The impact of Animal Welfare on Willingness-to-Pay for meat:
mediation of Expected Meat Quality and moderation of Meat Type and Animal Empathy

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ABSTRACT

Title: "The impact of Animal Welfare on Willingness-to-Pay for meat: mediation of Expected Meat Quality and moderation of Meat Type and Animal Empathy"

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Throughout the last decades, consumers have become more aware and concerned about the impact of what they buy on their health and society. Authors have pointed out the meat market as being part of this change, partially due to consumers' demand for higher welfare of the farm animals originating the meat consumed. The aim of this dissertation is thus to understand how animal welfare (AW) may affect the willingness to pay (WTP) for meat, namely through the introduction of an existing AW label on meat packages. Furthermore, it will be investigated how certain factors – meat type (MT) (chicken vs pork), animal empathy and expected meat quality (EMQ) – may influence this relationship, either by moderating or mediating it.
The implemented methodology consisted of two surveys – a preliminary one, that failed to find relevant similarities between the perception of AW of the different levels in the label, and the main survey, from which conclusions were drawn. These include that, on average, consumers associate meat with no label to a medium(C)/good(B) level of welfare, that they are more willing to pay for a 1-level increase in welfare when AW is low (D), that EMQ has a positive mediating effect on WTP, and that MT and AE are both non-significant moderators. It was also concluded that the introduction of such a label would only be beneficial for some companies, depending on their current levels of welfare, strategy and costs. In the end, implications and limitations are described, and future research is suggested.

Keywords: Animal Welfare, Animal Wellbeing, Animal Empathy, Expected Meat Quality, Willingness-to-Pay, Meat Industry

SUMÁRIO

Título: "O impacto do Bem-estar Animal na Disposição para Pagar: mediação da Qualidade de Carne Esperada e moderação do Tipo de Carne e Empatia para com os Animais"

Autor: Daniela Francisco

Ao longo das últimas décadas, os consumidores tornaram-se mais conscientes e preocupados com o impacto que as suas compras têm na própria saúde e na sociedade. Autores sugerem a indústria da carne como sendo parte desta mudança, em parte devido à procura por um melhor nível de bem-estar dos animais que originam a carne consumida. O objetivo desta dissertação é compreender como o bem-estar animal poderá afetar a disponibilidade a pagar pela carne, nomeadamente através da introdução de um rótulo de bem-estar animal já existente nas embalagens de carne. Ademais, será investigado como certos fatores – tipo de carne (frango vs porco), empatia para com os animais e qualidade da carne esperada – poderão influenciar esta relação, moderando ou mediando-a.
A metodologia implementada consistiu em dois questionários – um preliminar, que falhou em encontrar semelhanças relevantes entre a perceção de bem-estar animal dos diferentes níveis no rótulo, e o questionário principal, do qual as conclusões foram retiradas. Estas incluem que, em média, os consumidores estão mais dispostos a pagar por um aumento de 1 nível de bem-estar quando este é baixo (D), que a qualidade da carne esperada tem um efeito mediador positivo na disponibilidade para pagar e que o tipo de carne e empatia para com os animais não são moderadores significativos. Também se concluiu que a introdução deste rótulo seria benéfica apenas para algumas empresas, dependendo dos seus níveis atuais de bem-estar, estratégia e custos. No fim, são descritas as implicações e mediações, e futura investigação é sugerida.

Palavras-chave: Bem-estar Animal, Empatia para com os Animais, Expectativa de Qualidade da Carne, Disponibilidade a pagar, Indústria da Carne

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TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

TABLE OF APPENDICES

GLOSSARY

AW: Animal Welfare

AWL: Animal Welfare Label

WTP: Willingness-to-Pay

MT: Meat Type

AE: Animal Empathy

EMQ: Expected Meat Quality

CHAPTER 1: INTRODUCTION

1.1 Background

The current generations are increasingly aware and interested in sustainability and health issues and, in particular, in farm animal welfare (Bennett & Blaney, 2003; McEachern et al., 2007). Following this trend, many have decided to consume less meat and animal-based products or to do it more consciously – from animals that live in acceptable living conditions. Yet, this trend keeps changing mentalities (Cornish et al., 2016a), and the meat industry players need to adjust to demand. In countries where consumers are more concerned about this issue, supermarkets have started to implement on meat packages a scale of the level of living conditions of the respective animals - addressing consumer's interest in knowing the production methods employed, as they now want to make more informed decisions (G. C. Harper & Henson, 2001). Consumers desire companies to be transparent in most regards, as well as to set high moral and ethical standards (Bone & Corey, 2000).

This paper intends to focus on the impact of AW on WTP for meat on the Portuguese market. In order to better understand what drives this relationship, further variants are evaluated - the moderating effect of AE and of MT (chicken or pork) and the mediating effect of EMQ. AW is evaluated through the introduction of a Swiss AW label (AWL) on meat packages, adapted to the Portuguese and English languages.

Although several authors have identified the potential advantages of creating a scale (Lagerkvist & Hess, 2011) in the future, no reference to the existing AW labels can yet be found in the literature.

1.2 Relevance

This topic is of great relevance for the meat industry due to the increased necessity of studying consumers. Given that no AWL has yet been implemented in Portugal, this study can help understand what the impact of such implementation in the near future could be, or in what specific types of meat it should be present – to best accommodate firms' interests.

Acknowledging the impact of the different levels of AW and comparing them with that of the absence of a label, may not only give precious insights to firms on the benefits or costs of implementing an AWL, but also on those of improving the level of welfare provided to their animals.

The understanding of the moderating effect of AE may help companies understand whether implementing an AWL would make sense for them, considering the target they deal with and its specificities.
Lastly, the study of EMQ and its mediating effect may contribute towards explaining the effect of AW on WTP, possibly also helping meat producers and sellers of superior quality products make decisions consistent with their goals.

1.3 Problem Statement

This investigation is intended to study the impact of AW on WTP through the introduction of an AWL, and how this relationship is mediated by MT and AE and moderated by EMQ. Based on this statement, three research questions were formulated.

RQ1: *What level of the AWL do consumers associate with the absence of label?*

Getting insights into what Portuguese consumers expect from the meat they consume allows firms to know whether they are producing above or below expectations, which is relevant as opportunities may be missed due to the lack of information on this issue.

When no information is released to the public on a specific firm's process, people tend to assume average behaviors from it - corresponding to the AWL intermediate levels, levels B and C. However, given the widespread knowledge of the automation processes that happened throughout the last decades and the subsequent deterioration of animal welfare in the industry (Broom & Fraser, 2015), it is expected that consumers' expectations decrease. For this reason, the hypothesis formulated is that meat with no AWL is mostly associated with a medium (C) AW level.

RQ2: *Would Portuguese consumers be willing to pay more for an improvement in animal welfare? How do they perceive the distance between each level?*

The decision of improving animal conditions should be based on whether potential increased revenues cover the costs incurred. Studying the WTP of consumers may thus provide meaningful insights to firms and the overall market on the consequences of AW improvement.

The existing literature suggests that consumers want the level of AW to increase and that they are willing to pay more to make this happen (McInerney, 2004). As such, it is expected that consumers of meat in Portugal are willing to pay more for level A, followed by levels B, C and D, respectively.

Concerning the perceived distance between the levels of an AWL, no previous studies have been found. Based solely on the colors and description of the levels of the chosen label, which shows both levels A and B as positive (dark and light green, labeled as excellent and good, respectively), level C as medium (yellow) and D as low (orange), intuitive expectations are formed. For this reason, it is expected that the perceived distance A-B is smaller than those of B-C and C-D.

RQ3: *How can MT, AE and EMQ influence the effect of AW on WTP?*

Understanding the moderating and mediating effect of AE, MT and EMQ allows to create a more robust model that helps explain the main effect of the study, supporting decision-making in this matter.

Regarding the moderating effect of MT, one expects that chicken and pork have different impacts, as they are so different physically. Though, it is not yet possible to create expectations on which one leads to stronger results, as literature contradicts itself – whereas some have found that people are willing to pay more for the welfare of chicken (Lagerkvist et al., 2011), others argue that more phylogenetic similarities increase sensitivity (Rae Westbury & Neumann, 2008), which ultimately increases WTP (Vanhonacker et al., 2007). At the same time, the fact that a higher sensitivity and empathy increases WTP for AW makes it expected that AE has a positive moderating effect. Finally, EMQ is expected to have a positive mediating effect, as AW has been described as an increasingly important food quality attribute (Grunert, 2006), and meat quality expectation tends to increase WTP (Napolitano et al., 2010).

1.4 Research methods

After reviewing the literature on related topics, primary data will be collected – firstly through a preliminary survey (qualitative research) and secondly through the main survey, both conducted online.

Before collecting the data, different stimuli will be created. The pre-survey has the goal of providing a preliminary idea of the distance between the AWL levels and whether their effects would be significant or not in order to simplify our study.

Based on its results, the main survey is conducted - online, to collect a higher number of testimonials. This questionnaire will include three main parts – the stimulus presentation (where AW and MT are addressed), stimulus response (concerning WTP and EMQ), and AE assessment (which is independent of the stimulus). Most questions are expected to be measured on Likert Scales and Ratings, for a simple and easier comparison of answers between different sections and participants. The survey sample to be analyzed should be bigger than 50 times the number of different stimuli, as having 30 valid responses makes it possible to invoke the Central Limit Theorem when analyzing data. Although participants will be gathered through a convenience sampling method, the sample should ideally be representative of the Portuguese grocery shoppers age, gender, and monthly income. The primary data collected should be described and analyzed on SPSS and the main analysis is expected to be made with regression tests and Hayes' PROCESS tool.

Although the research methodology has been carefully considered, it also has flaws. The most prominent is the fact that the AWL is part of the package communication and, for this reason, consumers' reaction to it should ideally be studied through observational research, which requires more resources than those available. Moreover, the Social Desirability Bias may also represent a problem for ethical questions, as it may lead participants to answer in a way that will make them favorably viewed by others.

1.5 Dissertation outline

The second chapter of this paper will review the existing literature on all variables being studied and relationships between. The Conceptual Model will then be introduced to the reader, as well as all formulated hypotheses.

The Methodology composes the third chapter, which contains a detailed explanation of the research approach and the methodologies implemented for data collection, including the pre-survey stage and its conclusions.

The Results and Discussion chapter is intended to present, analyze and discuss the results obtained. It contains the data cleaning, sample characterization, manipulation check, key variables metrics and the testing of all hypotheses.

The last chapter of the body of this dissertation is Conclusions and Limitations, where the main conclusions, limitations, managerial and academic implications and suggested further research may all be found.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

The aim of this chapter is to provide a theoretical background to the variables being studied. It begins by exploring the concept of AW, its specificities and the relationships found between it and other relevant variables. Later, the existing literature on WTP for meat is reviewed, with a focus on its definition and on how it may be influenced by several factors, including the farm conditions of the animals that originate it. The following chapters revise the key papers on the EMQ, AE and MT, as well as their relationships with AW, WTP, and with each other.

With the information collected, it is then possible to formulate research hypotheses and to present the conceptual model.

2.1 Animal Welfare

Animal Welfare is a concept for which there is no clear consensus, either because different authors focus its meaning on the biological functioning of the animal, on the emotions it experiences or on whether the environment around it is similar to that of the natural state of the species or not (Fraser, 2003). There are some things, however, in which all of them agree - that welfare is inherent of the animal and not of the environment (Broom, 2009), varies through time and that it is a multidimensional concept (Bracke, M. et al., 2007). The principal source of international standards of AW and, therefore, of recommendations on it is the Terrestrial Animal Health Code, created by the World Organization for Mental Health and based on scientific knowledge in the area (Vapnek & Chapman, 2010).

Although consumers are increasingly concerned about farming conditions in developed countries (Cornish et al., 2016), legislation has been the main driver of the improvement of AW in Europe (Bennett, 1997). People do feel an ethical conflict in consuming meat, yet consumption remains nearly universal. This cognitive dissonance between people's ethical views and their actual behavior – the Meat Paradox (Bastian & Loughnan, 2017) – will be explained later, as it relates to AE.

AW is perceived as a credence good (Darby & Karni, 1973) for most consumers, since most of them lack knowledge in the field (Grunert, 2006). As healthiness and other process attributes (Henchion et al., 2014), people cannot experience AW by themselves. The only way of evaluating AW is by believing what is said on the product packages, which is seen as a possible

threat by Lagerkvist & Hess (2011), possibly originating market failures if, due to it, people fail to change their purchasing decisions and producers are unable to raise costs.

The younger (Cornish et al., 2016a) and more educated (Barnett, 2007) generations attribute the highest relevance to AW issues and also represent the future. Those involved in the meat supply chain have the incentive to be updated on what consumers require in order to make informed decisions on the improvement of production practices (Alonso et al., 2020). This represents a business opportunity, since it allows farmers to operate in a more welfare-friendly manner and still reach economic profitability (Blokhuis et al., 2008).

Consumers want to increase their knowledge on AW (Clark et al., 2017). For this reason, the benefits involved in consuming meat from animals treated according to welfare regulations should be communicated and clearly reflected as a sign of quality on the product label (Schnettler et al., 2009). Alonso et al. (2020) have suggested informative coding-schemes for meat consumers at the point-of-sale, which should be clear, rational, scientifically-based and comprehensible (G. Harper & Henson, 2005) - to increase transparency and confidence in the food chain participants (Gellynck et al., 2006) as most European consumers use food labels to identify welfare-friendly products (Broom, 2017). So far, no such scheme has been developed due to a lack of consensus on a standard of AW and on what should be the role of AW in production systems (Buller et al., 2018).

2.2 Willingness-to-Pay

WTP is defined as the maximum price that a consumer is willing to pay for a given quantity of a product or a service (Wertenbroch & Skiera, 2002). At that price, the consumer is indifferent between buying and not buying, since WTP reflects the inherent value of the product in monetary terms.

Overall, western consumers are willing to pay more to improve AW. When buying meat, they no longer seek the best price but rather the best value for money (McInerney, 2004). Related to this is the discovery of Johansson-Stenman (2006), who concluded that consumers are mostly willing to pay for AW to get increased utility (for being beneficial in terms of product quality and human health) and not so much for altruistic concern.

It is possible that animal-friendly practices are economically sustained by the increased WTP of consumers, since it is becoming so relevant on the hierarchy of societal issues (Napolitano et al., 2010). For this reason, authors are suggesting that effective monitoring of animal living

conditions and a corresponding labelling system on meat and animal-based products are implemented – particularly in Western countries, where AW has gained importance.

Such implementation could provide farms with a tool to differentiate themselves, hereby increasing competitiveness without interventions on production efficiency or drawbacks on the welfare state of animals (Napolitano et al., 2010). On the other hand, these would bring risks for the well-functioning of the market. Not only is there not enough evidence to say that the increased WTP would cover the extra costs of production (Napolitano et al., 2010), as making labelling mandatory could also result in welfare losses for consumers due to the higher prices that it would originate (Lagerkvist et al., 2011).

This WTP premium is affected by demographics, beliefs (Bernard & Bernard, 2009), and sensitivity to AW issues (Vanhonacker et al., 2007), as well as by different aspects of welfare (Liljenstolpe, 2008) and animal species (Chilton et al., 2006) and. Contrarily, Lagerkvist et al. (2011) have concluded that WTP for AW does not differ between species, with the exception of caged hens, for which there is a consistently positive WTP related to living conditions.

Regarding the way WTP is measured, there is an overall assumption that indirect methods, and, namely, conjoint analyses, give us more accurate conclusions (Schmidt & Bijmolt, 2020). Indirect methods try to better represent the shopping experience, forcing consumers to make tradeoffs that also exist in a real scenario, but researchers often choose to apply direct methods because they are easier to implement (Hofstetter et al., 2013). Experimental auctions are also becoming increasingly popular among researchers who aim to study WTP, as they are more costly but very efficient at decreasing biases by relying on incentives (Lagerkvist et al., 2011).

2.3 Expected Meat Quality

The decision of what meat to buy is highly based on consumers' quality expectation. Meat quality is known to have seven dimensions, and its expectation is based on quality cues such as cut, color, price and process information, among others.

According to the Total Food Quality Model developed by Grunert et al. (1995), quality perception has two main components – the quality expected, formulated before preparing and eating the products, and the quality experienced, formulated only after doing so. The discrepancy between the two is what dictates customer satisfaction (Oliver, 1980, 1993). The expectation of quality is based on the quality cues that consumers are exposed to and that they

get to perceive (Steenkamp, 1990). These may be intrinsic - physical characteristics - or extrinsic, including all those that are not related to the product's technical specifications.

Research made by Grunert (1997) concluded that the most important quality dimensions when evaluating beef were taste, juiciness, healthiness, nutritional value, freshness, tenderness and leanness. Since then, these dimensions have been successfully used for accessing meat quality expectations several times, both for beef (Grunert, 2001) and pork meat (Bredahl et al., 1998).

Several authors have suggested that the correspondence between quality expected and experienced during consumption is far from perfect (Grunert & Andersen, 2000). As Grunert et al. (2004) stated, EMQ is heavily based on a small number of key cues that are not predictive enough and prevent consumers from properly accessing meat quality in the supermarket. This, added to the fact that meat is sold as a commodity with little visual differentiation, decreases the incentives that producers have to improve the quality of their meat. For this reason, Grunert et al. (2004) suggests that any attempt to differentiate meat requires innovative ways to signal the quality to consumers, namely through mentioning process characteristics as the level of AW.

AW is an increasingly important food quality attribute for European consumers (McEachern & Willock, 2004) but it is also positively associated with several other attributes, including quality dimensions (Issanchou, 1996; Verbeke & Viaene, 1999). The most evident one is the association with healthiness, which is one of the main reasons why welfare-friendly products are preferred (Miranda-de la Lama et al., 2017). Apart from this, products that are animal-friendly are also considered safer, tastier, more hygienic, acceptable, environmentally friendly, authentic and traditional, which all contribute to a higher quality expectation (de Graaf et al., 2016).

The relationship between EMQ and WTP is not yet analyzed in the academic literature. However, it is known that consumer satisfaction mediates the relationship between quality and WTP (Baron & Kenny, 1986) and that the relationship between consumer satisfaction and WTP for a product is positive (E. W. Anderson, 1996).

2.4 Meat Type

Eating meat from different animal species is part of the Portuguese cuisine, which is known to have a high level of meat and fish consumption (Galli et al., 2020). According to Portal do INE

(2021), each Portuguese inhabitant consumed, on average, 115kg of meat in 2020. Out of these, 39% came from poultry meat, 36% from pork and 18% from bovine animals.

Among consumers that care about AW, most of them also show different attitudes and levels of concern for different species, partially because current welfare levels are also perceived to be different (Clark et al., 2016). According to the same study, consumers perceive the farming conditions of broilers and layer hens worse than those of cattles and pigs.

Later, in the meta-analysis conducted by (Clark et al., 2017), it was concluded that people's WTP for the welfare of different species is not in the order that one could expect when solely based on perceived conditions, suggesting that AE also differs according to the specie, which was confirmed later on (Figueredo, 2021). As mentioned, the more phylogenetically similar animals are to humans, the higher the level of empathy felt for them.

The WTP for increased welfare of farm animals differs from specie to specie. Although it seems to be positive for all of them, consumers are willing to pay more for beef and dairy cows' welfare than for chickens', and even less for the welfare of pigs (Clark et al., 2017). In general, species generating the highest WTP are those that have received more press attention recently – for this reason, the same authors defend that policy makers should ensure general and accessible access to accurate information on this matter.

2.5 Animal Empathy

According to Young et al. (2018), empathy is a stimulated emotional state that relies on the ability to perceive, understand, and care about the experiences or perspectives of another person or animal. It is developed over time through a "cognitive-socio-emotional process" (Myers et al., 2009) shaped by the interactions we have with the world that surrounds us.

Empathy towards animals (AE) is a recent concept. Some defend it is the same as human-directed empathy but applied to animals instead of other humans (Eisenberg, 2015) and that we are "evolutionarily predisposed" to feel it (Filippi et al., 2010). Others, such as Camilleri et al. (2020) believe that human-directed and animal-directed empathy are two distinct concepts, since the second response is aroused by the suffering of an animal (Rothgerber & Mican, 2014).

Different animals are known to elicit different levels of empathy in humans - Rae Westbury & Neumann (2008) revealed that empathy is higher for animals that are more phylogenetically similar to humans. Several characteristics of animals have been mentioned to increase an animal's ability to arouse empathy on a human (Myers et al., 2009): continuity (amount of time

spent with the animal), coherence (being easily understood as a whole animal, with face, body, arms and legs), affectivity (the ability of the animal to show emotions) and agency (ability to perform behaviors similar to ours, such as moving, playing and grooming).

Studies have pointed out that empathy works as a motivator or mediator of altruistic behavior (Blum, 2009) but they have also showed that, in the meat consumption context, it may not be as simple. When barriers, incentives and empowerment come into play, empathy itself may not be enough to change consumption behaviors (L. Chawla, personal communication June 2, 2015) – which may be the case. Consumers will only fight for a change if they are given convenient and clear alternatives, incentives, and measurable feedback on how they contributed to a different society.

A recent meta-analysis identified emotions and cognitive dissonance as the strongest individual predictors of the consumption of meat (Stoll-Kleemann & Schmidt, 2017). More specifically, a greater animal empathy is associated to a higher moral engagement and to reduced meat consumption (Camilleri et al., 2020). This happens because those who are higher in empathy tend to connect the meat and its animal origins, which in turn leads to attributing a moral consideration to that same inanimate object and ultimately prevents people from eating it.

Still, meat consumption in the western world was in its all-time high just some years ago (OECD & FAO, 2014) and it remains an essential part of most people's diets (Ruby, 2012), which confirms that AE is not necessarily related to meat consumption. Several authors have tried to describe this "meat paradox" (Loughnan et al., 2010), and several strategies have been found to reduce it, including "justifying" one's meat consumption with hedonistic, nutritional and evolutionary reasons (Rothgerber, 2013) and simply dissociating meat from once-living creatures (van Rijswijk et al., 2008), which is a particularly effective strategy (Adams, 2015) for being at the core of this conflict. The mentioned dissociation is often facilitated by the different shapes created with meat, such as sausages and hamburgers, and boosted by the current urbanization trend (Leroy & Degreef, 2015).

Lastly, demographic traits such as gender, science education, vegetarianism and religiousness are all related to attitudes to animals (Broida et al., 1993). Particularly, women tend to show higher levels of AE than men (Pifer et al., 1994).

2.6 Hypotheses Framing

What was found on the existing literature allows us to presume that AW positively affects WTP, that MT and AE moderate this relationship, and that EMQ mediates it. In addition, we may also expect that these variables are related to each other. Based on these, the following hypotheses were formulated for further assessment.

1) Impact of the Animal Welfare level on Willingness-to-Pay

H1*: A higher AW leads to a higher WTP.*

H2*: Levels A and B increase WTP (compared to non-label meat), level D decreases it, and level C does not have a statistically significant impact on WTP.*

2) Moderating effect of Meat Type

H3*: A higher welfare on chicken has a higher positive impact on WTP than a higher welfare on pork.*

3) Moderating effect of Animal Empathy

H4*: A higher AE increases the positive effect of AW on WTP.*

H5*: A higher AE decreases the WTP for both pork and chicken meat.*

4) Mediating effect of Expected Meat Quality

H6*: A higher EMQ increases WTP.*

H7*: A higher AW has an equal (positive) impact on the EMQ of pork and chicken.*

> ***H7.1****: Levels A and B increase EMQ (compared to non-label meat), level D decreases it, and level C does not have a statistically significant impact on EMQ.*

5) Hypotheses for further analysis

H8*: A higher AE decreases the EMQ.*

H9*: A higher EMQ increases WTP differently for different Meat Types.*

H10*: The level of EMQ varies equally (with different welfare levels) for different AE levels.*

2.7 Conceptual Framework

Figure 1 illustrates the expected relationships to be found in the main analysis.

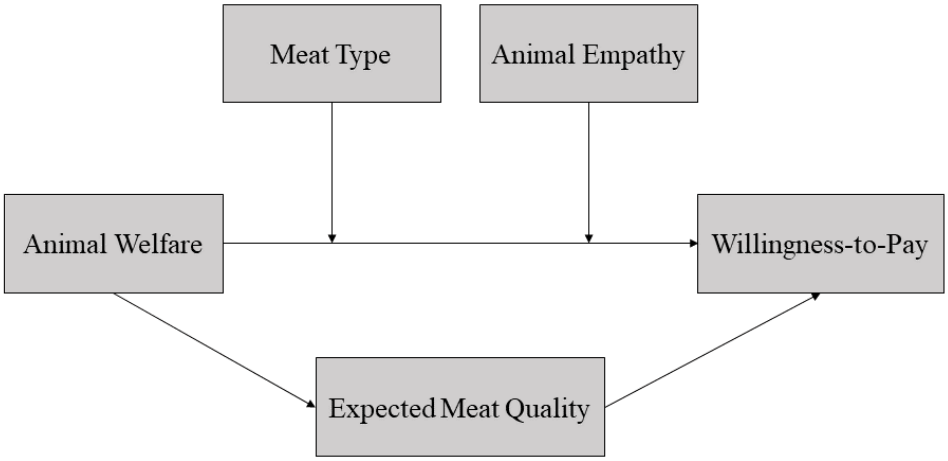


Figure 1: Conceptual Framework

CHAPTER 3: METHODOLOGY

In this chapter, it is explained the methodology and particular methods used to study the impact of an AWL on consumers' WTP and to reach conclusions about the hypotheses previously formulated.

3.1 Research Approach

The main goal of this dissertation is to understand the impact of AW on WTP and how this is affected by the MT, AE and the EMQ of meat consumers. The first step of the research process was to analyze the existing literature, which allowed to formulate the conceptual model to be studied. The model suffered several alterations, until it was possible to balance the interest of studying each topic and the appropriate amount of existing information about it.

The pre-survey conducted online was the following moment of the process. Its objective was to study possibility of eliminating at least one of the four levels from the preliminary version of the AWL, which was not verified.

Based on the insights collected, the pilot version of the main online survey was then created and released to 5 respondents, and after their feedback small adjustments were made. Later, the main online survey – meant to acquire numerical data on the subject being studied - was created. It was made available through Qualtrics Web Platform, both in Portuguese and English, to gather as many responses as possible, preferably by a sample representative of meat consumers in Portugal. The aspired number of participants was 500 and 1359 responses were obtained, from which only 657 ended up being used. The results obtained were analyzed through the statistical software IBM SPSS.

Phase	Stimuli Ideation 1	Stimuli Ideation 2	Stimuli Creation	Main Study
Tool	State-of-the-art	Qualtrics	Canva	Qualtrics
Goal	Choose between creating a new AWL, using the German or the Swiss one	Take out one or more levels of the AWL	Translate the AWL into Portuguese and English; Remove the institutional logo	Test the hypotheses; Conduct further analyses

Table 1: Research Process

3.2 Primary Data

As mentioned, the primary data was gathered in two different ways. The first was a pre-survey, which aimed to eliminate one or more AW levels. The second one was the actual survey that would study the conceptual framework relationships, shared online with 1359 participants.

3.2.1 Label Selection

The selection of the AWL to be presented was mainly based on two questions. The first one was whether to create a new label from scratch or to use an existing one. The second was how to make it or which one to choose.

The decision was to take an AWL that already existed. In order to make a new one it would be necessary to study many different features of it and go through an iteration period that requested more resources than those of a master's dissertation. Coming from such trustworthy institutions, the already existing labels have certainly been studied in a more extensive way than this dissertation could ever comprise.

Among the AW labels that existed – a German one created by Haltungsform (*appendix A*) and a Swiss one created by Schweizer Tierschutz STS (*appendix B*) – the second one was selected. The choice was based on how intuitive it was, mainly concerning the color schemes and the words representing each level, and the Swiss label was preferred in both aspects. The words of the Swiss label "Top, Good, Medium and Low" were more straightforward than the German's and its colors were extremely similar to the Nutri-score label (*appendix C*), which Portuguese consumers are already used to seeing and interpreting in the desired way – A (dark green) is the best, D (orange) is the worst.

The label was translated into Portuguese and English (smaller size), exactly as one could find it on a supermarket in Portugal.

3.2.2 Choice of the label levels – Preliminary Survey

After deciding which label to use, and since there were time and resources constraints to take into account, it was decided to carry a short preliminary research. It was chosen to make a survey to gather quantitative data on the perception of welfare created by each level. It aimed at understanding if the psychological distances between certain levels were small enough to disregard one of them, hence decreasing substantially the number of required responses.

3.2.2.1. Data Collection

The pre-survey was developed on Qualtrics and shared with friends and family on social media through a convenience sampling method. 32 responses were gathered in total and 6 of them were screened, due to either not eating meat, not living in Portugal, or not considering moving to Portugal in the near future, therefore not belonging to the relevant population.

3.2.2.2 Research Design

The structure of the preliminary survey consisted of 3 blocks, which can be found in appendix D. The first one concerned the two mentioned screening questions. Afterward, each participant saw one single label and stated the level of welfare (on a scale 0-10) that they perceived when looking at the stimulus. This way, it was possible to get quantitative insights on the psychological distance between each level of the scale. Lastly, there a demographics section including age, gender, education, and income questions.

At the end, all respondents were asked for feedback. The second screening question had been misunderstood since it was double-barreled – a known informal fallacy. This mistake was corrected when developing the main survey.

3.2.2.3 Data Analysis and Results

The results obtained were analyzed on Microsoft Excel. After deleting the screened answers, it was possible to compute averages of the perceived welfare stated by the participants that had seen the same stimulus. Since the sample was small, the number of participants allocated to each stimulus varied more than supposed. Still, the pre-survey results can be seen in the following table and the demographic distribution of participants can be found in appendix E, and the results per demographic group are present in appendix F.

AW Level	Level A	Level B	Level C	Level D
Frequency	6	10	4	7
Average Perceived Welfare	8,17	6,30	4,00	1,43

Table 2: Frequency and average perceived welfare per AW level

Considering the results shown above, none of the levels could be eliminated from the main study. In fact, the averages were all very distinct, which indicates that there should be a significant psychological distance between all levels.

Once the final label was achieved, the 10 different stimuli were created. This step consisted of adding each AWL (A, B, C and D) to a pork and chicken package. The meat presented was always steaks, to not elicit biased WTP and EMQ levels. Two of the stimuli did not contain any AWL, as they composed the control groups of the investigation.

3.2.3 Main Study

After the collection of information on how to present the stimuli and what different levels of AWL were needed in it, the main data collection was carried. This was done through a Qualtrics online survey which was meant to study the moderating effect of MT, AE, and the mediating effect of EMQ on the impact of AW on consumers' WTP on the Portuguese market, as well as the specific research questions previously formulated.

3.2.3.1 Pilot testing

Before sending out the main survey, a pilot version of it was created with the goal of ensuring all questions were correctly presented and understood. Five individuals participated in it, two of them in English and three in Portuguese. All of them were asked about difficulties they had felt and suggestions they could have. Although developing this survey took into consideration the feedback on the pre-survey, further advice came up. No main changes were made, however, details were altered such as including a synonym for all uncommon terms and correcting spelling mistakes.

The stimuli that had been created were partially confirmed in this pilot test, although it appeared somehow blurred when participants tried to zoom the image, which made it more difficult to understand the translation to English. Since this issue would happen for all images shown on Qualtrics surveys and given that it was not possible to increase the size of the AWL too much (to keep the image truthful to what happens in reality), the label was made only slightly bigger. The final stimuli were not ideal in this matter, but they were considered acceptable by the researcher. The final stimuli may be found in appendix G.

3.2.3.2 Data Collection

The main survey of the methodology employed was made online, for a higher number of responses, and made available from 23-11-2021 to 31-11-2021.

1359 diverse respondents were gathered through several channels. The survey started by being shared on social media platforms, on an extensive process that took several days. To gain more answers, participants were told that one of them could win a Christmas basket on a giveaway to happen later. Lastly, 1200 fliers with the survey QR code were distributed.

The targeted sample size was 500, in order to account for incomplete/excluded answers and still gather 30 necessary answers for each stimulus – which allowed to evoke the Central Limit Theorem and assume a normal distribution.

Again, the survey was available in both Portuguese and English, with the goal of accommodating both the foreigners living in Portugal and also the Portuguese people who do not speak fluent English.

3.2.3.3 Research Design

The questionnaire started with an introductory section in which the researcher presented herself and explained what type of study it was. Participants were told the expected response time, 5 minutes, and that they should always answer truthfully and by intuition. Lastly, an e-mail address was displayed, for those who had any doubts or feedback to give.

The first relevant block (Block 2) consisted of two screening questions – the same as before.

Block 3 concerned the variable AE. It was composed of 22 items plus one – "Please choose disagree very strongly" – made to assess participants' attention to the questions.

The fourth block was the response to the stimulus. Firstly, participants were presented with one of the ten stimuli (chosen randomly by Qualtrics) and asked to look at it enough time to fully understand and remember its label. Then, they were asked questions on their EMQ (7 items) and WTP (dragging scale ranging from 0 to 6 euros). Still within this block, three questions were made regarding the manipulation check – respondents were asked what meat type they had seen on the picture, whether there was an AWL on it or not, and, if, so, what was the level of welfare of the animal that originated that meat.

Blocks 3 and 4 were randomized, which means that some participants saw the AE questions before seeing the stimulus and others saw it only afterward. This way, it was possible to control for the effect that the stimuli could possibly have on the assessed AE.

Block 5 concerned the demographic questions of the survey. It was composed of questions on age, gender, education level, net household income per month and number of people in the household. These last two questions were intended to be combined into one single variable, which could more precisely measure the living standards of the person – assuming that household income is shared between living members. This decision was taken because it was expected that a substantial part of the sample would still be students who did not earn money or earned very small wages compared to the money they had available to cover their costs.
There was one last block of questions – block 6 – comprising extra factors to be used in further analyses, including the level of interest in nutrition and sustainability issues and how much respondents liked chicken and pork meat, which could both influence results.
Block 7 was the End of Survey, in which it was explained what the topic of the dissertation was and where all respondents could find it once finished.
The full survey may be read in appendix H.

3.2.3.4 Measurement/Indicators

The goal of the third section was to measure participants' AE in general. To assess it, the Animal Empathy Scale was used. This method was suggested by Elizabeth Paul (2000), and it was chosen because most authors use it and its internal consistency has been confirmed since then (Colombo et al., 2016). The AES is comprised of 22 items – half of them representing empathetic sentiments and the other half unempathetic sentiments. The scale was converted from a 9-point to a 7-point Likert scale to allow for easier comparison with the mediator EMQ and easier answering for participants.
After this block, participants were presented with the stimulus and questions were made about their EMQ and what influenced it. The model used was not about the expected quality of food (in general) since the EMQ has specificities that we wanted to study. The model suggested by (Bredahl et al., 1998) was used because it addressed the different dimensions of the quality of meat – nutritional value, wholesomeness, freshness, leanness, juiciness, tastefulness, and tenderness. The method used is composed of 7 items, one for each quality dimension, which was not changed.
In order to assess WTP, participants were directly asked what was the maximum amount they would be willing to pay for the product shown (van Doorn & Verhoef, 2011), considering the average price of that product in the Portuguese market. Directly asking WTP to participants is a heavily criticized method of assessing their actual WTP, particularly because consumers do

not have an accurate idea of what they would do in a specific situation, because they overstate prices due to prestige effects or because they understate them due to collaboration effects (Breidert et al., 2006). As of 2021, the most well-known alternatives to it would be Conjoint Analysis (Green & Rao, 1971), which was not feasible due to time and technical constraints.

The moderator MT did not require a section of its own since it was not intrinsic of the respondent. It was thus addressed in the manipulation of the stimuli, together with the different levels of AW.

The following part of the questionnaire was the manipulation check, as it was fundamental to verify that the stimulus each person saw was understood to assess their EMQ and WTP. With this aim, three questions were asked – one concerning the MT, another one the existence of AWL and the third one the level of AW presented on the scale.

At the end of the survey, there were extra questions made for possible further analysis. All of them were to be answered on a 7-point Likert-type scale – the same type of scale of the questions on AE and EMQ - so as to facilitate the analysis.

Variable	Construct	Literature	Scale	Number of items	Cronbach's alpha
Dependent variable	Willingness-to-Pay	Van Doorn & Verhoef (2011)	Open-ended question	1	N/A
Mediator	Expected Meat Quality	Bredahl et al. (1998)	7-point Likert scale	7	0,65 – 0,86
Moderator	Animal Empathy	Paul (2000)	7-point Likert scale	22	0,78
Moderator	Meat Type	N/A	N/A	Stimulus	N/A
Independent variable	Animal Welfare	N/A	N/A	Stimulus	N/A

Table 3: Operational Model

3.2.3.5 Data Analysis

After the collection of data, it was all exported to and analyzed with IBM SPSS Statistics software. The analysis of data went through several steps, namely the conduction of data processing, descriptive statistics, inferential statistics and additional data analysis.

The processing of data consisted of cleaning and coding the data. The second step, descriptive statistics, included checking for outliers, characterizing the sample and key variables, assessing the effectiveness of the manipulation, and measuring constructs' reliability.

Concerning the inferential statistics section, regression analyses and the Hayes PROCESS tool were adopted. Model 1 was used to assess the moderation effects, model 4 was used for mediation, and model 10 was chosen to represent the full model being studied. In this case, AW is represented by X, WTP by Y, EMQ is M, and the moderators MT and AE are represented by W and Z, respectively.

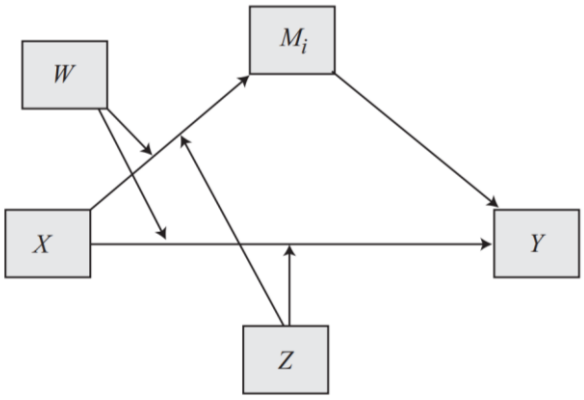


Figure 2: Hayes' Model 10

CHAPTER 4: RESULTS AND DISCUSSION

The following chapter presents the analysis of data collected and results from the main survey. The first part of the chapter concerns the descriptive statistics, while the second section carries inferential statistics on the hypotheses and model formulated beforehand.

4.1 Data Cleaning

In total, 1359 respondents participated in the survey but only 1078 completed it. Within these, 48 (4,5%) did not eat meat at all, 141 (13,1%) considered themselves flexitarian, and the remaining 899 (82,5%) were omnivorous. Out of the 1030 remaining, 97,5% (1004 people) lived in Portugal, 0,7% (7 people) did not live in Portugal but considered moving to Portugal in the near future, and 1,8% (19 people) did not live in Portugal or consider moving to Portugal. Therefore, another 19 people were deleted, and the sample was reduced to 1011.

Next, it was necessary to eliminate all responses given by participants who answered incorrectly to the item "Please choose Disagree Very Strongly" in the AE section, this time reducing the sample to 908 respondents.

The 908 participants remaining were allocated to the 10 different stimuli, but not all of them understood theirs correctly. 251 participants responded incorrectly to at least one of the stimulus assessment questions and their answers were also not considered, according to Hauser et al. (2018), leaving us with a sample of 657 responses. The stimuli distribution may be found in appendix I. As one can tell, 336 saw chicken packages, 321 saw pork, and participants allocated to the two control groups amounted to 154 (23,4% of the sample). In addition, 22,7% of participants were presented with level A, 19,6% with level B, 17,4% with level C, and the remaining 16,9% with level D.

In order to find and remove outliers, the Mahalanobis Distance was calculated. Since the lowest p-value of all was 0,0012, which is higher than 0,001, no entry was removed from the sample at this stage.

4.2 Sample Characterization

The final sample is composed of 657 participants with distinct demographic traits – appendix J.

A lot more women responded to the survey successfully, representing 71,4% (469) of the final sample. This is a very high percentage compared to the proportion of women in the Portuguese population, 52,43% (PORDATA, 2021), but it does not represent a problem to the reliability of

this study since women are consistently pointed as the most usual grocery shoppers in the household (Statista, 2020; Pew Research Center, 2019), which makes the sample highly representative in this sense. Concerning the age of respondents, there was a satisfactory distribution. The most frequently mentioned interval was 45-54 years-old (28,8%), followed by 35-44 (20,2%), 18-24 (18,6%) and 55-64 (16,4%). Most participants were high school graduates or equivalent (40,8%) or owned a bachelor's or master's degree (54,5%), and very few (4,8%) had a lower or higher level of education. The net income of participants was measured per household member, as a relevant percentage of responses was expected to be obtained from students who did not yet work. It ranged mainly between 301 and 900 euros per month (66,9% of responses), followed by "1201-1500" (11,6%) and "≤ 300" (10,8%).

4.3 Key variables: Mean, Minimum, Maximum, and Standard Deviation

AW and MT composed the different stimulus presented. AW is a nominal variable coded on a scale of 0 to 4 (0-control; 1-A; 2-B; 3-C; 4-D), whereas MT got only two different values (1-chicken; 2-pork).

The three remaining variables in this study were all ratio variables that depended on participants' responses, rated on a 7-point Likert-type scale. As so, WTP, AE and EMQ could be meaningfully evaluated in terms of descriptive statistics for the whole sample (table below), and WTP and EMQ can also be described for each stimulus separately (*appendix K*).

	N	Minimum	Maximum	Mean	Std. Deviation
Animal Empathy	657	3,05	7,00	5,2204	0,73241
Willingness-to-Pay	657	0,00	5,49	2,4821	0,92796
Expected Meat Quality	657	1,00	7,00	4,3066	1,18246
Valid N (listwise)	657				

Table 4: Key variables - Minimum, Maximum and Standard Deviation

4.4 Reliability of Constructs' Measurement

Out of the five variables present in the conceptual framework, two (AW and MT) were not measured but rather made part of the stimuli presented. Since WTP was measured through one single item, AE, EMQ are the only variables whose internal consistency should be computed.

The models chosen for measurement of the variables being studied were based on already existing ones with an acceptable to good level of proven reliability, according to George & Paul Mallery (2003). After data collection, it was possible to calculate the Cronbach's Alpha of these variables (*appendix L*) - 0,808 for AE, which is considered a good value of internal consistency, and 0,905 for EMQ, which, according to the same classification method, is excellent. As so, there was no need to eliminate items from any of the scales.

4.5 Manipulation Check

To understand whether stimuli could generally be assumed as correctly understood or not, a manipulation check was made.

Firstly, a descriptive analysis was conducted (*appendix M*) with all 908 participants. All stimuli were understood by, at least, 56,3% of those who saw them, but there were wide discrepancies in the levels of understanding between them. Stimuli with no label were understood by 92,8% of respondents, but all four AW levels showed much lower values. The higher the AW, the better respondents understood the label they saw (A=73,4%; B=70,1%; C=67,1%; D=61,1%) - this may be related to the title of the AWL, as "welfare" is associated with positive living conditions; to the presence of a label, which tends to happen only when there is something beneficial to communicate to consumers; or to its color scheme, slightly biased to the green tones, commonly associated with positive features and attitudes. Both meat types were very well understood by participants (chicken=99,6%; pork=98,6%).

A Manipulation Check was then made with only the valid sample in order to assess whether both types of manipulations (AW and MT) actually resulted in different WTP for the different groups. The AW analysis was made through a One-Way ANOVA, as all its assumptions had been previously verified. The output (*appendix N*) shows a very statistically significant (p-value<0,001) difference in means between levels (including the absence of label), however, the Multiple Comparisons table indicates that the only significant differences happen between A and D (p-value<0,001) and between B and D (p-value=0,004), with level D presenting the lowest WTP of both comparisons. Regarding the analysis between MT groups, an Independent-Samples t-test was run (*appendix O*) and chicken WTP was found significantly higher than pork's (two-sided p<0,001). Therefore, it is possible to assume that the overall manipulation of both variables has been successful for a 5% significance level, although most comparisons between AW levels were not.

4.6 Inference Statistics

4.6.1 Assumptions

Before proceeding with hypothesis testing, it was necessary to understand what type of sample had been obtained so as to select the most appropriate types of tests, according to the assumptions of each one of them.

The independence of observations (Gerald, 2018) was always assured, as each participant saw one and one stimulus only. The Central Limit Theorem, which states that the distribution of sample means approximates a normal distribution as sample sizes get larger, can be invoked, since all samples are composed of over 30 observations (appendix I)

The homogeneity of variances was one more common assumption that needed to be checked, and according to Levene's test, all WTP, AE and EMQ are homoscedastic both when grouped into AW levels and MT (*appendix P*), as p-values based on means were always higher than 0,05 and we fail to reject the null hypothesis of homogeneity of variances.

4.6.2 Hypotheses Test

The following section of this paper concerns the testing of all 10 hypothesis previously formulated, with a 95% level of confidence. All analyses are made based on the valid sample of 657 participants.

Given the hypotheses to be tested and the types of variables, and also given that the above assumptions and absence of outliers were all met, it was decided to proceed with parametric tests – namely regression tests (including Hayes' mediation and moderation analyses). The multicollinearity, independence of errors and linear relationship are the only three assumptions remaining, which are all checked upon each hypothesis testing, when necessary. The linear relationship was accessed through a curve estimation prior to running each simple regression and the linear models presented always showed high levels of significance compared to the others.

H1: *A higher AW leads to a higher WTP*

In order to test the first hypothesis, it was chosen to carry a linear regression that accommodated the nominal independent variable AW, as all assumptions had been verified previously to running the analysis. To test H1, the N/A entries were all filtered out and the AW variable was recoded into three new variables – level A, level B and level C - with level D as the reference level.

A linear regression was then run (*appendix Q*). The Durbin-Watson coefficient (d) is 2,051, which is lower than 2,5 and higher than 1,5, suggesting that there is no autocorrelation (errors are independent). Additionally, the VIF value is lower than 5 for all predicting variables, meaning that there is no multicollinearity worth considering. Consequently, all regression assumptions were checked and it was possible to analyze the model formulated.

The model created is statistically significant (p-value<0,001) and explains 5,1% of the variation in the dependent variable, WTP. All unstandardized coefficients are lower than the level of significance (0,05), meaning that they can all be interpreted. There is statistically significant evidence that level A increases WTP by 0,586 compared to level D, that level B increases WTP by 0,414 euros, and that level C increases it by 0,320.

The figure below shows the model coefficients and whether they are significant or not:

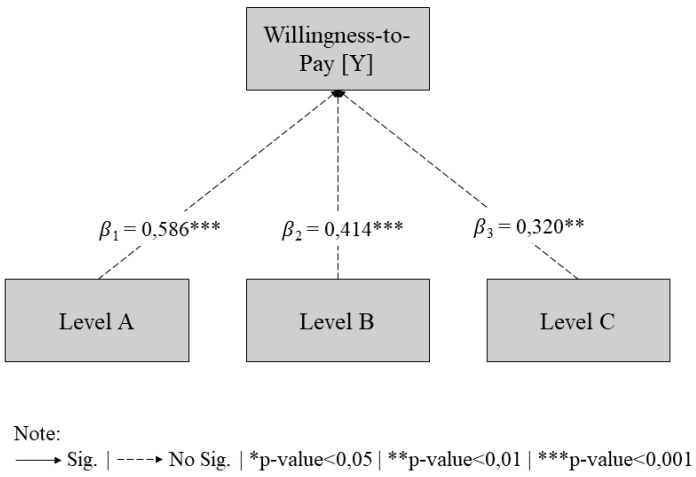


Figure 3: Linear Regression - Impact of AW levels on WTP (D as reference)

For the reasons presented above, namely the high significance of levels A, B and C effects and their coefficients, H1 is accepted.

***H2**: Levels A and B increase WTP (compared to non-label meat), level D decreases it, and level C does not have a statistically significant impact on WTP.*

Testing H2 was made through a multiple linear regression which included the 4 different welfare levels as categorical dummy variables and the control group as the reference level.

According to the regression results (*appendix R*), there is no autocorrelation (d=1,956) or multicollinearity (1,430≤VIF≤1,521). The model created is highly significant (p-value<0,001), explains 4,0% of the variation in WTP, and only two of the AW levels have been found to be statistically significant. The coefficients and their significance levels are represented in the figure below.

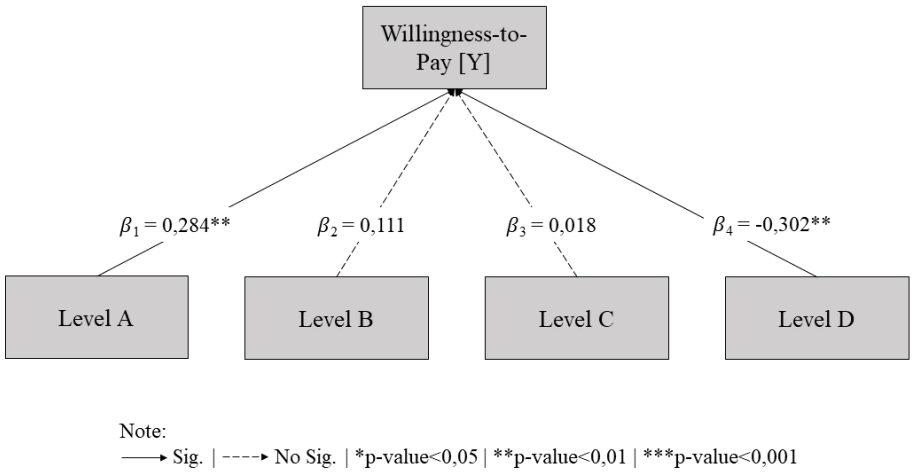


Figure 4: Linear Regression - Impact of AW levels on WTP (N/A as reference)

The coefficient of level A is 0,284 and its p-value is lower than 0,05 (0,007), meaning that there is statistical evidence for an increased 0,284 euros in WTP for meat packages with AW=A compared to N/A. Level D also presents a statistically significant p-value of 0,008, which suggests that consumers decrease their WTP by 0,302 euros when seeing a Level D label on the packages of meat. Both levels B and C have non-significant p-values (0,306 and 0,877), which prevents us from stating that there is statistical evidence that these levels lead to different WTP than that of non-label meat.

Since it is not possible to assume the impact of level B, although the other three are consistent with the formulated hypothesis, H2 is only partially accepted.

In addition, after repeating the test for each MT, it was concluded that the results of participants that saw chicken meat (*appendix S*) differ from those of participants who saw pork (*appendix T*). Non-label chicken meat is associated with higher AW, since only the coefficient of level D is statistically significant, and the contrary happens for pork, for which only A is significant (positive coefficient). As expected, and since the distribution between chicken and pork stimuli was made randomly, the overall results state that both extremes of the scale have a significant effect on WTP.

***H3**: A higher welfare on chicken has a higher positive impact on WTP than a higher welfare on pork.*

To study the moderating effect of MT between AW and WTP, Hayes' PROCESS Model 1 was used (*appendix U*). Before running the analysis, it was necessary to unselect AW=N/A cases once again. The AW variable was recoded so that X1, X2 and X3, would represent level A, B and C, respectively. This coding scheme will be applied in all further Hayes' models analyses using AW as the independent variable.

Looking at the model summary, one can see the model is significant with a p-value of 0,0000 and 10,13% of the variance in WTP is explained by it. The simple effects of the three levels are all statistically significant for a 95% confidence level, meaning that A tends to lead to an increased WTP by 0,6229 euros, B increases it by 0,4756 euros and C by 0,3508, compared to the WTP for level D. The regression coefficient of MT is -0,4987 with a significant p-value of 0,0043, suggesting that participants pay less 0,4987 euros for 500g of pork meat than for the same amount of chicken meat when AW is low (D).

The interaction between MT and AW is not significant for any of the levels, meaning that there is no evidence that the MT moderates the effect of AW on WTP.

The figure below shows the statistical diagram of the moderation analysis:

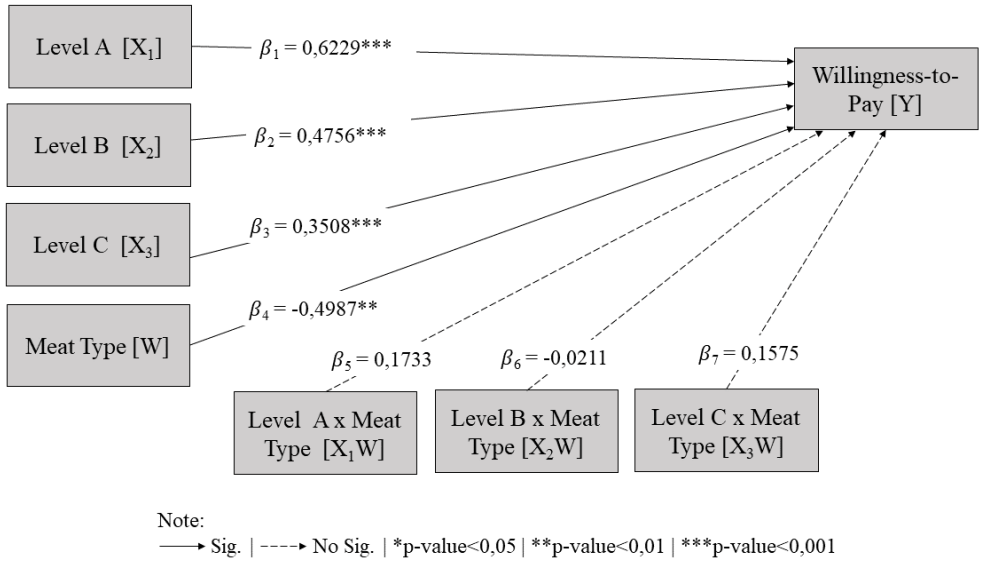


Figure 5: Hayes' Model 1 - Moderation of MT on the relationship between AW and WTP

Given that MT does not moderate the relationship of any level of AW with WTP, H3 is rejected.

***H4**: AE moderates the relationship between AW and WTP.*

The study of moderation of AE was also made through Hayes' PROCESS Model 1, and its results are found in appendix V. The previous coding of the variable AW was used once again. Since it had been ensured that all regression assumptions were verified, it was possible to run the model.

The formulated model is significant and only 5,59% of the variance in WTP is explained by it. The model suggests that level A increases WTP by 0,5891 euros, level B by 0,4083, and level C by 0,3144 – all compared to the WTP of level D. Both AE alone and all interactions between AW levels and AE have shown to not be significant (p-values≥0,4666). For this reason, we cannot assume that AE has a moderating effect on the relationship between AW and WTP. Hypothesis 4 is thus rejected.

The relationships found are represented in the following figure:

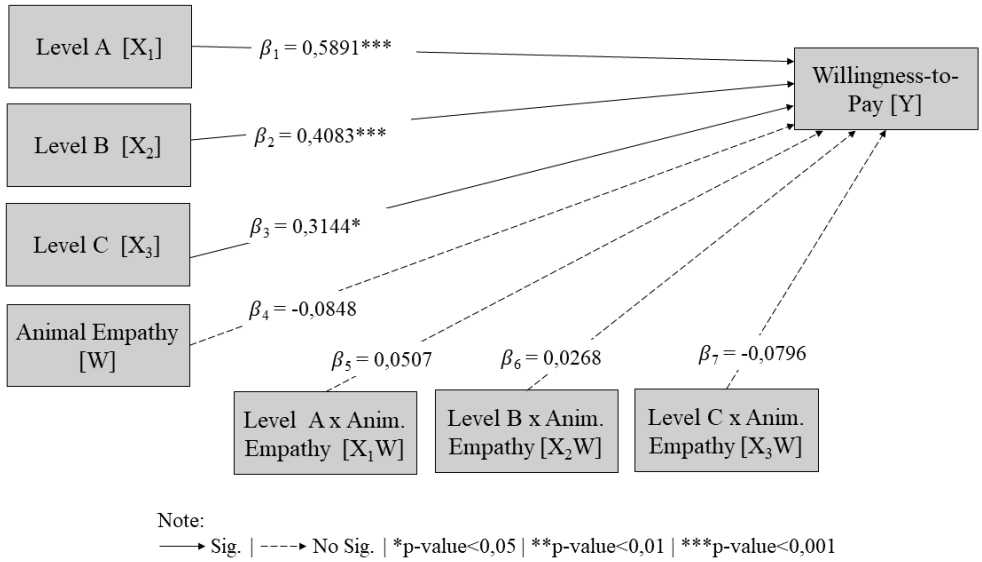


Figure 6: Hayes' Model 1 - Moderation of AE on the relationship between AW and WTP

***H5**: EMQ mediates the effect that AW has on WTP*

With the aim of testing the mediating effect of EMQ, Hayes' model 4 was used. Regression assumptions were all met, meaning that no obstacle could compromise the fitting of the model formulated.

Results are shown in appendix W, which describes a highly statistically significant model (p-value=0,0000) that explains 11,09% of the variation of the dependent variable only through the variation in AW.

As expected, the different levels of AW lead to different EMQ. According to the model, all levels have statistically significant effects on EMQ. Level A leads to a 1,0598 increase in EMQ, level B increases it by 0,8551 and level C by 0,4163, compared to the reference level (D). In turn, EMQ also has a very significant effect on WTP, with a coefficient of 0,2559 and a p-value equal to 0,0000. This means that a one-point increase in EMQ is expected to increase WTP by 0,2271 euros. It is then possible to compute the mediating effect – EMQ will increase WTP by 0,2559*1,0598=0,2712 when AW increases from level D to A, by 0,2559*0,8551=0,2188 when it increases to level B, and by 0,2559*0,4143=0,1065 when AW increases to C.

Despite the mediation effect that has already been analyzed, the Hayes & Preacher (2014) model also describes a direct effect of AW on WTP that is only significant for level A. The coefficient of X1 is 0,3146, meaning that WTP would increase by this value as a consequence of increasing

AW from D to A. Although X2 and X3 coefficients are also positive, they are not statistically significant in the data collected (0,0952 and 0,0694, respectively).

The figure below represents all found relationships.

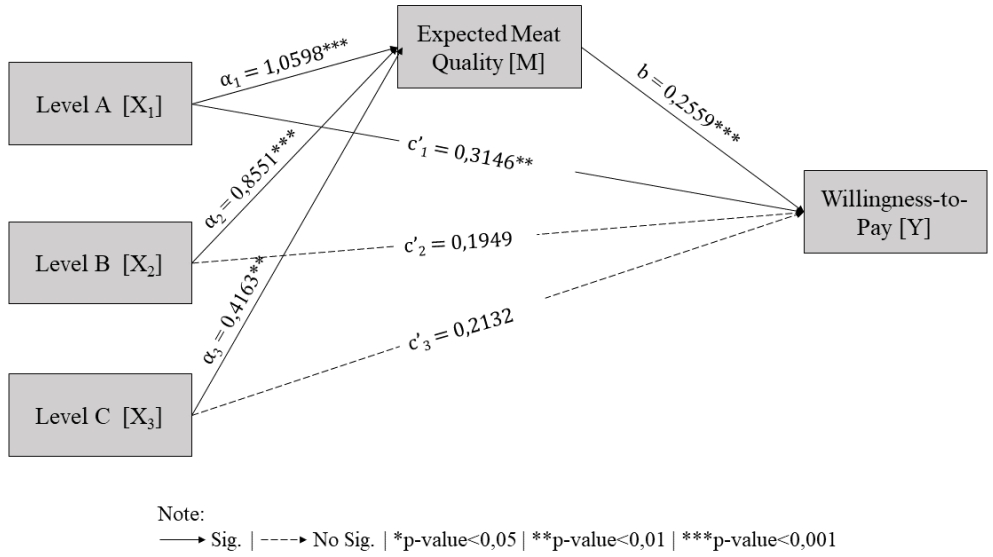


Figure 7: Hayes' Model 4 - Mediation of EMQ on the relationship between AW and WTP

As all mediation effect relationships were found to be statistically significant, H5 is accepted.

Further Analysis

***H6**: A higher AE decreases the WTP for both pork and chicken meat.*

In order to test H6, it was intended to run two simple linear regressions since both AE and WTP are measured at the continuous level.

Beginning by identifying whether linear regression assumptions could be verified, a scatter plot was created for the relationship between AE and WTP of participants presented with chicken meat. As it seemed not to represent a relationship between the two variables, a curve estimation was made for different types of regressions (*appendix X*). Since none of the models created presented p-values below 0,6, it was assumed that there is no sort of relationship between AE and WTP for chicken meat.

On the other hand, the relationship between AE and WTP for pork was actually found significant (*appendix Y*). Although the lowest p-value was that of the inverse regression, it was decided to proceed with the linear regression for convenience matters. All further linear regression assumptions were met, as explained previously, and the model created can be found in appendix Z. This model is statistically significant (p-value=0,041) with d=1,015 (suggesting the absence of autocorrelation) and it explains only 1,3% of the variation of WTP. The coefficient of AE, -0,141, is statistically significant and suggests that, for a 1-point increase in AE, WTP for pork meat decreases by 0,141 euros.

As the level of AE increases, there is significant evidence that the WTP for pork meat decreases. Since this conclusion is not applicable to chicken meat, H6 is only partially accepted.

***H7**: MT has no moderation effect on the relationship between AW and EMQ*

For the study of H7, Hayes' model 1 was used once again. After confirming that all regression assumptions were met, AW was again set as a nominal multicategorical independent variable (X), EMQ was set as the dependent variable (Y) and MT as the moderator (W). As before, the control group was not considered in this analysis in order not to disturb results and level D was again the reference level.

Results are shown in appendix AA. The model formulated is highly significant (p-value=0,0000) and explains 15,68% of the variation in EMQ. According to it, all AW levels are statistically significant and the same happens for MT. However, none of the interaction terms has p-values lower than 0,5500, indicating that MT does not have a moderating effect for any of the different AW levels.

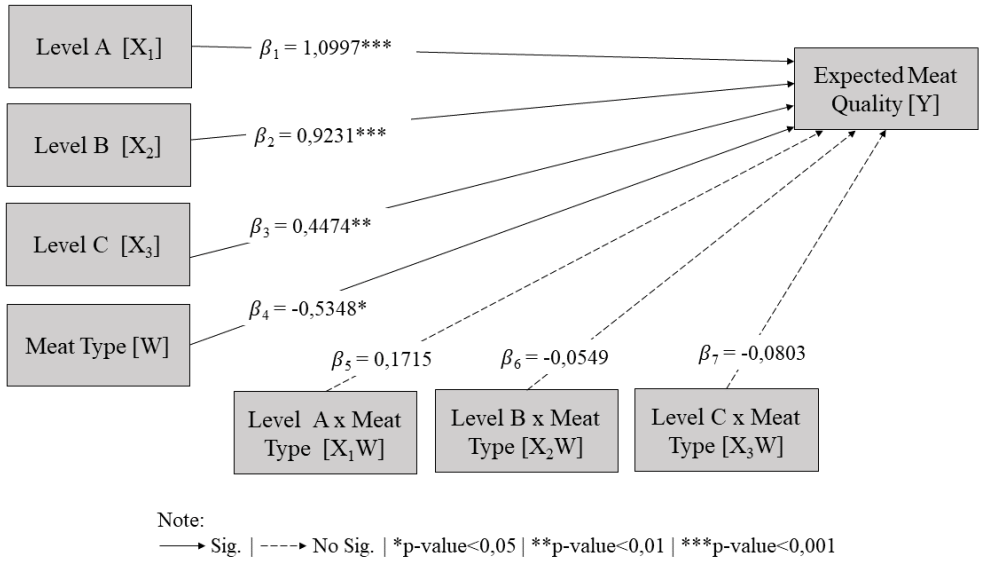


Figure 8: Hayes' Model 1 - Moderation of MT on the relationship between AW and MT

As the interaction terms are not statistically significant in explaining EMQ, H7 is accepted.

***H7.1**: Levels A and B increase EMQ (compared to non-label meat), level D decreases it, and level C does not have a statistically significant impact on EMQ.*

To study H7.1, a linear regression as that of H2 was run – this time with EMQ as the dependent variable. The results are found in appendix BB and suggest that the formulated regression explains 9,2% of the variation in EMQ, with a very high significance level (p-value <0,001). Again, there is no autocorrelation or multicollinearity, allowing us to proceed with the analysis.

Out of the four coefficients, three have statistically significant effects. Levels A and D have similar but opposite effects on EMQ, as A tends to increase it by 0,545 (p-value<0,001) and D to decrease it by almost the same amount, 0,515, with the same p-value. Level B is less significant (p-value=0,012) but still suggests that it increases EMQ by 0,340 compared to non-label meat. Although level C has a negative coefficient, the same is not significant and no conclusion may be drawn concerning its effect.

The conclusions are coherent with the hypothesis formulated, thus leading it its acceptance.

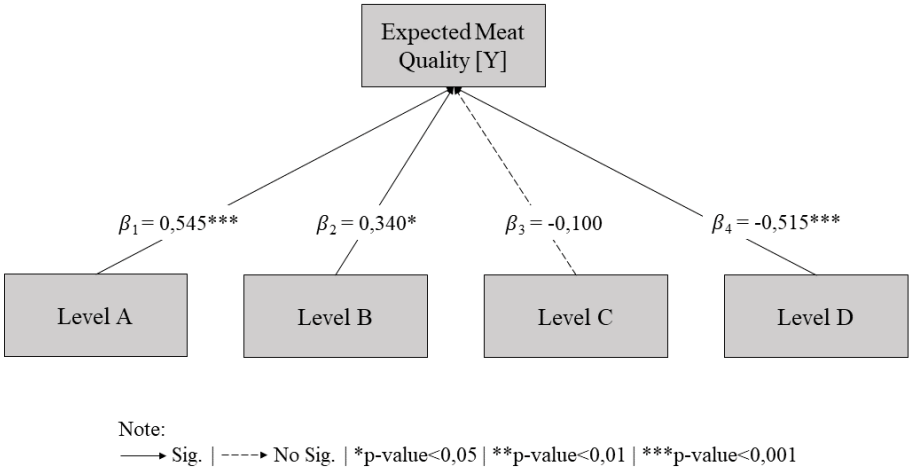


Figure 9: Linear Regression: Impact of AW levels on EMQ

***H8**: A higher AE decreases the EMQ.*

The assessment of H8 was made through another linear regression, although other types of functions would also fit the data (*appendix CC*).

With all assumptions verified, the regression model was run (*appendix DD*). It is highly significant but explains only 1,1% of the variation in EMQ. According to it, the AE coefficient is statistically significant (p-value=0,009) and equal to -0,175, meaning that there is statistical evidence that when AE increases by 1, EMQ decreases by 0,175, on average.

Since this coefficient is negative and statistically significant, H8 is accepted.

***H9**: A higher EMQ increases WTP differently for different Meat Types.*

To study the moderating effect of MT on the effect of EMQ over WTP, it was chosen to use Hayes' PROCESS Model 1 one more time.

The model obtained can be found in appendix EE, it is statistically significant, with a p-value of 0,0000, and explains 17,05% of the variation in WTP. Whereas both EMQ and MT are significant predictors of WTP – with coefficients of 0,2593 and -0,3510, respectively, and p-values of 0,0000 for both – the interaction term EMQ*MT is not. The model presents a p-value of 0,3968 for this term, which is much higher than 0,05. For this reason, MT cannot be assumed

to moderate the effect that EMQ has on WTP and H9 is rejected. The observed effects are represented below.

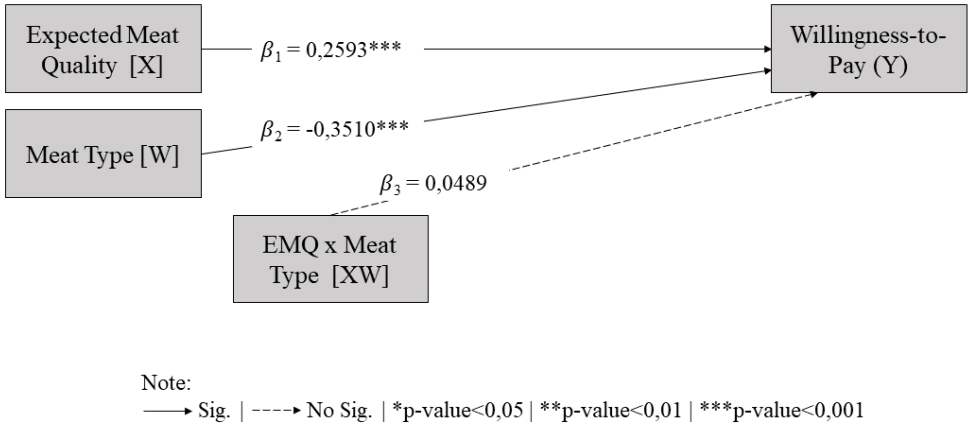


Figure 10: Hayes' Model 1 - Moderation of MT on the relationship between EMQ and WTP

***H10**: AE does not moderate the relationship between AW and EMQ*

As with the previous moderation tests, the test of H10 was made through the Hayes' model 1. and the coding of AW was the same as before.

The resulting model (*appendix FF*) was found to be highly significant and to explain 13,82% of the variation in EMQ. X1, X2 and X3 all have very significant p-values and positive coefficients. AE is also statistically significant (p-value=0,0009), and its coefficient indicates that increasing AE by one point tends to decrease EMQ by 0,4845. Concerning the interaction terms, AE moderates the relationship between AW and EMQ but only when AW=A. In other words, there is statistically significant evidence that when AE increases by 1 point and the meat has a level A on its AWL, EMQ will increase by 0,5217. The mentioned effects are portraited below.

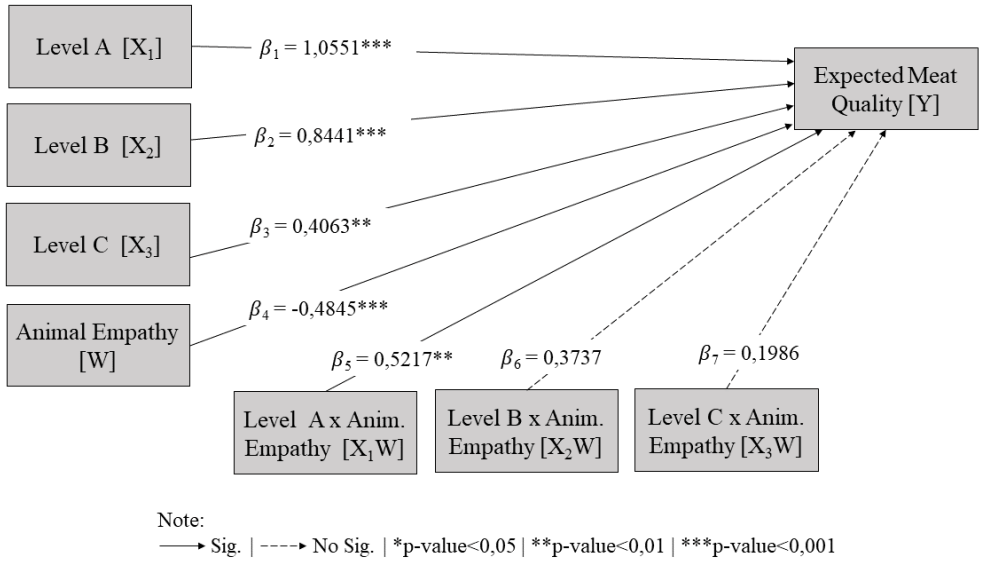


Figure 11: Hayes' Model 1 – Moderation of AE on the relationship between AW and EMQ

In conclusion, H10 is rejected for AW=A, but accepted for levels B and C.

Full Model

Aiming to evaluate the formulated model as a whole, the Hayes' PROCESS tool was used one last time (*appendix GG*). In order to analyze how the relationship of AW (X) on WTP (Y) is moderated by MT (W) and AE (Z) and mediated by EMQ (M), model 10 was chosen.

Two models were formulated as the result of the mediation effect being studied. The first model, intended to explain EMQ as a function of X, W and Z, presents relevant information on the effect that X has on the independent variable. According to the model, which is statistically significant (p-value=0,0000) and explains 18,18% of the variation in EMQ, the only statistically significant variables are MT, AE, and the interactions of AE with AW=A and AW=B. None of the AW levels is significant, although they all have negative coefficients.

The second model is also highly significant (p-value=0,0000) and represents 17,62% of the variation in WTP, with EMQ and MT being the only significant predictors of it. According to the final model, all AW levels have a positive coefficient but none of them has direct effect on WTP. Additionally, increasing EMQ by one-point increases WTP by 0,2258, on average (p-value=0,0000), and the presence of pork meat decreases WTP by 0,3812 (p-value=0,0240)

compared to that of chicken meat. All remaining direct and indirect effects present in the regression are not significant for a 95% confidence level, including all interactions between AW levels and MT (p-values≥0,4139) and between AW levels and AE (p-values≥0,4294), and the simple effect of AE (p-value=0,7267).

The mediation effect of EMQ within the full model is analyzed on the Indirect Effect section of the output, in which the conditioning values were the mean, and mean ± 1 SD. As one can tell, EMQ cannot be considered a mediator in three of the presented scenarios (all for AW=C), but in the others it can.

According to the interpretation made above, the full model being studied is not statistically significant. Although EMQ has a mediation effect worth considering, MT and AE are not significant moderators of the relationship between AW and WTP.

CHAPTER 5: CONCLUSIONS AND LIMITATIONS

The following chapter discusses all conclusions drawn from the current investigation, always considering its limitations. Furthermore, it presents the implications that they may have in the managerial field and in future research.

5.1 Main Findings & Conclusions

Conclusions were taken from both the review of literature and hypotheses testing, which meant to answer the research questions formulated initially and also to conduct exploratory research on other relationships. The answers found are resumed below.

RQ1: *What level of the AWS do consumers associate with meat that has no scale on it?*

Although no research on this specific scale has been carried out before, it is known that consumers are increasingly concerned about farming and that those who are younger and better educated tend to be the most interested in AW improvement (Barnett, 2007; Cornish et al., 2016a).

According to the data collected, it was possible to determine that the absence of a label led to the same WTP as that of levels B and C, whereas level D tends to decrease it by 0,302 euros and level A to increase it by 0,284 (appendix HH2). The levels of significance of these predictors B and C were both found high (p-value≥0,306), but level C had a p-value that is more than the double of level B's. This means that, within the two, level C tends to be even more associated with N/A than level B.

Also, when using EMQ as the dependent variable (appendix HH7.1), the N/A packages got similar results to those of level C (p-value=0,477), but not to any other level (p-values≥0,012).

In terms of the variables being studied as dependent on AW, the level that is more strongly associated to non-existence of label is level C (medium), followed by level B (good). In both analyses made, levels A and D got very low p-values (≤0,01), meaning that their association with N/A is extremely low.

RQ2: *Would consumers be willing to pay more for an improvement in animal welfare? How do they perceive the distance between each level?*

The literature review suggested that consumers are willing to pay for increased levels of AW, mostly for utilitarian than for altruistic reasons (Johansson-Stenman, 2006).

This is consistent with the current data analysis, as the study of H1 allows us to infer that indeed improving the level of AW also improves WTP. According to the results, all levels of AW have a statistically significant positive impact on WTP when level D is the one used as reference. Level C increases it by 0,320 euros, level B by 0,414 euros and level A by 0,586 euros, which translate into 0,640, 0,828 and 1,172 euros per kilo, respectively. These values are considerably high and also significant for a 99% confidence interval, meaning that there is no margin for doubt in this matter.

Additionally, assuming that the WTP is proportional to the perception of AW between these 4 levels, we can conclude that levels B and C are perceived as the closest to each other, since the difference in WTP between the two (0,094 euros) is the closest of all. The distance between D and C is 0,320 euros, which is more than 3 times the one between C and B, and the distance between B and A is 0,172. To be more precise, the perceived distance C-B is only 29% and the distance B-A is 54% of the one between D and C.

The results found may be partially explained by the color scheme of the label (A-dark green; B-light green; C-yellow; D-orange) or by the names present in it (A-Excellent; B-Good; C-Medium; D-Low), as both cues are subject to one's interpretation.

RQ3: *What would be the impact of introducing the AWS on the Portuguese market? What may influence the result?*

The answer to RQ3 depends on the level of animal welfare that meat producers provide to the animals being raised. As the literature review noted, the national and international meat industries have made efforts in the direction of improving the life quality of animals, and this is the assumption being made when analyzing RQ3.

Given the current improvement of AW, the introduction of an AWL on meat packages would have an overall benefit impact to producers and sellers of meat. Not only would this meat be better expected in terms of quality, which ultimately raises WTP, as it would also increase the WTP directly.

For the meat producers that could not manage to provide an excellent (A) or good (B) life quality to their animals, then adding this logo to their packages would only lead to lower expectations of quality and lower WTP.

Concerning the study of potential moderation by MT and AE, both were found to be non-significant. This way, although MT does have an effect on EMQ and on WTP (HH3; HH9), this effect does not depend on the AWL. The study of AE and its impact on WTP always showed non-significant p-values, whether concerning direct or indirect effects.

Additional findings:

The first takeaway was that AE leads to lower EMQ. Those who are more empathetic towards animals have lower expectations of quality, which then translates into a lower WTP as well. However, since the model formulated explains only 1,1% of the variation in EMQ, it should not be a primary topic of concern.

Also, although AE is not a significant moderator of AW on WTP, it does have a direct and negative effect on the WTP for pork meat only. This is consistent with the review of literature, as several sources have mentioned that humans create more empathy towards animals with similar features. Being the pig a mammal with closer characteristics from those of humans, such an outcome would be expected.

The MT was found not to moderate the effect of AW on EMQ, or of EMQ on WTP. This would also be expected, since no information on this topic was found when reviewing the existing literature.

Lastly, AE positively moderates the effect of AW on EMQ, but only when AW=A. In this case, the AW being so high will activate consumers' AE and, the higher this is, the higher is their additional EMQ. It should be mentioned that the potential moderating effect of AE when AW=B or C is the same as that of when AW=D, but the question of whether it is significant or not is yet to be discovered.

5.2 Managerial / Academic Implications

The findings of this study are indeed relevant for producers and sellers of meat in Portugal and for future researchers of this subject. From the insights obtained, companies may decide

whether implementing this AWS on meat packages could be a good idea, considering the costs incurred for an increase in AW.

The academic implications of this dissertation relate to the potential of differentiation by introducing information of AW on meat packages. According to the insights obtained, this would have significant consequences on the EMQ and WTP for meat in Portugal and must be studied more in-depth, as this trend is expected to remain in the future. It is relevant to study how these consequences would vary with different factors, some of which are specified in the following section of this paper.

From the managerial perspective, conclusions should also be drawn. Meat from animals that had very good life conditions should certainly be labelled with one of these scales, as consumers are willing to pay substantially more if they know that AW is high. For the meat producers that could not manage to provide an excellent (A) or good (B) life quality to their animals, then adding this logo to their packages would only lead to lower expectations of quality and lower WTP.

This will eventually lead to improvements in welfare for companies whose increased production costs would compensate for the increased AW. The trend of the market is to increase positive attitudes towards animals, either by eating less meat or by preferring meat produced with higher AW. Firms' long-term sustainability will be highly defined by their behavior towards the animal living conditions, although meat currently has a low level of differentiation. More and more, differentiation will increase due to credence attributes such as AW and healthiness, and the sooner the market starts adjusting to this trend, the better for its participants. However, the decision of whether to improve animal conditions should consider the desired brand image and target customers, as keeping price low is another way of differentiating, especially in a market where meat becomes more expensive.

5.3 Limitations

Although several conclusions were made, it is important to notice that this study does have its own limitations, most of them related to the Methodology and Data Analysis.

Due to time and resources constraints, it was not possible to define the best possible visual stimulus, but rather to use an existing one (appendix B). In fact, it is possible that the scale

would have been better understood if written with numbers, in the opposite order, with different words labelling each level (qualitative, as the current ones, or more specific), with a bigger font or even if its colors were different. All these are characteristics that may be explored to increase the manipulation understanding and get more trustworthy results.

Also, the Qualtrics platform does not allow pictures to be presented with its full quality. This may have affected the correct understanding of stimuli, namely from those who do not speak Portuguese. The AWL was only a small section of the stimulus in order to keep it realistic, and the English translation was smaller and more difficult to read. Furthermore, those who took the survey on smartphones found it difficult to zoom the picture, which, combined with a lower size of the screen, resulted in very small stimulus sizes.

It is also relevant to mention that the model used to study EMQ was initially based on pork meat. Since pork and chicken meat have different features and applications, their definition of quality may differ from each other. Consequently, the EMQ model may not be 100% suitable for chicken meat, although the Cronbach's alpha achieved was indeed very satisfactory (0,905).

A more holistic limitation is related to the fact that this research per se is not enough for firms to take any decision on whether to implement an AWL or not. The basic concept of any managerial decision is that benefits should outweigh costs, either in the short or long term, and this study does not mention what costs of improving AW would be. In fact, these depend substantially from each firm's resources and no one better than the own firm to make a cost estimation. However, independently of the numbers achieved, support systems for animal welfare from the government would always be an incentive in this direction. As Fernandes et al. (2021) refer, the benefits of improving AW are much more than higher WTP and EMQ – including production gains, benefits to the animal, and positive effects on the workforce, among others.

5.4 Further Research

The current research has explored several topics, however, many more are yet to be studied.

The Portuguese market consumes mainly pork and chicken meat, but poultry and turkey are two other very appreciated types of meat (Portal Do INE, 2021). The introduction of such a label on several other species, but, in particular, in these two, would be of great interest for the meat producer and sellers in the country.

It is also known that Portugal has a high level of fish consumption, thus becoming the European country with the highest fish consumption per capita (PÚBLICO, 2021). Studying the possibility of introducing an AWL (with adjusted criteria) on fish could lead to relevant results and, eventually, to the transformation of the industry as we know it.

The creation of clusters would be very interesting in order to know how to communicate the introduction of an AWL. According to the different groups of consumers and their response to the different stimuli, it could be possible to better understand if it would be worth it for a particular brand to implement this label, given its current and potential target. In addition, marketing and communication campaigns around the topic could become more efficient, as a good target is crucial for the outcome of one of these campaigns.

Finally, it could be relevant to study practical variables instead of AE, which seems to have only a residual effect on the topic studied. Examples could be different types of labels (moderator), different locations within the package (moderator), and even different parts of the animal's body (moderator). Moreover, labeling non-packaged meat with an AWL could have substantial impact on the Portuguese meat market, as most meat is actually bought in butchers, and studying this possibility would be pertinent as well. Perhaps it would also be relevant to study the purchase intention as the dependent variable, as AW may be a sensitive topic and many consumers may set their own AW floor – the minimum level of welfare accepted when buying meat, independently of the price being set.

Concerning the methodology itself, WTP should preferably be studied through indirect methods – conjoint analysis or experimental auctions - if enough resources are available. Researchers strongly advise these due to their increased efficacy in measuring this variable, as they force participants to make tradeoffs or give them incentives to reveal their true WTP.

REFERENCE LIST

Adams, C. J. (2015). *The sexual politics of meat: A feminist-vegetarian critical theory*. Bloomsbury Publishing USA.

Alonso, M. E., González-Montaña, J. R., & Lomillos, J. M. (2020). Consumers' Concerns and Perceptions of Farm Animal Welfare. *Animals 2020, Vol. 10, Page 385*, *10*(3), 385. https://doi.org/10.3390/ANI10030385

Anderson, E. W. (1996). Customer satisfaction and price tolerance. *Marketing Letters*, *7*(3), 265–274.

Barnett, J. L. (2007). Effects of confinement and research needs to underpin welfare standards. *Journal of Veterinary Behavior: Clinical Applications and Research*, *6*(2), 213–218. https://doi.org/10.1016/J.JVEB.2007.08.006

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173.

Bastian, B., & Loughnan, S. (2017). Resolving the Meat-Paradox: A Motivational Account of Morally Troublesome Behavior and Its Maintenance. *Personality and Social Psychology Review*, *21*(3), 278–299. https://doi.org/10.1177/1088868316647562

Bennett, & M., R. (1997). Farm animal welfare and food policy. *Food Policy*, *22*(4), 281–288. https://ideas.repec.org/a/eee/jfpoli/v22y1997i4p281-288.html

Bennett, R. M., & Blaney, R. J. P. (2003). Estimating the benefits of farm animal welfare legislation using the contingent valuation method. *Agricultural Economics*, *29*(1), 85–98.

Bernard, J. C., & Bernard, D. J. (2009). What Is It About Organic Milk? An Experimental Analysis. *American Journal of Agricultural Economics*, *91*(3), 826–836. https://doi.org/10.1111/J.1467-8276.2009.01258.X

Blokhuis, H. J., Keeling, L. J., Gavinelli, A., & Serratosa, J. (2008). Animal welfare's impact on the food chain. *Trends in Food Science and Technology*, *19*(SUPPL. 1), S79–S87. https://doi.org/10.1016/J.TIFS.2008.09.007

Blum, L. A. (2009). *Friendship, Altruism and Morality (Routledge Revivals)*. Routledge.

Bone, P. F., & Corey, R. J. (2000). Packaging ethics: Perceptual differences among packaging professionals, brand managers and ethically-interested consumers. *Journal of Business Ethics*, *24*(3), 199–213.

Bracke, M. B. M., Spruijt, B. M., & Metz, J. H. M. (1999). Overall animal welfare assessment reviewed. Part 1: Is it possible? *Netherlands Journal of Agricultural Science*, *47*(3–4), 279–291. https://doi.org/10.18174/NJAS.V47I3.466

Bracke, M., Botreau, R., Veissier, I., Butterworth, A., & Keeling, L. (2007). *Definition of criteria for overall assessment of animal welfare*. https://www.researchgate.net/publication/40105884

Bredahl, L. (2004). Cue utilisation and quality perception with regard to branded beef. *Food Quality and Preference*, *15*(1), 65–75.

Bredahl, L., Grunert, K. G., & Fertin, C. (1998). Relating consumer perceptions of pork quality to physical product characteristics. *Food Quality and Preference*, *9*(4), 273–281.

Breidert, C., Hahsler, M., & Reutterer, T. (2006). A review of methods for measuring willingness-to-pay. *Innovative Marketing*, *2*(4), 8–32.

Broida, J., Tingley, L., Kimball, R., & Miele, J. (1993). Personality Differences between Pro- and Antivivisectionists. *Society and Animals*, *1*(2), 129–144. https://doi.org/10.1163/156853093X00037

Broom, D. M., & Fraser, A. F. (2015). *Domestic animal behaviour and welfare*. Cabi.

Buller, H., Blokhuis, H., Jensen, P., & Keeling, L. (2018). Towards Farm Animal Welfare and Sustainability. *Animals : An Open Access Journal from MDPI*, *8*(6). https://doi.org/10.3390/ANI8060081

Camilleri, L., Gill, P. R., & Jago, A. (2020). The role of moral disengagement and animal empathy in the meat paradox. *Personality and Individual Differences*, *164*. https://doi.org/10.1016/J.PAID.2020.110103

Chilton, S. M., Burgess, D., & Hutchinson, W. G. (2006). The relative value of farm animal welfare. *Ecological Economics*, *59*(3), 353–363.

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*(3), 455–478. https://doi.org/10.1007/S10806-016-9615-X/TABLES/1

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.2017.01.006

Colombo, E. S., Pelosi, A., & Prato-Previde, E. (2016). Empathy towards animals and belief in animal-human-continuity in Italian veterinary students. *Animal Welfare*, *25*(2), 275–286.

Cornish, A., Raubenheimer, D., & McGreevy, P. (2016a). What We Know about the Public's Level of Concern for Farm Animal Welfare in Food Production in Developed Countries. *Animals 2016, Vol. 6, Page 74*, *6*(11), 74. https://doi.org/10.3390/ANI6110074

Darby, M. R., & Karni, E. (2015). Free Competition and the Optimal Amount of Fraud. *Https://Doi.Org/10.1086/466756*, *16*(1), 67–88. https://doi.org/10.1086/466756

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*(10), 8304–8313. https://doi.org/10.3168/JDS.2016-10886

Donald BROOM, P. M. (n.d.). *DIRECTORATE GENERAL FOR INTERNAL POLICIES POLICY DEPARTMENT C: CITIZENS' RIGHTS AND CONSTITUTIONAL AFFAIRS PETITIONS Animal Welfare in the European Union STUDY*.

Eisenberg, N. (2015). Empathy and Sympathy: A Brief Review of the Concepts and Empirical Literature. *Http://Dx.Doi.Org/10.2752/089279389787058226*, *2*(1), 15–17. https://doi.org/10.2752/089279389787058226

Fernandes, J. N., Hemsworth, P. H., Coleman, G. J., & Tilbrook, A. J. (2021). Costs and benefits of improving farm animal welfare. *Agriculture*, *11*(2), 104.

Figueredo, E. V. (2021). *Investigating Differences in Gender Identity, Empathy and Personality Between Vegetarians and Non-Vegetarians*.

Filippi, M., Riccitelli, G., Falini, A., Salle, F. di, Vuilleumier, P., Comi, G., & Rocca, M. A. (2010). The Brain Functional Networks Associated to Human and Animal Suffering Differ among Omnivores, Vegetarians and Vegans. *PLOS ONE*, *5*(5), e10847. https://doi.org/10.1371/JOURNAL.PONE.0010847

Fraser, D. (2003). *WellBeing International WellBeing International WBI Studies Repository WBI Studies Repository Assessing Animal Welfare at the Farm and Group Level: The Assessing Animal Welfare at the Farm and Group Level: The Interplay of Science and Values Interplay of Science and Values*. https://www.wellbeingintlstudiesrepository.org/assawel

Galli, A., Moreno Pires, S., Iha, K., Alves, A. A., Lin, D., Mancini, M. S., & Teles, F. (2020). Sustainable food transition in Portugal: Assessing the Footprint of dietary choices and gaps in national and local food policies. *Science of the Total Environment*, *749*. https://doi.org/10.1016/J.SCITOTENV.2020.141307

Gellynck, X., Verbeke, W., & Vermeire, B. (2006). Pathways to increase consumer trust in meat as a safe and wholesome food. *Meat Science*, *74*(1), 161–171. https://doi.org/10.1016/J.MEATSCI.2006.04.013

George, D., & Paul Mallery, with. (n.d.). *SPSS for Windows Step by Step A Simple Guide and Reference Fourth Edition (11.0 update) Answers to Selected Exercises*.

Gerald, B. (2018). A brief review of independent, dependent and one sample t-test. *International Journal of Applied Mathematics and Theoretical Physics*, *4*(2), 50–54.

Green, P. E., & Rao, V. R. (1971). Conjoint measurement-for quantifying judgmental data. *Journal of Marketing Research*, *8*(3), 355–363.

Grunert, K. G. (1997). What's in a steak? A cross-cultural study on the quality perception of beef. *Food Quality and Preference*, *8*(3), 157–174. https://doi.org/10.1016/S0950-3293(96)00038-9

Grunert, K. G. (2001). Færdigfedning af slagtekøer: Rapport fra en forbrugerundersøgelse. *MAPP Project Paper*, *1*.

Grunert, K. G. (2006). Future trends and consumer lifestyles with regard to meat consumption. *Meat Science*, *74*(1), 149–160. https://doi.org/10.1016/J.MEATSCI.2006.04.016

Grunert, K. G., & Andersen, S. (2000). Purchase decision, quality expectations and quality experience for organic pork. *9th Food Choice Conference, Dublin*, 28–31.

Grunert, K. G., Bredahl, L., & Brunsø, K. (2004). Consumer perception of meat quality and implications for product development in the meat sector-a review §. *Meat Science*, *66*, 259–272. https://doi.org/10.1016/S0309-1740(03)00130-X

Grunert, K. G., Larsen, H. H., Madsen, T. K., & Baadsgaard, A. (1995). *Market orientation in food and agriculture*. Springer Science & Business Media.

Harper, G. C., & Henson, S. J. (2001). The level of consumer concern about animal welfare–the comparative report. *The University of Reading. United Kingdom. Eu Fair Ct98*, *3678*.

Harper, G., & Henson, S. (2005). *Consumer Concerns about Animal Welfare and the Impact on Food Choice*.

Hauser, D. J., Ellsworth, P. C., & Gonzalez, R. (2018). Are manipulation checks necessary? *Frontiers in Psychology*, *9*, 998.

Hayes, A. F., & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *British Journal of Mathematical and Statistical Psychology*, *67*(3), 451–470.

Henchion, M., McCarthy, M., Resconi, V. C., & Troy, D. (2014). Meat consumption: Trends and quality matters. *Meat Science*, *98*(3), 561–568. https://doi.org/10.1016/J.MEATSCI.2014.06.007

Hofstetter, R., Miller, K. M., Krohmer, H., & Zhang, Z. J. (2013). How do consumer characteristics affect the bias in measuring willingness to pay for innovative products? *Journal of Product Innovation Management*, *30*(5), 1042–1053.

Issanchou, S. (1996). Consumer Expectations and Perceptions of Meat and Meat Product Quality. *Meat Science*, *43*.

Johansson-Stenman, O. (2006). Should animal welfare count? *Rapport Nr.: Working Papers in Economics*, *197*.

Lagerkvist, C. J., & Hess, S. (2011). A meta-analysis of consumer willingness to pay for farm animal welfare. *European Review of Agricultural Economics*, *38*(1), 55–78.

Leroy, F., & Degreef, F. (2015). Convenient meat and meat products. Societal and technological issues. *Appetite*, *94*, 40–46. https://doi.org/10.1016/J.APPET.2015.01.022

Liljenstolpe, C. (2008). Evaluating animal welfare with choice experiments: An application to Swedish pig production. *Agribusiness: An International Journal*, *24*(1), 67–84.

Loughnan, S., Haslam, N., & Bastian, B. (2010). The role of meat consumption in the denial of moral status and mind to meat animals. *Appetite*, *55*(1), 156–159. https://doi.org/10.1016/J.APPET.2010.05.043

McEachern, M. G., Schröder, M. J. A., Willock, J., Whitelock, J., & Mason, R. (2007). Exploring ethical brand extensions and consumer buying behaviour: The RSPCA and the "Freedom Food" brand. *Journal of Product & Brand Management*.

McEachern, M. G., & Willock, J. (2004). Producers and consumers of organic meat: A focus on attitudes and motivations. *British Food Journal*, *106*(7), 534–552. https://doi.org/10.1108/00070700410545737

McInerney, J. (2004). *ANIMAL WELFARE, ECONOMICS AND POLICY Report on a study undertaken for the Farm & Animal Health Economics Division of Defra*.

Miranda-de la Lama, G. C., Estévez-Moreno, L. X., Sepúlveda, W. S., Estrada-Chavero, M. C., Rayas-Amor, A. A., Villarroel, M., & María, G. A. (2017). Mexican consumers' perceptions and attitudes towards farm animal welfare and willingness to pay for welfare friendly meat products. *Meat Science*, *125*, 106–113. https://doi.org/10.1016/J.MEATSCI.2016.12.001

Myers, O. E., Saunders, C., & Bexell, S. M. (2009). Fostering empathy with wildlife: factors affecting free-choice learning for conservation concern and behavior. *Undefined*.

Napolitano, F., Girolami, A., & Braghieri, A. (n.d.). *Consumer liking and willingness to pay for high welfare animal-based products*. https://doi.org/10.1016/j.tifs.2010.07.012

Oecd, & Fao. (n.d.). *OECD-FAO Agricultural Outlook 2014-2023*. https://doi.org/10.1787/agr_outlook-2014-en

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, *17*(4), 460–469.

Oliver, R. L. (1993). Cognitive, affective, and attribute bases of the satisfaction response. *Journal of Consumer Research*, *20*(3), 418–430.

Paul, E. S. (2000). Anthrozoös A multidisciplinary journal of the interactions of people and animals Empathy with Animals and with Humans: Are They Linked? *ANTHROZOÖS*, *13*(4), 194–202. https://doi.org/10.2752/089279300786999699

Pifer, L., Shimizu, K., Pifer, R., & Pifer, R. (1994). Public Attitudes Toward Animal Research: Some International Comparisons. *Society and Animals*, *2*(2), 95–113. https://doi.org/10.1163/156853094X00126

PORDATA - População residente segundo os Censos: total e por sexo. (n.d.). Retrieved March 5, 2022, from https://www.pordata.pt/Portugal/Popula%c3%a7%c3%a3o+residente+segundo+os+Censos+total+e+por+sexo-1

Portal do INE. (n.d.). Retrieved January 28, 2022, from https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&contecto=pi&indOcorrCod=0000211&selTab=tab0&xlang=pt

Portugal é o maior consumidor de peixe na União Europeia | Europa - Estado da União | PÚBLICO. (n.d.). Retrieved March 17, 2022, from https://www.publico.pt/2021/12/06/infografia/portugal-maior-consumidor-peixe-uniao-europeia-651

Rae Westbury, H., & Neumann, D. L. (2008). Empathy-related responses to moving film stimuli depicting human and non-human animal targets in negative circumstances. *Biological Psychology*, *78*(1), 66–74. https://doi.org/10.1016/J.BIOPSYCHO.2007.12.009

Rothgerber, H. (2013). Real men don't eat (vegetable) quiche: Masculinity and the justification of meat consumption. *Undefined*, *14*(4), 363–375. https://doi.org/10.1037/A0030379

Rothgerber, H., & Mican, F. (2014). Childhood pet ownership, attachment to pets, and subsequent meat avoidance. The mediating role of empathy toward animals. *Appetite*, *79*, 11–17.

Ruby, M. B. (2012). Vegetarianism. A blossoming field of study. *Appetite*, *58*(1), 141–150. https://doi.org/10.1016/J.APPET.2011.09.019

Schmidt, J., & Bijmolt, T. H. A. (2020). Accurately measuring willingness to pay for consumer goods: a meta-analysis of the hypothetical bias. In *Journal of the Academy of Marketing Science* (Vol. 48, Issue 3, pp. 499–518). Springer. https://doi.org/10.1007/s11747-019-00666-6

Schnettler, B., Vidal, R., Silva, R., Vallejos, L., & Sepúlveda, N. (2009). Consumer willingness to pay for beef meat in a developing country: The effect of information regarding country of origin, price and animal handling prior to slaughter. *Food Quality and Preference*, *20*(2), 156–165. https://doi.org/10.1016/j.foodqual.2008.07.006

Steenkamp, J.-B. E. M. (1990). Conceptual model of the quality perception process. *Journal of Business Research*, *21*(4), 309–333.

Stoll-Kleemann, S., & Schmidt, U. J. (2017). Reducing meat consumption in developed and transition countries to counter climate change and biodiversity loss: a review of influence factors. *Regional Environmental Change*, *17*(5), 1261–1277. https://doi.org/10.1007/S10113-016-1057-5/FIGURES/3

United Kingdom: usual grocery shoppers by gender 2020 | Statista. (n.d.). Retrieved March 5, 2022, from https://www.statista.com/statistics/1256034/share-of-uk-consumers-who-usually-shop-for-food-by-gender/

van Doorn, J., & Verhoef, P. C. (2011). Willingness to pay for organic products: Differences between virtue and vice foods. *International Journal of Research in Marketing*, *28*(3), 167–180.

van Rijswijk, W., Frewer, L. J., Menozzi, D., & Faioli, G. (2008). Consumer perceptions of traceability: A cross-national comparison of the associated benefits. *Food Quality and Preference*, *5*(19), 452–464. https://doi.org/10.1016/J.FOODQUAL.2008.02.001

Vanhonacker, F., Verbeke, W., van Poucke, E., & Tuyttens, F. A. M. (2007). Segmentation based on consumers' perceived importance and attitude toward farm animal welfare. *The International Journal of Sociology of Agriculture and Food*, *15*(3), 91–107.

Vapnek, J., & Chapman, M. (2010). *FAO LEGISLATIVE STUDY 104 FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS Legislative and regulatory options for animal welfare*.

Verbeke, W., & Viaene, J. (1999). *Beliefs, attitude and behaviour towards fresh meat consumption in Belgium: empirical evidence from a consumer survey*. Retrieved January 18, 2022, from www.elsevier.com/locate/foodqual

Wertenbroch, K., & Skiera, B. (2002). Measuring consumers' willingness to pay at the point of purchase. *Journal of Marketing Research*, *39*(2), 228–241.

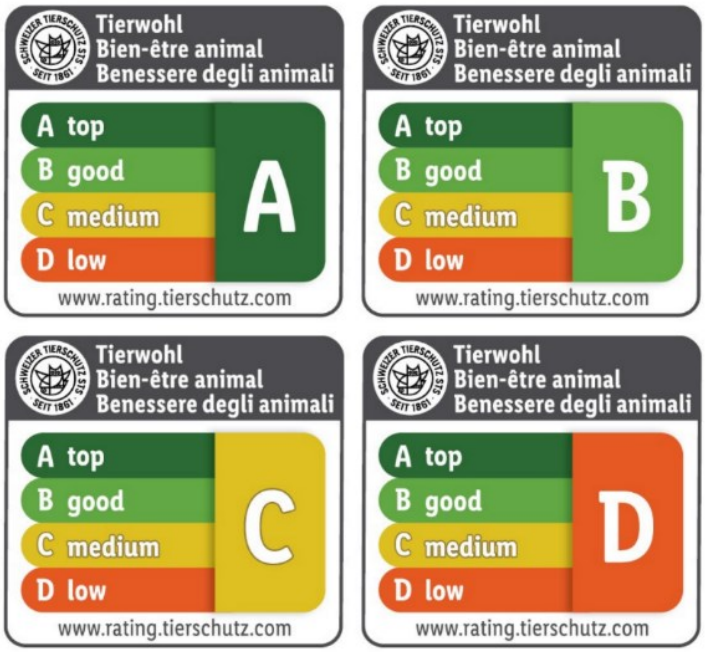
Women do more cooking, grocery shopping than men among U.S. couples | Pew Research Center. (n.d.). Retrieved March 5, 2022, from https://www.pewresearch.org/fact-tank/2019/09/24/among-u-s-couples-women-do-more-cooking-and-grocery-shopping-than-men/

Young, A., Khalil, K. A., & Wharton, J. (2018). Empathy for Animals: A Review of the Existing Literature. *Curator: The Museum Journal*, *61*(2), 327–343. https://doi.org/10.1111/CURA.12257

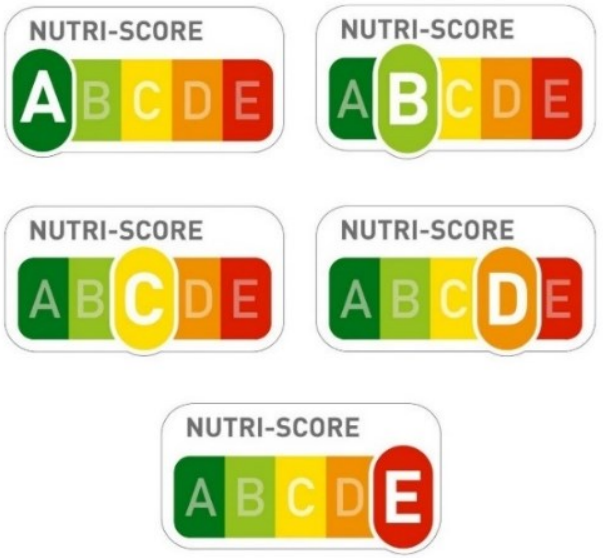
APPENDICES

Appendix A: German Animal Welfare Label

Appendix B: Swiss Animal Welfare Label



Appendix C: Nutri-score label



Appendix D: Preliminary Survey

Block 1 – Introduction

Block 2 – Screening Questions

Q1: Concerning your meat consumption, how do you classify your dietary regime?

- Omnivore - I eat meat on a regular basis
- Vegan / Vegetarian / Pescatarian - I do not eat meat
- Flexitarian – I only eat meat occasionally

Skip To: End of Survey If Concerning your meat consumption, how do you classify your dietary regime? = Vegan / Vegetarian / Pescatarian - I do not eat meat

Q2: Do you currently live in Portugal or consider living in Portugal in the next 5 years?

- Yes
- No

Skip To: End of Survey If Do you currently live in Portugal or consider living in Portugal in the next 5 years? = No

Block 3 – Stimuli Assessment

Q3: Please look at the picture below.
This picture represents a scale of animal welfare that could be present on meat packages. It tells us how good was the life quality of an animal that originated a certain piece of meat.

Q4: On a scale from 0 (terrible) to 10 (magnificent), how much welfare do you believe a certain animal had in life if its welfare is represented by the following picture?

Random selection of 1 label.

Block 4 – Demographics

Q5: How old are you?

- Younger than 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- Older than 64

Q6: To which gender do you identify?

- Male
- Female
- Non-binary

Q7: What is the highest educational degree you have completed?

- Less than high school
- High school graduate or equivalent
- Bachelor's degree
- Master's degree / MBA
- PhD

Q8: What is your monthly household income, in euros and in net terms?

- Less than 1000
- 1000 - 1999
- 2000 - 2999
- 3000 - 3999
- 4000 - 4999
- 5000 - 5999
- 6000 - 6999
- 7000 - 7999
- More than 7999

Q9: How many people is your household composed of?

- 1
- 2
- 3
- 4
- 5
- 6 or more

Block 5: End of survey

Appendix E: Pre-survey participants

Question	Answer	Frequency	Relative Frequency	Total
Dietary Regime	Vegetarian	2	0,06	32
	Flexitarian	9	0,28	
	Omnivore	21	0,66	
Age	18-24	21	0,78	27
	25-34	2	0,07	
	45-54	1	0,04	
	55-64	3	0,11	
Gender	Woman	13	0,48	27
	Man	14	0,52	
Educational Level	High school or equivalent	8	0,30	27
	Bachelor's degree	17	0,63	
	Master's degree	2	0,07	
Net Income per month	0-500	6	0,22	27
	501-1000	11	0,41	
	1000 or more	10	0,37	

Appendix F: Average Perceived Welfare of the pre-survey participants

a) per Dietary Regime

Dietary Regime	Level A	Level B	Level C	Level D
Omnivore	8,20	6,44	4,00	0,33
Flexitarian	8,00	5,00	N/A	2,25
Total	8,17	6,30	4,00	1,43

b) per Age Group

Age	Level A	Level B	Level C	Level D
18-24	8,17	6,125	4,00	1,00
25-34	N/A	7,00	3,00	N/A
45-54	N/A	N/A	N/A	5,00
55-64	N/A	7,00	5,00	1,43
Total	8,17	6,30	4,00	0,00

c) per Gender

Gender	Level A	Level B	Level C	Level D
Female	7,67	6,50	4,00	3,00
Male	8,67	6,17	4,00	0,33
Total	8,17	6,30	4,00	1,43

d) Average Perceived Welfare per Education Level

Education Level	Level A	Level B	Level C	Level D
High school or equivalent	9,00	6,40	N/A	2,50
Bachelor's degree	8,00	6,00	3,67	1,00
Master's degree or MBA	N/A	7,00	5,00	N/A
Total	8,17	6,30	4,00	1,43

e) Average Perceived Welfare per Monthly Income (net terms)

HH Income per member	Level A	Level B	Level C	Level D
0-500	9,00	5,67	N/A	2,50
501-1000	8,50	7,00	4,00	0,50
1001+	7,50	6,67	N/A	1,00
Total	8,17	6,30	4,00	1,43

Appendix G: Final stimuli

	MT - Chicken	MT - Pork
AW=A		
AW=B		

AW=C		
AW=D		
AW=N/ A		

Appendix H: Main Survey

Block 1 - Introduction

Block 2 – Screening Questions

Q1: Concerning your meat consumption, how do you classify your dietary regime?

- Omnivore - I eat meat on a regular basis
- Vegan / Vegetarian / Pescatarian - I do not eat meat
- Flexitarian – I only eat meat occasionally

Skip To: End of Survey If Concerning your meat consumption, how do you classify your dietary regime? = Vegan / Vegetarian / Pescatarian - I do not eat meat

Q2: Which option best applies to you?

- I live in PortugaI
- I do not live in Portugal but I consider moving to Portugal in the near future
- I do not live in Portugal and I do not consider moving to Portugal

Skip To: End of Survey If Which option best applies to you? = I do not live in Portugal and I do not consider moving to Portugal

Block 3 – Empathy towards Animals

In this section, you will be asked questions about your empathy towards animals, i.e. how much you emotionally understand how animals feel.

Q3: On a scale from 1 (disagree very strongly) to 7 (agree very strongly), please indicate how strongly you agree with each of the following statements. *(Matrix table; Likert-type scale)*

1. So long as they're warm and well fed, I don't think zoo animals mind being kept in cages.
2. Often cats will meow and pester for food even when they are not really hungry.
3. It upsets me to see animals being chased and killed by lions in wildlife programs on TV.
4. I get annoyed by dogs that howl and bark when they are left alone.
5. Sad films about animals often leave me with a lump in my throat.
6. Animals deserve to be told off when they're not behaving properly.
7. It makes me sad to see an animal on its own cage.
8. People who cuddle and kiss their pets in public annoy me.
9. A friendly purring cat almost always cheers me up.
10. It upsets me when I see helpless old animals.
11. Dogs sometimes whine and whimper for no real reason. (If you don't understand the words "whine" and "whimper", please assume "cry" instead)
12. Many people are over-affectionate towards their pets.
13. I get very angry when I see animals being ill-treated. (If you don't understand the word "ill-treated", please assume "mistreated" instead)
14. It is silly to become too attached to one's pets.
15. Pets have a great influence on my moods.
16. Sometimes I am amazed how upset people get when an old pet dies.
17. Please choose "disagree very strongly"
18. I enjoy feeding scraps of food to the birds.
19. Seeing animals in pain upsets me.
20. People often make too much of the feelings and sensitivities of animals.
21. I find it irritating when dogs try to greet me by jumping up and licking me.
22. I would always try to help if I saw a dog or puppy that seemed to be lost.
23. I hate to see birds in cages where there is no room for them to fly about.

Block 4 – Response to Stimuli

This section is meant to study your response to a particular meat package. Please look at the following picture for as long as you need in order to **fully understand and remember its label.** You will **not** see this picture again.

Here, each participant was shown one of the 10 different stimuli.

Q4: Bearing in mind the meat package you just saw, please answer the following questions from 1 (not at all) to 7 (extremely) *(Matrix table; Likert-type scale)*:

1. In your opinion, how nutritious are these steaks?
2. In your opinion, how wholesome are these steaks? If you do not know the word "wholesome", please assume the word "healthy" instead.
3. In your opinion, how fresh are these steaks?
4. In your opinion, how lean are these steaks? If you do not know the word "lean", please assume the word "low-fat" instead.
5. In your opinion, how juicy are these steaks?
6. In your opinion, how tasteful are these steaks?
7. In your opinion, how tender are these steaks? If you do not know the word "tender", please assume the word "soft" instead.

Q5:

If the stimulus shown was 1, 2, 3, 4 or 5: Knowing that the **average price of 500g of chicken steaks** in Portugal is **2.75 euros**, what would be the **maximum** amount you would be willing to pay for the product shown previously? *(Slider question – from 1 to 6)*

OR

If the stimulus shown was 6, 7, 8, 9 or 10: Knowing that the **average price of 500g of pork steaks** in Portugal is **2.00 euros**, what would be the **maximum** amount you would be willing to pay for the product shown previously? *(Slider question – from 1 to 6)*

Please remember the picture you were shown and answer the following questions about it.

Q6: What type of meat did the package contain?

- Chicken
- Pork

Q7: Was there a label with a scale of Animal Welfare on the package?

- Yes
- No

Skip To: End of Block If Was there a label with a scale of Animal Welfare on the package? = No

Q8: What was the level of welfare of the animal that originated that meat?

- A - Top
- B - Good
- C - Medium
- D - Low

Block 5: Demographics

Same questions Appendix D – Block 4.

Block 6: Extra Questions

Questions on extra topics (strength of bond with pets, interest in nutrition and sustainability issues and like for pork/chicken meat) not used in the final analysis.

Block 7 – End of Survey

Appendix I: Stimuli distribution

Welfare Level * Meat Type Crosstabulation

			Meat Type		
			Chicken	Pork	Total
Welfare Level	No label	Count	71	83	154
	Level A	Count	77	72	149
	Level B	Count	61	68	129
	Level C	Count	61	53	114
	Level D	Count	66	45	111
Total		Count	336	321	657

Appendix J: Participants' demographics

a) Age:

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Younger than 18	13	2,0	2,0	2,0
	18 - 24	122	18,6	18,6	20,5
	25 - 34	70	10,7	10,7	31,2
	35 - 44	133	20,2	20,2	51,4
	45 - 54	189	28,8	28,8	80,2
	55 - 64	108	16,4	16,4	96,7
	Older than 64	22	3,3	3,3	100,0
	Total	657	100,0	100,0	

b) Education:

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than high school	24	3,7	3,7	3,7
	High school graduate or equivalent	268	40,8	40,8	44,4
	Bachelor's degree	157	23,9	23,9	68,3
	Master's degree / MBA	201	30,6	30,6	98,9
	PhD	7	1,1	1,1	100,0
	Total	657	100,0	100,0	

c) Gender:

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	188	28,6	28,6	28,6
	Female	469	71,4	71,4	100,0
	Total	657	100,0	100,0	

d) Income per Person

IncomePerPerson_int

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	≤300	71	10,8	10,8	10,8
	301-600	192	29,2	29,2	40,0
	601-900	248	37,7	37,7	77,8
	901-1200	36	5,5	5,5	83,3
	1201-1500	76	11,6	11,6	94,8
	1501-1800	13	2,0	2,0	96,8
	≥1800	21	3,2	3,2	100,0
	Total	657	100,0	100,0	

Appendix K: EMQ and WTP descriptive statistics per stimulus

a) WTP:

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
WTP_C_A	77	,00	5,49	2,8847	,91842
WTP_C_B	61	,05	5,23	2,8293	,91056
WTP_C_C	61	,00	5,09	2,6200	,82889
WTP_C_D	66	,00	4,09	2,3438	,89425
WTP_C_na	71	,00	5,00	2,8689	,90594
WTP_P_A	72	,70	4,12	2,5593	,82630
WTP_P_B	68	,00	4,73	2,3096	,93667
WTP_P_C	53	,00	4,90	2,2789	1,02405
WTP_P_D	45	,00	4,02	1,8451	,84477
WTP_P_na	83	,00	4,22	2,0804	,68082
Valid N (listwise)	0				

b) EMQ:

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
EMQ_C_A	77	8,00	49,00	34,5844	7,46633
EMQ_C_B	61	7,00	49,00	34,0984	9,12269
EMQ_C_C	61	7,00	49,00	30,8525	8,70218
EMQ_C_D	66	7,00	49,00	27,4545	8,80067
EMQ_C_na	71	17,00	44,00	31,9014	6,60120
EMQ_P_A	72	10,00	49,00	32,0417	7,58694
EMQ_P_B	68	10,00	48,00	29,9706	6,96252
EMQ_P_C	53	9,00	44,00	26,5472	6,45864
EMQ_P_D	45	7,00	42,00	23,7111	7,86714
EMQ_P_na	83	75,00	145,00	113,0241	15,35513
Valid N (listwise)	0				

Appendix L: Cronbach's alpha – EMQ and AE

	Cronbach's Alpha	Cronbach's Alpha based on standardized items	N of Items
Expected Meat Quality	0,905	0,907	7
Animal Empathy	0,808	0,824	22

Appendix M: Manipulation check – crosstabulations

Stimulus presented * Manipulation Check Crosstabulation

			Manipulation Check		
			Wrong	Right	Total
Stimulus	C_A	% within Stimulus	27,4%	72,6%	100,0%
	C_B	% within Stimulus	29,9%	70,1%	100,0%
	C_C	% within Stimulus	34,4%	65,6%	100,0%
	C_D	% within Stimulus	37,1%	62,9%	100,0%
	C_na	% within Stimulus	10,1%	89,9%	100,0%
	P_A	% within Stimulus	25,8%	74,2%	100,0%
	P_B	% within Stimulus	29,9%	70,1%	100,0%
	P_C	% within Stimulus	31,2%	68,8%	100,0%
	P_D	% within Stimulus	43,8%	56,3%	100,0%
	P_na	% within Stimulus	4,6%	95,4%	100,0%
Total		% within Stimulus	27,6%	72,4%	100,0%

Level * Perceived Level Crosstabulation

			Perceived Level					Total
			A	B	C	D	No label	
Level	A	% within Level	73,4%	10,3%	4,9%	1,5%	9,9%	100,0%
	B	% within Level	4,3%	70,1%	5,4%	3,3%	16,8%	100,0%
	C	% within Level	6,5%	5,3%	67,1%	2,4%	18,8%	100,0%
	D	% within Level	3,2%	9,2%	7,0%	61,1%	19,5%	100,0%
	N/A	% within Level	1,8%	3,6%	1,8%	0,0%	92,8%	100,0%
Total		% within Level	19,5%	20,0%	16,5%	13,9%	30,1%	100,0%

MeatType * Perceived Meat Type Crosstabulation

			Perceived Meat Type		
			Chicken	Pork	Total
MeatType	Chicken	% within MeatType	99,6%	0,4%	100,0%
	Pork	% within MeatType	1,4%	98,6%	100,0%
Total		% within MeatType	52,2%	47,8%	100,0%

Appendix N: Manipulation check of AW

Multiple Comparisons

Dependent Variable: Willingness-to-Pay

Tukey HSD

(I) Animal Welfare Level	(J) Animal Welfare Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Level A	Level B	,17210	,10966	,518	-,1279	,4721
	Level C	,26605	,11346	,132	-,0443	,5764
	Level D	,58583*	,11432	<,001	,2731	,8986
	No label	,28355	,10478	,054	-,0031	,5702
Level B	Level A	-,17210	,10966	,518	-,4721	,1279
	Level C	,09395	,11721	,930	-,2267	,4146
	Level D	,41373*	,11805	,004	,0908	,7366
	No label	,11145	,10883	,844	-,1862	,4091
Level C	Level A	-,26605	,11346	,132	-,5764	,0443
	Level B	-,09395	,11721	,930	-,4146	,2267
	Level D	,31978	,12159	,066	-,0128	,6524

	No label	,01751	,11266	1,000	-,2907	,3257
Level D	Level A	-,58583*	,11432	<,001	-,8986	-,2731
	Level B	-,41373*	,11805	,004	-,7366	-,0908
	Level C	-,31978	,12159	,066	-,6524	,0128
	No label	-,30227	,11353	,061	-,6128	,0083
No label	Level A	-,28355	,10478	,054	-,5702	,0031
	Level B	-,11145	,10883	,844	-,4091	,1862
	Level C	-,01751	,11266	1,000	-,3257	,2907
	Level D	,30227	,11353	,061	-,0083	,6128

*. The mean difference is significant at the 0.05 level.

Appendix O: Manipulation check of MT

Group Statistics

	Meat Type	N	Mean	Std. Deviation	Std. Error Mean
Willingness-to-Pay	Chicken	336	2,7170	,91235	,04977
	Pork	321	2,2361	,88048	,04914

Independent Samples Test

		Levene's Test for Variance Equality		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
WTP	Equal variances assumed	,059	,809	6,869	655	<,001	<,001	,48086	,07000	,34340	,61831

Appendix P: Levene's tests

a) AW as the independent variable

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Willingness-to-Pay	Based on Mean	,305	4	652	,875
Expected Meat Quality	Based on Mean	,687	4	652	,601
Animal Empathy	Based on Mean	,788	4	652	,533

b) MT as the independent variable

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Willingness-to-Pay	Based on Mean	,059	1	655	,809
Expected Meat Quality	Based on Mean	3,502	1	655	,062
Animal Empathy	Based on Mean	1,039	1	655	,308

Appendix Q: H1 testing

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,225[a]	,051	,045	,92052	2,051

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22,510	3	7,503	8,855	<,001[b]
	Residual	422,829	499	,847		
	Total	445,338	502			

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	2,142	,087		24,512	<,001		
	Level A	,586	,115	,284	5,076	<,001	,607	1,648
	Level B	,414	,119	,192	3,472	<,001	,622	1,608
	Level C	,320	,123	,142	2,605	,009	,638	1,568

Appendix R: H2 testing

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,201[a]	,040	,034	,91182	1,956

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22,803	4	5,701	6,857	<,001[b]
	Residual	542,080	652	,831		
	Total	564,883	656			

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	2,444	,073		33,261	<,001		
	Level A	,284	,105	,128	2,706	,007	,657	1,521
	Level B	,111	,109	,048	1,024	,306	,677	1,477
	Level C	,018	,113	,007	,155	,877	,695	1,438
	Level D	-,302	,114	-,122	-2,663	,008	,699	1,430

Appendix S: H2 testing – chicken meat

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,227[a]	,051	,040	,89393	1,932

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14,339	4	3,585	4,486	,002[b]
	Residual	264,508	331	,799		
	Total	278,847	335			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2,869	,106		27,042	<,001		
	Level A	,016	,147	,007	,107	,915	,622	1,607
	Level B	-,040	,156	-,017	-,253	,800	,657	1,522
	Level C	-,249	,156	-,105	-1,595	,112	,657	1,522
	Level D	-,525	,153	-,229	-3,435	<,001	,645	1,551

Appendix T: H2 testing – pork meat

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,261[a]	,068	,056	,85536	1,955

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16,878	4	4,219	5,767	<,001[b]
	Residual	231,200	316	,732		
	Total	248,077	320			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2,080	,094		22,158	<,001		
	Level A	,479	,138	,227	3,477	<,001	,690	1,449
	Level B	,229	,140	,107	1,638	,102	,697	1,434
	Level C	,199	,150	,084	1,320	,188	,731	1,368
	Level D	-,235	,158	-,093	-1,486	,138	,754	1,326

Appendix U: H3 testing

Model : 1
Y : WTP
X : AW_Hayes
W : MeatType

****
OUTCOME VARIABLE:
WTP

Model Summary

R	R-sq	MSE	F	df1	df2	p
,3182	,1013	,8086	7,9664	7,0000	495,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,1078	,0862	24,4647	,0000	1,9386	2,2771
X1	,6229	,1134	5,4944	,0000	,4001	,8456
X2	,4756	,1173	4,0535	,0001	,2451	,7061
X3	,3508	,1205	2,9111	,0038	,1140	,5875
MeatType	-,4987	,1738	-2,8686	,0043	-,8402	-,1571
Int_1	,1733	,2279	,7604	,4474	-,2745	,6211
Int_2	-,0211	,2353	-,0897	,9286	-,4834	,4412
Int_3	,1575	,2423	,6501	,5159	-,3186	,6337

Product terms key:

Int_1	:	X1	x	MeatType
Int_2	:	X2	x	MeatType
Int_3	:	X3	x	MeatType

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0022	,4097	3,0000	495,0000	,7461

Level of confidence for all confidence intervals in output:
95,0000

Appendix V: H4 testing

Model : 1
Y : WTP
X : AW_Hayes
W : ETAnim

****
OUTCOME VARIABLE:
WTP

Model Summary

R	R-sq	MSE	F	df1	df2	p
,2363	,0559	,8494	4,1834	7,0000	495,0000	,0002

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,1418	,0875	24,4835	,0000	1,9699	2,3137
X1	,5891	,1161	5,0761	,0000	,3611	,8172
X2	,4083	,1197	3,4111	,0007	,1731	,6435
X3	,3144	,1230	2,5571	,0109	,0728	,5560
ETAnim	-,0848	,1163	-,7285	,4666	-,3133	,1438
Int_1	,0507	,1577	,3214	,7480	-,2591	,3604
Int_2	,0268	,1565	,1712	,8641	-,2806	,3342
Int_3	-,0796	,1679	-,4741	,6356	-,4095	,2503

Product terms key:

Int_1	:	X1	x	ETAnim
Int_2	:	X2	x	ETAnim
Int_3	:	X3	x	ETAnim

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0014	,2393	3,0000	495,0000	,8689

Level of confidence for all confidence intervals in output:
95,0000

Appendix W: H5 testing

Model : 4
Y : WTP
X : AW_Hayes
M : EMQual

****
OUTCOME VARIABLE:
EMQual

Model Summary

```
        R      R-sq       MSE         F       df1       df2         p
    ,3331     ,1109    1,3384    20,7524    3,0000   499,0000     ,0000

Model
            coeff         se          t          p       LLCI       ULCI
constant    3,7053      ,1098    33,7438      ,0000     3,4895     3,9210
X1          1,0598      ,1451     7,3066      ,0000      ,7748     1,3448
X2           ,8551      ,1498     5,7091      ,0000      ,5608     1,1493
X3           ,4163      ,1543     2,6985      ,0072      ,1132      ,7194

**************************************************************************
OUTCOME VARIABLE:
 WTP

Model Summary
        R      R-sq       MSE         F       df1       df2         p
    ,3857     ,1488     ,7612    21,7582    4,0000   498,0000     ,0000

Model
            coeff         se          t          p       LLCI       ULCI
constant    1,1934      ,1500     7,9546      ,0000      ,8986     1,4881
X1           ,3146      ,1151     2,7333      ,0065      ,0885      ,5407
X2           ,1949      ,1166     1,6717      ,0952     -,0342      ,4240
X3           ,2132      ,1172     1,8197      ,0694     -,0170      ,4435
EMQual       ,2559      ,0338     7,5804      ,0000      ,1896      ,3223

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y ***************

Relative direct effects of X on Y
      Effect         se          t          p       LLCI       ULCI
X1     ,3146      ,1151     2,7333      ,0065      ,0885      ,5407
X2     ,1949      ,1166     1,6717      ,0952     -,0342      ,4240
X3     ,2132      ,1172     1,8197      ,0694     -,0170      ,4435

Omnibus test of direct effect of X on Y:
   R2-chng          F        df1        df2          p
    ,0130     2,5421     3,0000   498,0000      ,0556
----------

Relative indirect effects of X on Y

 AW_Hayes    ->    EMQual      ->    WTP

      Effect    BootSE  BootLLCI  BootULCI
X1     ,2712     ,0538     ,1755     ,3843
X2     ,2188     ,0531     ,1216     ,3320
X3     ,1065     ,0440     ,0269     ,1997

Level of confidence for all confidence intervals in output:
  95,0000
```

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

Appendix X: H6 testing – chicken meat regression models

Model Summary and Parameter Estimates

	Model Summary					Parameter Estimates			
Equation	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	,001	,218	1	334	,641	2,879	-,031		
Logarithmic	,001	,240	1	334	,625	2,980	-,160		
Inverse	,001	,262	1	334	,609	2,561	,797		
Quadratic	,001	,135	2	333	,874	3,286	-,196	,016	
Cubic	,001	,135	2	333	,874	3,286	-,196	,016	,000

Appendix Y: H6 testing – pork meat regression models

Model Summary and Parameter Estimates

	Model Summary					Parameter Estimates			
Equation	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	,013	4,191	1	319	,041	2,970	-,141		
Logarithmic	,014	4,465	1	319	,035	3,423	-,724		
Inverse	,014	4,637	1	319	,032	1,537	3,564		
Quadratic	,015	2,471	2	318	,086	4,664	-,820	,067	
Cubic	,015	2,496	2	318	,084	4,168	-,502	,000	,005

Appendix Z: H6 testing – pork meat linear regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,114[a]	,013	,010	,87612	1,915

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,217	1	3,217	4,191	,041[b]
	Residual	244,861	319	,768		
	Total	248,077	320			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2,970	,362		8,209	<,001
	Animal Empathy	-,141	,069	-,114	-2,047	,041

Appendix AA: H7 testing

Model : 1
Y : EMQual
X : AW_Hayes
W : MeatType

****

OUTCOME VARIABLE:
EMQual

Model Summary

R	R-sq	MSE	F	df1	df2	p
,3960	,1568	1,2795	13,1513	7,0000	495,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,6690	,1084	33,8524	,0000	3,4561	3,8820
X1	1,0997	,1426	7,7113	,0000	,8195	1,3799
X2	,9231	,1476	6,2549	,0000	,6332	1,2131
X3	,4474	,1516	2,9520	,0033	,1496	,7452
MeatType	-,5348	,2187	-2,4455	,0148	-,9644	-,1051
Int_1	,1715	,2867	,5982	,5500	-,3918	,7349
Int_2	-,0549	,2960	-,1855	,8529	-,6365	,5267
Int_3	-,0803	,3049	-,2633	,7924	-,6792	,5187

Product terms key:

Int_1	:	X1	x	MeatType
Int_2	:	X2	x	MeatType
Int_3	:	X3	x	MeatType

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0018	,3466	3,0000	495,0000	,7917

Level of confidence for all confidence intervals in output:
95,0000

Appendix BB: H7.1 testing

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,304[a]	,092	,085	1,13078	1,836

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	84,810	5	16,962	13,265	<,001[b]
	Residual	832,414	651	1,279		
	Total	917,224	656			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4,619	5,774		,800	,424		
	Progress	-,004	,058	-,003	-,069	,945	,993	1,007
	Level A	,545	,130	,193	4,190	<,001	,657	1,522
	Level B	,340	,135	,114	2,516	,012	,675	1,481
	Level C	-,100	,140	-,032	-,712	,477	,694	1,440
	Level D	-,515	,141	-,163	-3,661	<,001	,699	1,430

Appendix CC: H8 testing – regression models

Model Summary and Parameter Estimates

Dependent Variable: EMQual

	Model Summary					Parameter Estimates			
Equation	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	,010	6,824	1	655	,009	5,162	-,164		
Logarithmic	,010	6,776	1	655	,009	5,634	-,808		
Inverse	,010	6,637	1	655	,010	3,555	3,837		
Quadratic	,010	3,410	2	654	,034	5,037	-,113	-,005	
Cubic	,010	3,415	2	654	,033	5,013	-,119	,000	-,001
Compound	,018	12,225	1	655	<,001	5,636	,941		
Power	,018	11,917	1	655	<,001	6,676	-,295		
S	,017	11,435	1	655	<,001	1,142	1,387		
Growth	,018	12,225	1	655	<,001	1,729	-,060		
Exponential	,018	12,225	1	655	<,001	5,636	-,060		

Appendix DD: H8 testing – linear regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,106[a]	,011	,009	1,21757	1,945

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8,443	1	8,443	5,695	,017[b]
	Residual	742,725	501	1,482		
	Total	751,168	502			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5,245	,386		13,591	<,001
	Animal Empathy	-,175	,073	-,106	-2,386	,017

Appendix EE: H9 testing

Model : 1
Y : WTP
X : EMQual
W : MeatType

****
OUTCOME VARIABLE:
WTP

Model Summary

R	R-sq	MSE	F	df1	df2	p
,4129	,1705	,7176	44,7404	3,0000	653,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,4881	,0338	73,5710	,0000	2,4217	2,5546
EMQual	,2593	,0288	9,0178	,0000	,2028	,3158
MeatType	-,3510	,0677	-5,1876	,0000	-,4839	-,2182
Int_1	,0489	,0577	,8478	,3968	-,0643	,1621

Product terms key:
Int_1 : EMQual x MeatType

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0009	,7188	1,0000	653,0000	,3968

Level of confidence for all confidence intervals in output:
95,0000

Appendix FF: H10 testing

Model : 1
Y : EMQual
X : AW_Hayes
W : ETAnim

****
OUTCOME VARIABLE:
EMQual

Model Summary

R	R-sq	MSE	F	df1	df2	p
,3718	,1382	1,3077	11,3446	7,0000	495,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,7062	,1085	34,1452	,0000	3,4929	3,9194
X1	1,0551	,1440	7,3271	,0000	,7722	1,3381
X2	,8441	,1485	5,6835	,0000	,5523	1,1359
X3	,4063	,1526	2,6632	,0080	,1066	,7061
ETAnim	-,4845	,1443	-3,3564	,0009	-,7681	-,2009
Int_1	,5217	,1956	2,6667	,0079	,1373	,9060
Int_2	,3737	,1941	1,9250	,0548	-,0077	,7551
Int_3	,1986	,2083	,9535	,3408	-,2107	,6079

Product terms key:

Int_1	:	X1	x	ETAnim
Int_2	:	X2	x	ETAnim
Int_3	:	X3	x	ETAnim

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0138	2,6335	3,0000	495,0000	,0493

Focal predict: AW_Hayes (X)
Mod var: ETAnim (W)

Conditional effects of the focal predictor at values of the moderator(s):

Moderator value(s):
ETAnim -,7416

	Effect	se	t	p	LLCI	ULCI
X1	,6683	,2109	3,1691	,0016	,2540	1,0826
X2	,5670	,2014	2,8149	,0051	,1712	,9627
X3	,2590	,2148	1,2059	,2285	-,1630	,6810

Test of equality of conditional means

F	df1	df2	p
4,2490	3,0000	495,0000	,0056

Estimated conditional means being compared:

AW_Hayes	EMQual
1,0000	4,0655
2,0000	4,7337
3,0000	4,6324
4,0000	4,3245

Moderator value(s):
ETAnim ,0000

	Effect	se	t	p	LLCI	ULCI
X1	1,0551	,1440	7,3271	,0000	,7722	1,3381
X2	,8441	,1485	5,6835	,0000	,5523	1,1359

```
X3      ,4063      ,1526     2,6632      ,0080      ,1066      ,7061

Test of equality of conditional means
         F        df1        df2          p
   20,8758     3,0000   495,0000      ,0000

Estimated conditional means being compared:
   AW_Hayes     EMQual
     1,0000     3,7062
     2,0000     4,7613
     3,0000     4,5503
     4,0000     4,1125
----------
Moderator value(s):
ETAnim      ,7416

       Effect         se          t          p       LLCI       ULCI
X1     1,4420      ,1977     7,2927      ,0000     1,0535     1,8305
X2     1,1212      ,2121     5,2856      ,0000      ,7044     1,5380
X3      ,5536      ,2194     2,5231      ,0119      ,1225      ,9847

Test of equality of conditional means
         F        df1        df2          p
   20,0236     3,0000   495,0000      ,0000

Estimated conditional means being compared:
   AW_Hayes     EMQual
     1,0000     3,3469
     2,0000     4,7889
     3,0000     4,4681
     4,0000     3,9005

Level of confidence for all confidence intervals in output:
  95,0000

W values in conditional tables are the mean and +/- SD from the mean.
```

Appendix GG: Full Model testing

```
Model  : 10
    Y  : WTP
    X  : AW_Hayes
    M  : EMQual
    W  : MeatType
    Z  : ETAnim

**************************************************************************
OUTCOME VARIABLE:
 EMQual
```

Model Summary

R	R-sq	MSE	F	df1	df2	p
,4263	,1818	1,2518	9,9160	11,0000	491,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	6,3378	,7456	8,5002	,0000	4,8728	7,8027
X1	-1,6394	1,0198	-1,6075	,1086	-3,6432	,3644
X2	-,7365	1,0064	-,7318	,4646	-2,7138	1,2408
X3	-,6750	1,0711	-,6302	,5288	-2,7795	1,4294
MeatType	-,4946	,2166	-2,2829	,0229	-,9202	-,0689
Int_1	,1291	,2839	,4549	,6494	-,4287	,6870
Int_2	-,1119	,2934	-,3814	,7030	-,6884	,4646
Int_3	-,0855	,3025	-,2825	,7777	-,6799	,5089
ETAnim	-,4663	,1414	-3,2966	,0010	-,7442	-,1884
Int_4	,5121	,1916	2,6726	,0078	,1356	,8886
Int_5	,3255	,1904	1,7101	,0879	-,0485	,6995
Int_6	,2209	,2045	1,0804	,2805	-,1809	,6227

Product terms key:

Int_1	:	X1	x	MeatType
Int_2	:	X2	x	MeatType
Int_3	:	X3	x	MeatType
Int_4	:	X1	x	ETAnim
Int_5	:	X2	x	ETAnim
Int_6	:	X3	x	ETAnim

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0016	,3233	3,0000	491,0000	,8085
X*Z	,0124	2,4769	3,0000	491,0000	,0607
BOTH(X)	,0143	1,4263	6,0000	491,0000	,2025

****

OUTCOME VARIABLE:
WTP

Model Summary

R	R-sq	MSE	F	df1	df2	p
,4198	,1762	,7487	8,7344	12,0000	490,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1,2576	,6176	2,0363	,0423	,0441	2,4711
X1	,7060	,7908	,8927	,3724	-,8478	2,2597
X2	,7432	,7787	,9543	,3404	-,7869	2,2732
X3	,8097	,8287	,9771	,3290	-,8185	2,4379
EMQual	,2258	,0349	6,4709	,0000	,1573	,2944
MeatType	-,3812	,1684	-2,2635	,0240	-,7122	-,0503
Int_1	,1396	,2196	,6359	,5252	-,2919	,5712

Int_2	-,0116	,2270	-,0512	,9592	-,4575	,4343
Int_3	,1914	,2340	,8178	,4139	-,2684	,6511
ETAnim	,0387	,1106	,3498	,7267	-,1786	,2560
Int_4	-,0755	,1493	-,5057	,6133	-,3687	,2178
Int_5	-,0911	,1477	-,6167	,5377	-,3812	,1991
Int_6	-,1252	,1583	-,7909	,4294	-,4363	,1859

Product terms key:

Int_1	:	X1	x	MeatType
Int_2	:	X2	x	MeatType
Int_3	:	X3	x	MeatType
Int_4	:	X1	x	ETAnim
Int_5	:	X2	x	ETAnim
Int_6	:	X3	x	ETAnim

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0021	,4090	3,0000	490,0000	,7466
X*Z	,0012	,2285	3,0000	490,0000	,8766
BOTH(X)	,0030	,3012	6,0000	490,0000	,9362

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Relative conditional direct effect(s) of X on Y:

	MeatType	ETAnim	Effect	se	t	p	LLCI	ULCI
X1	,0000	4,4720	,3684	,1852	1,9890	,0473	,0045	,7324
X1	,0000	5,2135	,3125	,1498	2,0861	,0375	,0182	,6068
X1	,0000	5,9551	,2565	,1872	1,3698	,1714	-,1114	,6244
X1	1,0000	4,4720	,5081	,2070	2,4543	,0145	,1013	,9148
X1	1,0000	5,2135	,4521	,1699	2,6610	,0080	,1183	,7859
X1	1,0000	5,9551	,3961	,1984	1,9963	,0465	,0062	,7860
X2	,0000	4,4720	,3360	,1876	1,7909	,0739	-,0326	,7046
X2	,0000	5,2135	,2685	,1574	1,7060	,0886	-,0407	,5776
X2	,0000	5,9551	,2009	,1957	1,0266	,3051	-,1836	,5855
X2	1,0000	4,4720	,3244	,1977	1,6407	,1015	-,0641	,7128
X2	1,0000	5,2135	,2568	,1696	1,5142	,1306	-,0764	,5901
X2	1,0000	5,9551	,1893	,2060	,9190	,3586	-,2154	,5941
X3	,0000	4,4720	,2497	,1875	1,3318	,1835	-,1187	,6180
X3	,0000	5,2135	,1568	,1550	1,0116	,3122	-,1478	,4614
X3	,0000	5,9551	,0640	,2012	,3178	,7508	-,3314	,4593
X3	1,0000	4,4720	,4410	,2155	2,0464	,0413	,0176	,8645
X3	1,0000	5,2135	,3482	,1761	1,9771	,0486	,0022	,6942
X3	1,0000	5,9551	,2553	,2077	1,2291	,2196	-,1528	,6634

Relative conditional indirect effects of X on Y:

INDIRECT EFFECT:

AW_Hayes -> EMQual -> WTP

MeatType	ETAnim	Effect	BootSE	BootLLCI	BootULCI

X1	,0000	4,4720	,1469	,0578	,0460	,2715
X1	,0000	5,2135	,2327	,0594	,1283	,3596
X1	,0000	5,9551	,3185	,0775	,1814	,4851
X1	1,0000	4,4720	,1761	,0641	,0639	,3183
X1	1,0000	5,2135	,2619	,0659	,1477	,4065
X1	1,0000	5,9551	,3476	,0830	,2030	,5301

Indices of partial moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
MeatType	,0292	,0657	-,0970	,1666
ETAnim	,1157	,0458	,0325	,2129

	MeatType	ETAnim	Effect	BootSE	BootLLCI	BootULCI
X2	,0000	4,4720	,1624	,0615	,0564	,2956
X2	,0000	5,2135	,2169	,0649	,1035	,3579
X2	,0000	5,9551	,2715	,0828	,1270	,4535
X2	1,0000	4,4720	,1372	,0589	,0306	,2629
X2	1,0000	5,2135	,1917	,0587	,0902	,3182
X2	1,0000	5,9551	,2462	,0751	,1161	,4096

Indices of partial moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
MeatType	-,0253	,0697	-,1639	,1108
ETAnim	,0735	,0449	-,0090	,1685

	MeatType	ETAnim	Effect	BootSE	BootLLCI	BootULCI
X3	,0000	4,4720	,0707	,0542	-,0314	,1847
X3	,0000	5,2135	,1077	,0552	,0066	,2231
X3	,0000	5,9551	,1447	,0778	,0027	,3071
X3	1,0000	4,4720	,0514	,0601	-,0604	,1791
X3	1,0000	5,2135	,0884	,0512	-,0028	,2005
X3	1,0000	5,9551	,1254	,0673	,0091	,2735

Indices of partial moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
MeatType	-,0193	,0701	-,1565	,1229
ETAnim	,0499	,0514	-,0465	,1588

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

Z values in conditional tables are the mean and +/- SD from the mean.