ANIMAL WELFARE OR MEAT QUALITY? A CONTROVERSIAL TRADE-OFF: NON-HYPOTHETICAL CHOICE EXPERIMENT WITH ATTRIBUTE NON-ATTENDANCE TREATMENTS

Zein Kallas[a*], Francesc Borrisser-Pairó[b], Ceferina Vieira[c], José Maria Gil[a]

[1]*Centre for Agro-food Economy and Development, (Barcelona, zein.kallas@upc.edu, chema.gil@upc.edu).*
[2]*IRTA-Monells, Product Quality program, Monells, (Girona, francesc.borrisser@irta.cat).*
[3]*Estación Tecnológica de la Carne, I. T. A. de Castilla y León, (Guijuelo, VieAllCe@itacyl.es)*

Abstract

The growing concerns about animal welfare in the European societies are resulting in continuous modifications of regulations and policies that led to ban of a number of intensive farming methods. Consumers are requiring that animals to be raised as close as possible to their natural conditions. Pork meat is the most produced and consumed meat in Europe. Thus, the European authorities considered the pig welfare as a priority issue. The surgical pig castration without anaesthesia is to be banned in near future, which may seriously affect the pork market due to boar tainted-meat. This study analysed consumers' preferences and acceptance regarding an alternative to castration of high-level boar-taint frankfurter sausages. Non-hypothetical discrete choice experiment was applied by creating a real shopping scenario before and after tasting the products. We collected the Data for a sample of 150 consumers in Madrid, Spain. Different modelling approaches were applied. All results showed the appropriateness of the proposed new flavour as a masking strategy. When consumers tasted the products, they showed a higher willingness to pay a premium for this flavour. Results also showed that consumers are more ethical when the meat quality is not compromised. The degree of randomness identified by the scale parameter decreased significantly after the sensory experience. Furthermore, attribute Non-attendance treatment improved the goodness of fit. However, after the eating experience the percentage of the non-attenders decreased significantly.

Key Words: Non-hypothetical choice experiments, sensory evaluation, attributes non-attendance, boar taint.

1. Introduction

Animal welfare is becoming a prominent politically sensitive matter in Europe. Consumers are demanding products with high animal welfare standards to ensure humane production systems. The growing concerns about animal welfare resulted in continuous modifications of regulations and policies that led to ban of a number of intensive farming methods (Kallas *et al.*, 2013). The European authorities considered the pig welfare as a priority issue within its agenda. A controversial aspect within the pig production is the castration issue. The castration of entire male is legally performed should be performed under anaesthesia and analgesia (after seven days of birth) by a qualified veterinarian. However, approximately 40% of the total EU pig production is surgically castrated without anaesthesia. The main objective of this study is threefold: first, to analyse consumers' expected preferences towards a new masking strategy of boar taint meat used to produce frankfurter sausages. Second, how expectations toward the "masked" frankfurter sausages are affected after to analyse the sensory, after tasting the products. Third, to analyse how the stated and inferred attribute non-attendance treatments is affected by the sensory experience.

2. Materials and methods

We followed a methodological approach that attempted to mimic consumer reactions (Meillon *et al.*, 2010) when facing a new product. According to this approach, before purchasing a food product, consumers build expectations about its quality because the sensory attributes cannot be revealed. Then, when the product is consumed, consumers may judge its quality and the eating experience and expectations are integrated. Preferences were analysed using two non-hypothetical discrete choice experiments (NH-DCE) by creating a real shopping scenario before and after a hedonic sensory test. Different frankfurter sausages defined by several attributes were presented to respondents in different choice sets. Data were collected from a sample of 150 consumers in Madrid, Spain. Consumers in the recruitment process were compensated by €15. Before the NH-DCE exercise, participants were unexpectedly awarded by an additional €5 in order to participate.

The attributes and levels for the NH-DCE application were defined. We focused on whether the meat was obtained from castrated animals or boars, if the sausage had an original flavour or was enriched with the masking strategy and if the product belongs to a manufacturer or a retailer brands and the price (€1.79, €1.39, €0.99, €0.59). We considered a D-optimal and orthogonal deign with 4 alternatives in 8 choice sets. After the main choice task (both before and after the sensory test) different follow-up questions were asked regarding attribute non-attendance, attributes order in a non-coincident 9-point Likert scale. Finally, at the end of the choice experiment exercise, a binding choice scenario was randomly drawn. Consumers were asked to pay their chosen product if selected.

For the econometric modelling, we have applied different approaches starting by the basic conditional logit (CL), Error Component Conditional Logit (EC-CL), Random Parameter Logit (RPL), Error Component- Random Parameter Logit (EC-RPL) and completed by the Generalized Multinomial Logit (G-MNL) in preference and WTP-space. Details on the theoretical foundation of the DCE and on the estimated models can be found in Hensher *et al.*, (2015). The attribute non-attendance (AN-A) is one of the most used information processing strategies in the DCE (Hensher, 2014). Two approaches are used to analyse AN-A. The stated non-attendance (SNA) which is based on what consumers answer in the follow up questions and the inferred non-attendance (INA) which use analytical model to infer non-attendance behaviour (Hess and Hensher 2010). For the stated approach we followed Hess and Hensher (2010). For the inferred approach, observing the data through the latent class approach is usually used. This approach is based on estimating membership probabilities from a latent class model with restrictions on the utility coefficients (Scarpa *et al.*, 2013).

3. Results

Results of the overall acceptability of tasting the four Frankfurter sausages showed that the sausage with the masking strategy from castrated and non-castrated pigs showed the higher scores, confirming that the proposed masking strategy had a positive effect on consumers' acceptance. The key questions are to verify if the consumers' expected preferences has shifted significantly after the eating experience and how the stated and inferred attribute non-attendance behaviour were affected. All models showed a clear tendency toward a decreasing utility of the boar meat after the eating experience. This result revealed that before the hedonic valuation experience, consumers exhibit a preference for meat obtained from pigs reared in natural condition (i.e. without castration) as a potential preference for a positive pig welfare. However, after the hedonic evaluation consumers preferred meats from castrated animal due to its effect on meat quality. We can clearly state that consumers would prefer meat quality than animal welfare. Consumers also had negative expectations toward the masking strategy proposed in this study before tasting the products by exhibiting in all modelling approach a negative and significant marginal utility. However, expectations shifted in the direction of the positive utility after the sensory experience, showing a relevant role of experience when new flavours or varieties is launched to markets. Results showed that the percentage of the stated non-attenders decreased significantly after the tasting experience. Furthermore, following the inferred non-attendance approach, the percentage of consumers who did not attend the animal welfare attribute increased significantly after eating experience while the attendance to the flavour attribute was complete.

4. Conclusions

Results showed the appropriateness of the proposed masking strategy of boar tainted meat to be used as a raw material for the production of frankfurter sausages. Consumers in Spain did not show a relevant preference towards t animal welfare if the meat quality is compromised. Our findings highlight the importance of the direct promotion by offering the potential consumers the opportunity to taste the new product. Thus, promoting the new flavoured product in the point of sales decrease the randomness in selection and may increase the probability of purchasing. The impact of the eating experience on the stated and inferred attributes non-attendance was significant. The sensory experience decreased significantly the percentage of non-attenders.

References

Hensher DA, Collins AT, Greene WH (2013) Accounting for attribute non-attendance and common-metric aggregation in a probabilistic decision process mixed multinomial logit model: a warning on potential confounding. Transportation 40(5):1003-1020

Hensher, D. (2014) Attribute processing as a behavioural strategy in choice making. In: Hess S, Daly A (eds) Handbook of Choice Modelling, Edward Elgar Publishers

Hess, S., and Hensher, D. (2010). "Using Conditioning on Observed Choices to Retrieve Individual-specific Attribute Processing Strategies". *Transportation Research Part B* 46 (3): 781–90.

Kallas Z., Gil J.M., Panella-Riera N., Blanch M., Font-i-Furnols M., Chevillon P., Tacken, G., De Roest, K. and Oliver M.A. (2013) "Effect of tasting and information on consumer opinion about pig castration". *Meat Science*, 95(2), 242–249.

Meillon, S., Urbano, C., Guillot, G., and Schlich, P. (2010). "Acceptability of partially dealcoholized wines–Measuring the impact of sensory and information cues on overall liking in real-life settings". *Food quality and preference*, 21(7), 763-773.

Scarpa, R., Zanoli, R., Bruschi, V., and Naspetti, S. (2013). Inferred and stated attribute non-attendance in food choice experiments. *American Journal of Agricultural Economics*, 95 (1): 165-180.