agree)							
If AW-labeled products were available, I would avoid buying conventionally produced foods for ethical reasons	Eth_1	3.40	1.02	0.88	0.72	0.85	Modified from Clark et al. (2019)
I am concerned about the welfare of farm animals, and it will affect the buying decision	Eth_2	3.59	1.02				
I would buy welfare-labeled products if livestock production focused more on animal welfare	Eth_3	3.74	1.02				
Consumption strategies: Boycott and Buycott In the past 12 months, have you done any of the following *(1=Always, 2= Often, 3= Sometimes, 4=Rarely, 5=Never)*							
Avoided certain foods for animal welfare reasons	Boyc_1	3.63	1.24	0.82	0.56	0.74	
Complained to a seller about a product or brand for sale because it conflicted with animal welfare	Boyc_2	4.67	0.76				
Deliberately did not buy a particular brand because you wanted to oppose it for animal welfare reasons	Boyc_3	3.86	1.19				
Participated in a discussion or responded to a peer or community group related to food with a common goal, including the improvement of animal welfare	Buyc_1	4.19	1.10				
Bought an AW-labeled product to support animal welfare (e.g., free-range cow's milk, organic label)	Buyc_2	3.42	1.20				

[1] Percentages for each class are presented for the variables measured on a different scale.

Statistical analysis

We applied structural equation modeling (SEM), which enables the simultaneous analysis of multiple latent constructs and their interrelationships, to analyze the data within the TPB approach. The willingness to pay more for an animal welfare labelled product (WTP) was explained by using theory-based latent factors. These included attitudes toward animals' additional welfare (WELFARE), the importance of elements of animal welfare (FEED, COMFORTABLE, HEALTH, BEHAVIOR, and TREATMENT), attitudes towards an animal welfare label (ATTITUDE), perceived behavioral control (PBC), subjective norms (NORMS), animal-related experiences (FAMILIARITY), ethical concern (ETHICS), and engagement in boycotting and buycotting (BOYCOTT, BUYCOTT). These twelve factors were formed based on respondents' evaluations of questionnaire statements. The ATTITUDE construct was used as a mediator between the six welfare-related constructs and the willingness to pay more for AW-labeled products. Although three factors consisted only of two statements, they were retained due to their high factor loadings and theoretical relevance.

Before conducting the SEM, we assessed the suitability of the data for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy ranged from 0.64 to 0.93 for factors having at least three variables, indicating adequacy for factor analysis. Internal consistency was evaluated using Cronbach's alpha, with values ranging from 0.69 to 0.95. Converged validity was assessed using Average Variances Extracted (AVE), which showed acceptable values for all factors, except for PBC and BOYC which values of 0.43 were slightly below the threshold of 0.5. Similarly, composite reliabilities (CR) of the factors PBC and BOYC were 0.49, which was below the recommended threshold of 0.7. Discriminant validity of the six factors predicting WTP was evaluated using the heterotrait-to-monotrait ratios (HTMTs), which ranged from 0.06 to 0.77, well below the conservative threshold of 0.85 (Henseler 2021), supporting satisfactory discriminant validity. For the six animal welfare (AW) factors explaining ATT, four HTMT values ranged between 0.85–0.89, slightly above the conservative threshold but still below the liberal cutoff of 0.90.

All statements were measured using the 5-point Likert scale, except the statements FAM_2 and FAM_3, which were categorical with three and two response options, respectively. These variables were standardized prior to analysis. Given the ordinal nature of the data and minor deviations from multivariate normality (e.g., Mardia´s relative multivariate kurtosis was 1.24), we used the maximum likelihood estimation method with the Satorra-Bentler correction (MLSB) The MLSB method was also chosen to address potential the ceiling effect of the attitude component. Four of those statements (Feed_1, Feed_2, Health_1 and Health_2) had a kurtosis value above three, which can be seen as problematic for the multinormality assumption (Westfall and Henning 2013).

Covariances between all exogenous variables were estimated. The model was not improved based on the modification indices. The goodness-of-fit of the models was evaluated with three criteria: the Comparative Fit Index (CFI), the Standardized Root Mean Square Residual (SRMR,) and the Root Mean Square Error of Approximation (RMSEA). According to Hu and Bentler (1999), CFI ≥ 0.90 can be considered an indicator of a reasonable fit, and CFI ≥ 0.95 a good fit, while RMSEA and SRMR ≤ 0.08 can be considered indicators of a reasonable fit, and RMSEA ≤ 0.05 a good fit.

Finally, the SEM model was estimated separately for key sociodemographic groups, including gender, age and income groups, place of residence, occupational status, responsibility for household´s grocery shopping, and a subgroup that only purchased AW-labelled product. This approach allowed us to explore whether the structural relationships between the latent constructs differed across these multiple demographic groups. All analyses were conducted using the CORR, MEANS and CALIS procedures in SAS Enterprise Guide 7.15 (SAS Institute, Inc., Cary, NC, USA).

Results

WTP for AW-labeled pork

The consumer price for pork in Finnish supermarkets at the time of the survey (September 2018) was about €8.50 per kilogram. One tenth of the respondents were unwilling to buy AW-labeled pork at all. In addition, about the same proportion was unwilling to pay a premium for AW-labeled pork (Fig. 2). Consequently, 21% of respondents indicated that they would not pay any premium. Altogether 38% of respondents were willing to pay a 10% premium on top of the current price, resulting in a price of €9.40 per kg; 27% were willing to pay a premium of 25%. The remaining 14% of respondents were willing to pay at least a 40% premium on top of the current price. Willingness to pay for AW-labeled pork in different subgroups of the sample are presented in Appendix 3. For respondents

willing to pay a premium for AW-labeled pork (79%), the mean willingness to pay (WTP) was €10.17 per kilogram, which represents approximately a 20% increase over the base price of conventional pork (€8.50 kg^{-1}). The median WTP was €9.40, and the standard deviation was €1.40, indicating some variability among respondents. The 95% confidence interval for the mean was €10.02–10.31 (95% CI).

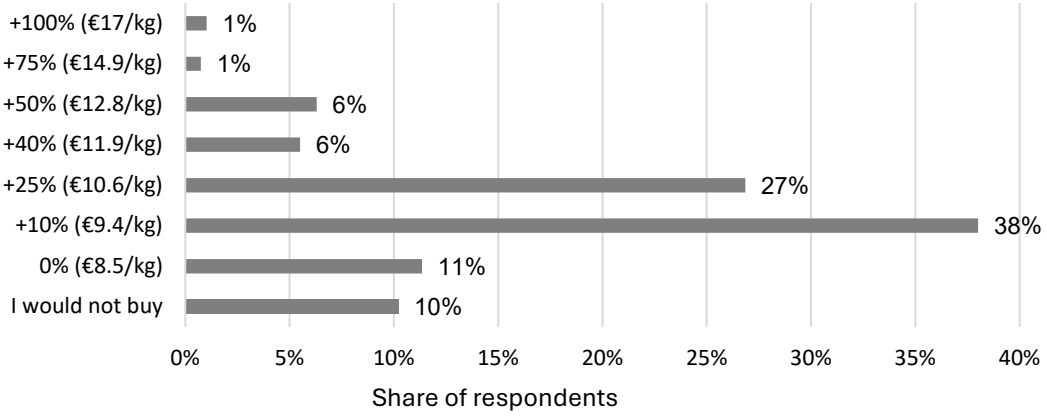

Fig. 2. Willingness to pay a premium for AW-labeled pork

Figure 3 presents a Kaplan–Meier survival curve for WTP, which illustrates the cumulative proportion of respondents willing to pay at or above different price levels. The curve provides an intuitive overview of how willingness to pay declines as price increases, highlighting the heterogeneity in consumer preferences.

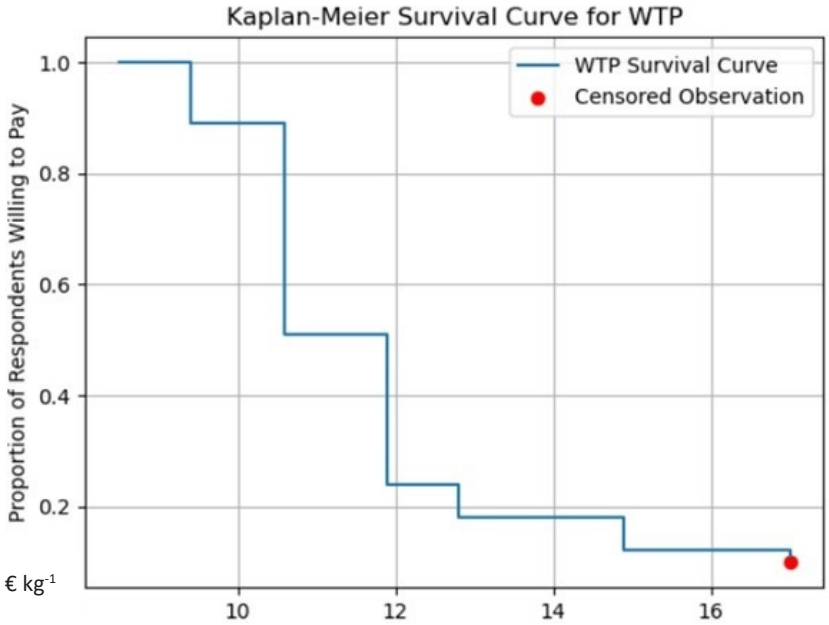

Fig. 3. Kaplan–Meier Survival Curve for Willingness to Pay (€ kg^{-1}) for AW-Labeled Pork

Factors explaining purchase intention: the SEM approach

The purchase intention to buy AW-labeled pork was explained using the SEM. After applying the TPB, purchase intention was predicted by the subjective norm, attitude, perceived behavioral control, self-identity with concern for AW, connections with animal farming, and finally, by consumption strategies of boycotting and buycotting. The R-squared of the dependent variables and all standardized estimates that differed statistically significantly from zero are shown in Figure 4. Appendix 4 provides information on the standardized regression estimates, standard errors, *p*-values and error variances of the variables and factors. The goodness-of-fit measures of the model (CFI, RMSEA, SRMR) was found to be good. The factors used explained 23% of the variation in purchase intention, which

is linked to WTP for AW-labeled products (Fig. 3). According to the estimation results, the strongest explanatory factors were self-identification with an ethical concern about AW (β= 0.443) and was related to connections with and knowledge about farm animals(β= 0.357). Positive attitudes (β= 0.289) had a slightly smaller explanatory power than familiarity with animal production and ethical concern. Consumption strategy highlighting boycotting (β= 0.242) was linked positively to purchase intention. However, the effect was not statistically significant (p= 0.80).

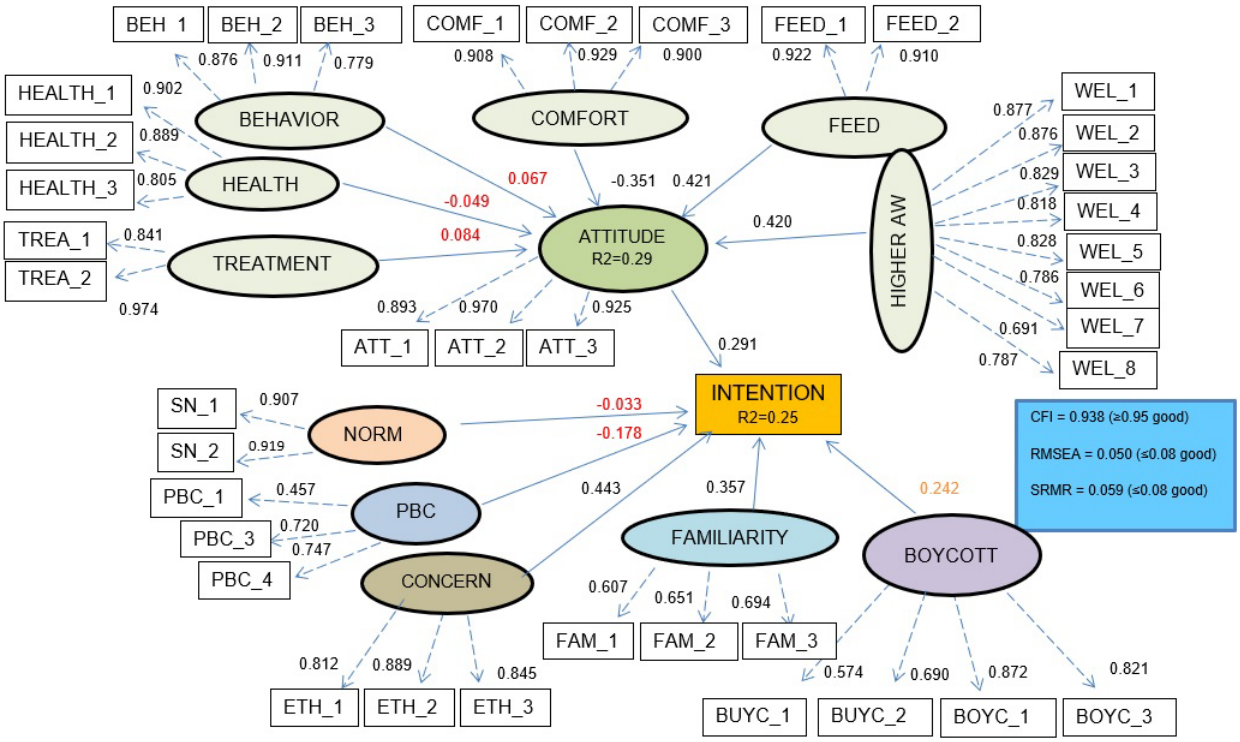

Fig. 4. Structural equation model (SEM) showing standardized estimates of the factors affecting the intention to purchase animal welfare (AW)-labeled pork. The model includes latent variables such as attitude, behavior, comfort, health, treatment, feed, higher AW, norm, perceived behavioral control (PBC), concern, familiarity, and boycott, each measured by multiple statements. Path coefficients are shown along the arrows: yellow indicates statistical significance of the effect at a 10% risk level, and red indicates a statistically insignificant association. Model fit indices (CFI, RMSEA, SRMR) are provided in the blue box, demonstrating acceptable model fit. R^2 values for endogenous effects, attitude and intention, are reported. The error variances of the statements and other details are presented in Appendix 4

The hypotheses related to a positive association of positive attitude and purchase intention toward the AW product (H1) were therefore supported. Holding all other variables constant, a one standard deviation increase in attitude is associated with a 0.29 standard deviation increase in intention. Surprisingly, we found no support for hypotheses H2 and H3, related to a positive association between a purchase intention for AW-labeled pork and social norms or perceived behavioral control. The results indicated a positive association between concern for farm animals and the purchase intention for AW-labeled pork, providing support for hypothesis H4. Moreover, research hypothesis H5 concerning the positive association of familiarity and purchase intention was highly supported at a confidence level of 99% (p< 0.001). Finally, there was some evidence of a positive association between boycotting and the intention to purchase AW-labeled pork (H6), but the confidence level did not reach statistical significance at a 95% confidence level (p= 0.080). The coefficients of the boycott-related statements were slightly higher compared to buycott-related statements, so we from now on refer to BOYCOTT-factor. Two of the three boycott-related variables loaded for the factor with high coefficients.

Subsamples

SEM models were estimated for the subsamples of the whole data represented in Table 5, assuming that the extended Theory of Planned Behavior was also a valid hypothesis for the subsamples. In a few cases, the number of respondents was less than one hundred, which is generally considered a limitation for SEM due to potential issues with statistical power and model stability. As such, the results for these smaller groups should be interpreted with caution, particularly regarding the reliability and generalizability of the parameter estimates.

Table 5. Standardized regression estimates and model fit indices for the extended Theory of Planned Behavior model, including ethical concern, familiarity with animal farming, and boycotting, across different subsamples

		Coefficients						Goodness-of-fit			
Subsample	N	ATT	PBC	SN	FAM	CON	BOYC	CFI	SRMR	RMSEA	R^2
Whole sample	400	0.291***	-0.178	-0.033	0.357*	0.443*	0.242°	0.938	0.059	0.050	0.245
Gender											
Men	196	0.138	0.295	-0.103	0.144	0.133	0.135	0.913	0.060	0.057	0.234
Women	204	0.234**	-0.512°	0.075	0.640**	0.788°	0.598	0.911	0.064	0.084	0.351
Age group, years											
18–34	105	0.214	0.255	-0.073	0.291	0.252	0.326	0.913	0.081	0.050	0.347
35–54	131	0.337**	-0.851	0.061	0.862°	1.023	0.717	0.920	0.056	0.056	0.368
55 and older	164	0.332*	-0.302	0.139	0.215	0.249	0.002	0.899	0.059	0.082	0.233
Education level											
Primary/basic	44	0.452°	0.768	0.047	-0.592*	-0.954	-0.064	0.664	0.086	0.147	0.359
Secondary	208	0.245**	-0.212	-0.195	0.294	0.528°	0.155	0.902	0.054	0.069	0.213
Tertiary or higher	144	0.307***	-0.148	0.090	0.436*	0.428	0.296	0.938	0.087	0.048	0.328
Employment status											
Employed	199	0.093	-0.064	0.053	0.416	0.572	0.475°	0.927	0.055	0.052	0.335
Retired	131	0.626***	-0.663**	0.053	0.155	0.344	-0.288°	0.905	0.060	0.078	0.428
Annual income, €1 000											
<20	134	0.215°	0.000	-0.163	0.265	0.194	-0.016	0.907	0.063	0.063	0.182
20–40	144	0.435**	-0.280	0.198°	0.415°	0.290	0.261	0.913	0.059	0.070	0.324
>40	53	0.831°	-0.976°	-0.427°	0.365	1.085**	0.224	0.756	0.094	0.076	0.594
No information	69	0.703°	-1.635°	-0.055	0.430	1.861*	0.799°	0.839	0.096	0.110	0.679
Responsible for grocery shopping											
Alone	200	0.352**	0.015	0.027	0.152	0.103	0.075	0.931	0.067	0.059	0.185
Shared responsibility	175	0.120	-0.233	0.032	0.602*	0.760*	0.508°	0.918	0.066	0.062	0.371
AW-labelled product buyers											
Sample without non-buyers group	359	0.189***	-0.005	-0.076	0.196	0.344*	-0.005	0.933	0.054	0.055	0.225

Variables: ATT=Attitude, PBC=Perceived behavioral control, SN=Social norm, FAM=Familiarity with animal farming, CON=Ethical concern, BOYC=Boycotting. *p*-values (< 0.10) for the estimates are given in parentheses: °p< 0.1, *p≤ 0.05, **p≤ 0.01, ***p≤ 0.001; Goodness-of-fit indices for the most suitable TPB model in each subsample are shown, and unsatisfactory goodness of fit values are underlined.

Gender

Based on the results, the model explained better women's purchase intention better than men's (R^2= 0.35 vs. R^2= 0.23). Female respondents' intentions had a positive association with FAMILIARITY (β= 0.640) with animal farming, CONCERN (β=0.788), ATTITUDE (β= 0.234), and BOYCOTT (β=0.640, p= 0.004). In contrast, PBC had a negative association with purchase intention (β= -0.512, p= 0.066).

Age and occupational status

Among respondents aged 35–54, FAMILIARITY had the strongest effect (β= 0.862, p= 0.059) on the intention to purchase AW-labeled pork, whereas its effect was lower in the other age groups. Moreover, ATTITUDE increased the willingness to pay for AW among respondents who were 55 years or older and with aged 35–54. The R^2 was

lower for the 55 years or older subgroup than middle-aged (R^2= 0.23 vs. R^2= 0.37). The models with employed and retired respondents were examined, as the other subgroups were too small for an analysis. Retirees' intention to purchase was affected positively by ATTITUDE (*β*= 0.626) and negatively by the PBC factor (*β*=–0.663). BOYCOTTING was associated positively with the employed respondents (*β*= 0.459, *p*= 0.051) and negatively with retired people (*β*=–0.228, *p*= 0.067).

Education and annual income

The education level was divided into *basic education, secondary level*, and *higher education.* Based on the goodness-of-fit values, the models fitted the two latter groups. When the level of professional education increased from secondary to higher than secondary education, the effect of FAMILIARITY and ATTITUDE on buying intention also increased. The buying intention of respondents in the income class of €20 000–€40 000 or more was associated with the ATTITUDE factor and the income class of higher than €40 000 with CONCERN factor.

Responsibility for grocery shopping

The model for the respondents with *shared responsibility* for food shopping (R^2= 0.37) explained a larger share of variation in the buying intention than those for the full responsibility (R^2= 0.19) group. In the shared responsibility group, ETHICS, FAMILIARITY, and BOYCOTTING were associated positively with buying intention (*β*= 0.602, *β*= 0.760, and *β*= 0.508 respectively).

AW-labelled product buyers

ATTITUDE, ETHICS and FAMILIARITY with animal farming were associated with the buying intention among AW-product buyers' group (*β*= 0.188*, β*= 0.340 and *β*= 0.186*,* respectively*)*. Compared to the results of the whole sample, the effects were weaker. The effect of BOYCOTT no more existed among AW-product buyers' group.

Discussion

The results suggest that ethical concern, positive attitude towards AW and familiarity with animal farming had the strongest effect on the intention to purchase pork among Finnish citizens. There were differences between the subgroups in how the modeled components affected buying intention. Women's buying intention was explained by attitudes, ethical concerns, and familiarity with animal production, as well as PBC. In previous studies, women have been found to have a higher WTP for AW, but also to be more disgusted by unethical meat than men and more concern about AW (Clark et al. 2016, Michel et al. 2021). The results suggest that attitude influences buying intention to purchase and pay for high AW products which is consistent with earlier findings on sustainable consumption, including organic food (Scalco et al. 2017), AW-labeled products (Chang and Chen 2022), and vegetarianism (Ploll and Stern 2020). This is further supported by findings from the dairy sector, where animal welfare was prioritized over other sustainability attributes such as greenhouse gas reductions in consumer decision-making (Richter et al. 2025).

Familiarity including connections with and knowledge of animal farming, is strongly associated with buying intentions. However, consumers' somewhat poor knowledge of modern animal farming is a challenge. A concern for AW also representing self-identity has been shown to increase the purchase intention has also been identified in previous studies (Alonso et al. 2020, Temple and Manteca 2020). Based on the results, only ten percent of respondents expressed unwillingness to purchase the AW-labelled pork product, and corresponding share would not pay for it. This suggests that a substantial proportion of respondents are willing to both purchase and pay more for an AW-labelled pork, indicating market potential for such products. This is in line with previous research showing that self-identification as an ethical or organic consumer influences purchasing intentions (Bartels and Onwezen 2014, Johe and Bhullar 2016, Carfora et al. 2019, Ates 2020). Furthermore, recent findings by Peschel et al. (2025) emphasize the importance of ethical orientation and trust in the food system in shaping consumer behavior across European countries, reinforcing the broader relevance of our results.

The propensity of boycotting or buycotting had a positive effect on buying intention in the whole sample. Previous studies have shown that vegetarians are more critical of animal production and more concerned about animal welfare (e.g., Clark et al. 2016). However, when evaluating the sub-sample of respondents only, who would buy the AW-labelled product, the effect of consumption strategies was not found. This indicates the role of

boycotting as a consumption strategy among citizens, as it was associated within the whole sample, including the non-buyers group.

The results suggest that Finnish respondents' intention to purchase AW-labeled pork is not affected by the subjective norm and perceived behavioral control. This result differs from that of previous studies (Gracia 2013) regarding AW. However, social norms have been found less important than attitudes (and PBC) in avoiding meat consumption (Hoeksma et al. 2017) or veganism (D'Souza et al. 2022). Moreover, the limited influence of social norms on Finnish consumers' intention to purchase AW-labeled products may stem from a cultural focus on individual values and autonomy, a societal consensus on the importance of animal welfare, and the perception that production animal conditions are relatively good due to marketing emphasizing e.g. antibiotic-free production. PBC was associated with buying intention only in some subgroups such retired respondents and women. These groups were therefore more affected by the restrictions (availability, resources) than other sub-groups. There may be a discrepancy between the results and the reality of limited availability of AW-labeled products, as survey responses tend to focus more on personal values and attitudes rather than practical constraints.

In conclusion, the purchase of AW-labeled pork is more a consequence of positive attitudes towards and concerns for AW, that is, emotions-based action, than restricted by resource-based possibilities such as being able to pay a higher price for high AW products. The TPB with the extension of familiarity, ethical concern, and boycotting appeared to be a quite relevant theoretical framework among some of the subgroups such as women, but not among all respondents. Although the extended TPB had an improved predictive capacity compared to the standard TPB, a substantial amount of variation in buying intentions remained unexplained. For example, the gap between attitudes and intention (criticized e.g. by Kuokkanen and Sun 2016), related to the meat paradox (disliking killing, liking eating), suggests a discrepancy between expressed values and actual purchasing behavior.

It is essential to improve public familiarity with animal production and strengthen positive consumer attitudes toward AW. These components can be incorporated into marketing efforts and industry communication to highlight the value of AW practices. For instance, high AW pork producers could emphasize transparency in farming practices and the benefits of AW labeling through targeted consumer education. Young people especially may be more receptive to AW-related messaging, providing an opportunity for tailored outreach and education on animal farming practices. Additionally, clearer AW labeling and certification could serve as effective marketing tools, reinforcing consumer trust and aligning purchasing decisions with ethical values. The results indicate the potential to strengthen the commercial viability of AW-labeled products.

Limitations and future research

While the Theory of Planned Behavior provides a useful framework for understanding consumer intentions, several limitations have been identified in its application to animal welfare contexts. First, the model often struggles to account for the well-documented attitude–behavior and intention–behavior gaps, where consumers' stated ethical intentions do not consistently translate into actual purchasing behavior due to situational constraints or social desirability bias (de Graaf et al. 2016, Cornish et al. 2019).

One conceptual limitation of this study is that attitude is defined broadly in terms of general views on animal welfare, rather than explicitly as an evaluation of purchasing AW-labeled pork. Additionally, the lack of availability of AW-labeled pork in Finland further complicates direct assessments of purchase behavior, making a broader definition of attitude a necessary proxy in this context. Furthermore the variability and conceptual overlap in how extended TPB constructs—such as self-identity, personal norms, and perceived behavioral control—are defined and operationalized across studies can challenge the comparability and validity of TPB-based models (Gracia 2013, Chang and Chen 2022). This is particularly relevant in ethical consumption contexts, where these constructs may interact or overlap in complex ways. The group of respondents not eating meat was too small to permit a model to be estimated. A relatively large and representative sample with non-missing data enabled the use of versatile models utilizing the SEM approach. Although some subsamples had a very low number of respondents, the models converged, and the results still allowed for meaningful and indicative comparison. However, we acknowledge the methodological challenges and limitations associated with subgroup analysis. Because of potential stability and reliability issues, these subsample estimates should be interpreted with caution. Future research could benefit from larger subsamples to further validate these results and enhance generalizability. Finally, further research is needed to examine which factors explain males' buying intentions or willingness to pay for AW because all the components studied here remained statistically insignificant.

References

Agyeman, C.M. & Badugu, D. 2017. Predicting consumers' purchasing intentions of a product: A critical analysis of willingness-to-pay as the antecedent. International Journal of Research in Economics and Social Sciences 7: 71–84.

Ajzen, I. 1985. From intentions to actions: a theory of planned behavior. In: Kuhl J.& Beckmann J. (eds). Action Control: From Cognition to Behavior. Springer: Berlin, Germany. p. 11–39. https://doi.org/10.1007/978-3-642-69746-3_2

Alonso, M.E., González-Montaña, J.R & Lomillos, J.M. 2020. Consumers' concerns and perceptions of farm animal welfare. Animals. https://doi.org/10.3390/ani10030385

Armstrong Soule, C.A. & Sekhon, T. 2019. Preaching to the middle of the road: Strategic differences in persuasive appeals for meat anti-consumption. British Food Journal. https://doi.org/10.1108/BFJ-03-2018-0209

Ateş, H. 2020. Merging theory of planned behavior and value identity personal norm model to explain pro-environmental behaviors. Sustainable Production and Consumption 24: 169–180. https://doi.org/10.1016/j.spc.2020.07.006

Ayadi, N. & Lapeyre, A. 2014. Consumer purchase intentions for green products: Mediating role of WTP and moderating effects of framing. Journal of Marketing Communications. https://doi.org/10.1080/13527266.2014.888574

Bartels, J. & Onwezen, M.C. 2014. Consumers' willingness to buy products with environmental and ethical claims: The roles of social representations and social identity. International Journal of Consumer Studies 38: 82–89. https://doi.org/10.1111/ijcs.12067

Carfora, V., Cavallo, C., Caso, D., Giudice, T.D., De Devitiis, B., Viscecchia, R. Nardone, G. & Cicia, G. 2019. Explaining consumer purchase behavior for organic milk: Including trust and green self-identity within the theory of planned behavior. Food Quality and Preference 76: 1–9. https://doi.org/10.1016/j.foodqual.2019.03.006

Catellani, P. 2015. Identity, values, and food. In: Botturi, F. & Zoboli, R. (eds.). Through the convivium: Food and nutrition between needs and culture. Milano: Vita and Pensiero. p. 102–114.

Chan, H., Pong, V. & Tam, K. 2020. Explaining participation in Earth Hour: The identity perspective and the theory of planned behavior. Climatic Change 158: 309–325. https://doi.org/10.1007/s10584-019-02554-y

Chang, M. & Chen, H. 2022. Consumer attitudes and purchase intentions in relation to animal welfare-friendly products: Evidence from Taiwan. Nutrients 14: 4571. https://doi.org/10.3390/nu14214571

Clark, B., Panzone, L.A., Stewart, G.B., Kyriazakis, I., Niemi, J.K., Latvala, T., Tranter, R., Jones, P. & Frewer, L.J. 2019. Consumer attitudes towards production diseases in intensive production systems. PLoS ONE 14: e0210432. https://doi.org/10.1371/journal.pone.0210432

Clark, B., Stewart, G.B., Panzone, L.A., Kyriazakis, I. & Frewer, L.J. 2016. A Systematic Review of Public Attitudes, Perceptions and Behaviours Towards Production Diseases Associated with Farm Animal Welfare. Journal of Agricultural and Environmental Ethics 29: 455–478. https://doi.org/10.1007/s10806-016-9615-x

Clark, B., Stewart, G.B., Panzone, L.A., Kyriazakis, I. & Frewer, L.J. 2017. Citizens, consumers and farm animal welfare: A meta-analysis of willingness-to-pay studies. Food Policy 68: 112–127. https://doi.org/10.1016/j.foodpol.2017.02.001

Clayton, S. & Opotow, S. 2003. Environmental identity: A conceptual and an operational definition. In: Identity and the natural environment: The psychological significance of nature. Cambridge (MA): The MIT Press. p. 45–65. https://doi.org/10.7551/mitpress/3644.003.0005

Cornish, A., Jamieson, J., Raubenheimer, D. & Mcgreevy, P. 2019. Applying the behavioural change wheel to encourage higher welfare food choices. Animals (Basel) 9: 524. https://doi.org/10.3390/ani9080524

De Graaf, S., Van Loo, E.J., Bijttebier, J., Vanhonacker, F., Lauwers, L., Tuyttens, F.A.M. & Verbeke, W. 2016. Determinants of consumer intention to purchase animal-friendly milk. Journal of Dairy Science 99: 8304–8313. https://doi.org/10.3168/jds.2016-10886

Denver, S., Christensen, T., Lund, T.B., Olsen, J.V. & Sandøe, P. 2023. Willingness-to-pay for reduced carbon footprint and other sustainability concerns relating to pork production - A comparison of consumers in China, Denmark, Germany and the UK. Livestock Science 276: 105337. https://doi.org/10.1016/j.livsci.2023.105337

D'Souza, C., Brouwer, A.R. & Singaraju, S. 2022. Veganism: Theory of planned behaviour, ethical concerns and the moderating role of catalytic experiences. Journal of Retailing and Consumer Services 66: 102952. https://doi.org/10.1016/j.jretconser.2022.102952

Euractive 2022. German minister presents plans for mandatory animal welfare label. Euractive, April 8. https://www.euractiv.com/section/agriculture-food/news/german-minister-presents-plans-for-mandatory-animal-welfare-label/

European-Commission 2016. Attitudes of EU Citizens towards Animal Welfare, Report. Special Eurobarometer 442. European Commission Brussels, Belgium: 2016. p. 84.

Gorton, M., Yeh, C.-H., Chatzopoulou, E., White, J., Tocco, B., Hubbard, C. & Hallam, F. 2023. Consumers' willingness to pay for an animal welfare food label. Ecological Economics 209: 107852. https://doi.org/10.1016/j.ecolecon.2023.107852

Gracia, A. 2013. The determinants of the intention to purchase animal welfare-friendly meat products in Spain. Animal Welfare 22: 255–265. https://doi.org/10.7120/09627286.22.2.255

Gross, S., Waldrop, M.E. & Roosen, J. 2021. How does animal welfare taste? Combining sensory and choice experiments to evaluate willingness to pay for animal welfare pork. Food Quality and Preference 87: 104055. https://doi.org/10.1016/j.foodqual.2020.104055

Harrison, M.E., O'Driscoll, K., O'Connell, N.E. & McCarthy, S.N. 2025. An examination of the factors that influence consumer intention to purchase higher welfare meat and milk. Animal Frontiers 15: 53–60. https://doi.org/10.1093/af/vfaf007

Henseler, J. 2021. Composite-based structural equation modeling: Analyzing latent and emergent variables. New York: The Guilford Press.

Hirschman, E.C. & Touzani, M. 2016. Contesting religious identity in the marketplace: Consumption ideology and the boycott halal movement. Journal of Islamic Studies and Culture. https://doi.org/10.15640/jisc.v4n1a3

Hoeksma, D.L, Gerritzen, M.A, Lokhorts, A.M. & Poortvliet, P.M. 2017. An extended theory of planned behavior to predict consumers' willingness to buy mobile slaughter unit meat. Meat Science 128: 15–23. https://doi.org/10.1016/j.meatsci.2017.01.011

Hoffman, S. & Hutter, K. 2012. Carrotmob as a New Form of Ethical Consumption. The Nature of the Concept and Avenues for Future Research. Journal of Consumer Policy 35: 215–23. https://doi.org/10.1007/s10603-011-9185-2

Holt, J., Rumble, J.N., Telg, R. & Lamm, A. 2018. Understanding consumer intent to buy local food: Adding consumer past experience and moral obligation toward buying local blueberries in Florida within the theory of planned behavior. Journal of Applied Communications 102. https://doi.org/10.4148/1051-0834.2203

Hopwood, C.J., Bleidorn W., Schwaba, T. & Chen, S. 2020. Health, environmental, and animal rights motives for vegetarian eating. PLoS One 15: e0230609. https://doi.org/10.1371/journal.pone.0230609

Hu, L.-T. & Bentler, P.M. 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling 6: 1–55. https://doi.org/10.1080/10705519909540118

Hölker, S., Von Meyer-Höfer, M. & Spiller, A. 2019. Animal Ethics and Eating Animals: Consumer Segmentation Based on Domain-Specific Values. Sustainability 11: 1–17. https://doi.org/10.3390/su11143907

Jamieson, J., Reiss, M.J., Allen, D., Asher, L., Parker, M.O., Wathes, C.M. & Abeyesinghe, S.M. 2015. Adolescents care but don't feel responsible for farm animal welfare. Society & Animals 23: 269–297. https://doi.org/10.1163/15685306-12341283

Johe, M.H. & Bhullar, N. 2016. To buy or not to buy: The roles of self-identity, attitudes, perceived behavioral control and norms in organic consumerism. Ecological Economics 128: 99–105. https://doi.org/10.1016/j.ecolecon.2016.02.019

Johnston, R.J., Boyle, K.J., Adamowicz, W.(V.), Bennett, J., Brouwer, R., Cameron, T.A., Hanemann, W.M., Hanley, N., Ryan, M., Scarpa, R., Tourangeau, R. & Vossler, C.A. 2017. Contemporary guidance for stated preference studies. Journal of the Association of Environmental and Resource Economists 4: 319–405. https://doi.org/10.1086/691697

Kashif, M. 2019. Food anti-consumption and consumer well-being. British Food Journal 121: 2–5. https://doi.org/10.1108/BFJ-01-2019-814

Kettunen, J. 2016. Finally it was time to be influential by purchasing: Narrative research of organic consumer behavior. (in Finnish). Master's thesis of marketing. Turku School of Economics.

Kos Koklic, M., Golob, U., Podnar, K. & Zabkar, V. 2019. The interplay of past consumption, attitudes and personal norms in organic food buying. Appetite 137: 27–34. https://doi.org/10.1016/j.appet.2019.02.010

Kuokkanen, H. & William, S. 2016. Social desirability and cynicism: Bridging the attitude-behavior gap in CSR surveys. In: Ashkanasy, N., Zerbe, W. & Härtel, C. (eds.). Emotions and organizational governance 12: 217–247. https://doi.org/10.1108/S1746-979120160000012008

Lagerkvist, C.-J. & Hess, S. 2011. A meta-analysis of consumer willingness to pay for farm animal welfare. European Review of Agricultural Economics 38: 55–78. https://doi.org/10.1093/erae/jbq043

Lareya, A. 2017. Farm Animal Welfare in Canada: Role of Values, Attitudes and Knowledge on the Consumer Choice of Farm Animal Welfare Labelled Meat. Department of Resource Economics and Environmental Sociology University of Alberta.

Leipämaa-Leskinen, H., Alhonnoro, L., Laaksonen, P. & Toivanen, H. 2017. Consumption through life. Publication of Finnish Association of Consumer Research. (in Finnish). http://www.kulutustutkimus.net/wp-content/uploads/2017/08/Kulutustutkimus.nyt_1_2017.pdf

Li, S. & Kallas, Z. 2021. Meta-analysis of consumers' willingness to pay for sustainable food products. Appetite 163: 105239. https://doi.org/10.1016/j.appet.2021.105239

Liang, Y., Xu, Y., Lai, D., Hua, G., Huang, D., Wang, H., Li, H. & Han, L. 2023. Emerging market for pork with animal welfare attribute in China: An ethical perspective. Meat Science 195: 108994. https://doi.org/10.1016/j.meatsci.2022.108994

Liang, Y., Gengrong, H., Weiyou, C., Li, G., Wang, H. & Hui, L. 2022. Knowledge of animal welfare and consumers' behavioral intentions in China: A moderated mediation model of product cognition and empathy. Animals. https://doi.org/10.3390/ani12081043

Liu, M.T, Liu, Y. & Mo, Z. 2020. Moral norm is the key: An extension of the theory of planned behaviour (TPB) on Chinese consumers' green purchase intention. Asia Pacific Journal of Marketing and Logistics. https://doi.org/10.1108/APJML-05-2019-0285

López-Mosquera, N., García, T. & Barrena, R. 2014. An extension of the Theory of Planned Behavior to predict willingness to pay for the conservation of an urban park. Journal of Environmental Management 10: 91–99. https://doi.org/10.1016/j.jenvman.2014.01.019

LUKE 2024. Consumption of food commodities per capita by Year and Commodity. https://statdb.luke.fi/PxWeb/pxweb/en/LUKE/LUKE__02%20Maatalous__08%20Muut__02%20Ravintotase/01_Elintarvikkeiden_kulutus.px/

Malek, L., Umberger, W. & Goddard, E. 2018. Is anti-consumption driving meat consumption changes in Australia? British Food Journal 121: 123–138. https://doi.org/10.1108/BFJ-03-2018-0183

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

National Advisory Board on Research Ethics 2009. Ethical principles of research in the humanities and social and behavioural sciences and proposal for ethical review. National Advisory Board on Research Ethics, Helsinki. www.tenk.fi/sites/tenk.fi/files/ethicalprinciples.pdf. Accessed 19 February 2025

Niva, M. & Jallinoja, P. 2018. Taking a Stand through Food Choices? Characteristics of Political Food Consumption and Consumers in Finland. Ecological Economics 154: 349–360. https://doi.org/10.1016/j.ecolecon.2018.08.013

Novo Vázquez, A. & García-Espejo, I. 2021. Boycotting and buycotting food: New forms of political activism in Spain. British Food Journal 123: 2492–2505. https://doi.org/10.1108/BFJ-01-2021-0006

Nystrand, B.T. & Olsen, S. 2020. Consumers' attitudes and intentions toward consuming functional foods in Norway. Food Quality and Preference 80: 103827. https://doi.org/10.1016/j.foodqual.2019.103827

Peschel, A.O., Thomsen, K., Tsalis, G. & Grunert, K.G. 2025. The role of ethical orientation in animal welfare choice behaviour: A segmentation study. Food Quality and Preference 123: 105334. https://doi.org/10.1016/j.foodqual.2024.105334

Ploll, U. & Stern, T. 2020. From diet to behaviour: Exploring environmental- and animal-conscious behaviour among Austrian vegetarians and vegans. British Food Journal 122: 3249–3265. https://doi.org/10.1108/BFJ-06-2019-0418

Reczek, R.W., Irwin, J. & Zane, D. 2022. Good intentions - Thoughtless buying decisions: Understanding and breaking barriers to ethical consumption. Marketing Intelligence Review 14. https://doi.org/10.2478/nimmir-2022-0004

Richter, S., Stolz, H., Martinez-Cruz, A.L. & Kachi, A. 2025. Animal welfare has priority: Swiss consumers' preferences for animal welfare, greenhouse gas reductions and other sustainability improvements in dairy products. Food Quality and Preference 123: 105350. https://doi.org/10.1016/j.foodqual.2024.105350

Shin, Y.H., Im, J., Jung, S.E. & Severt, K. 2018. The theory of planned behavior and the norm activation model approach to consumer behavior regarding organic menus. International Journal of Hospitality Management 69: 21–29. https://doi.org/10.1016/j.ijhm.2017.10.011

Scalco, A., Noventa, S., Riccardo, S. & Ceschi, A. 2017. Predicting organic food consumption: A meta-analytic structural equation model based on the theory of planned behavior. Appetite 112: 235–248. https://doi.org/10.1016/j.appet.2017.02.007

Slack, N.J., Sharms, S., Cúg, J. & Gurmeet, S. 2023. Factors forming consumer willingness to pay a premium for free-range eggs. British Food Journal 125: 2439–2459. https://doi.org/10.1108/bfj-07-2022-0663

Schwartz, S.H. 1992. Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In: Zanna, M.P. (ed.). Advances in Experimental Social Psychology 25: 1–65. https://doi.org/10.1016/S0065-2601(08)60281-6

Temple, D. & Manteca, X. 2020. Animal welfare in extensive production systems is still an area of concern. Frontiers in Sustainable Food Systems 4. https://doi.org/10.3389/fsufs.2020.545902

Thomas, E.F., Bury, S., Louis, W.R. & Amiot, C.E. 2019. Vegetarian, vegan, activist, radical: Using latent profile analysis to examine different forms of support for animal welfare. Group Processes & Intergroup Relations 22: 836–857. https://doi.org/10.1177/1368430218824407

Toma, L., Stott, A., Revoredo-Giha, C. & Kupiec-Teahan, B. 2012. Consumers and animal welfare: A comparison between European Union countries. Appetite 58: 767–770. https://doi.org/10.1016/j.appet.2011.11.016

Van den Broek, T., Langley, D. & Hornig, T. 2017. The effect of online protests and firm responses on shareholder and consumer evaluation. Journal of Business Ethics 146: 279–294. https://doi.org/10.1007/s10551-017-3653-9

Van der Werff, E., Steg, L. & Keizer, K. 2014. I am what I am, by looking past the present: The influence of biospheric values and past behavior on environmental self-identity. Environment and Behavior 46. https://doi.org/10.1177/0013916512475209

Villacé-Molinero, T., Reinares-Lara, P. & Reinares-Lara, E. 2016. Multi-vendor loyalty programs: Influencing customer behavioral loyalty? Frontiers in Psychology 7. https://doi.org/10.3389/fpsyg.2016.00204

Vermeir, I. & Verbeke, W. 2006. Sustainable food consumption: Exploring the consumer "attitude-behavioral intention" gap. Journal of Agricultural and Environmental Ethics 19: 169–194. https://doi.org/10.1007/s10806-005-5485-3

Washio, T., Ohashi, T. & Saijo, M. 2020. What promotes intention? Factors influencing consumers' intention to purchase animal-welfare friendly beef in Japan. In: Fred, A., Salgado, A., Aveiro, D., Dietz, J., Bernardino, J. & Filipe, J. (eds.). Knowledge discovery, knowledge engineering and knowledge management. Cham: Springer. p. 536–549. https://doi.org/10.1007/978-3-030-66196-0_25

Welfare Quality® 2009. Assessment protocol for pigs. Welfare Quality® Consortium: Lelystad, The Netherlands.

Westfall, P.H. & Henning, K.S. 2013. Texts in statistical science: Understanding advanced statistical methods. Boca Raton, FL: Taylor & Francis. https://doi.org/10.1201/b14398

Yeh, C.-H. & Hartmann, M. 2021. To purchase or not to purchase? Drivers of consumers' preferences for animal welfare in their meat choice. Sustainability 13: 9100. https://doi.org/10.3390/su13169100