



**Attitudes of young adults toward meat consumption
and effects on preferences for meat substitutes**
A cross-cultural study of Germany and South Korea

Anna Sophie Schwarze

Dissertation submitted in partial fulfilment of requirements for the degree of M.Sc.
Management with Specialization in Strategic Marketing at Universidade Católica Portuguesa

ADVISOR: Ana Isabel de Almeida Costa

August 2024

ABSTRACT

Title of the dissertation: “Attitudes of young adults toward meat consumption and effects on preferences for meat substitutes - A cross-cultural study of Germany and South Korea”

Author: Anna Sophie Schwarze

The environmental impact of beef production on greenhouse gas emissions requires urgent changes in global dietary behaviours. Young adults play a crucial role in this transition due to their growing environmental awareness and influential role on societal behaviour. This thesis examines young adults’ attitudes toward meat consumption in Germany and South Korea, focusing on how the contradictory trends in per capita meat consumption apply to this age group, the factors influencing these behaviours, and the resulting preferences for meat substitutes. A mixed-methods approach was employed, involving quantitative and qualitative analysis. A total of 279 participants (211 Germans, 68 South Koreans) were surveyed, assessing factors like meat attachment, consumption patterns, cultural influences, food neophobia, health perceptions, and environmental awareness. Key findings showed that South Koreans consume meat more frequently than Germans (4-6 times vs. 2.3 times per week) and have a higher mean Meat Attachment Index (3.48/5 vs. 2.90/5). Additionally, 61.8% of South Koreans preferred cultured meat over plant-based substitutes, while Germans were indifferent. Qualitative insights reveal that in South Korea, meat remains strongly tied to cultural and sensory attributes, while Germans associate meat more with environmental concerns, showing greater openness to substitutes. The study suggests cross-country tailored strategies to promote sustainable diets among young adults, contributing to global efforts to reduce the environmental impact of food consumption.

Keywords: Meat Consumption, Meat Substitutes, PBMA, Cultured Meat, Cross-Cultural Study, Germany, South Korea, Young Adults, Cultural Traditions, Environmental Concerns, Plant-Based Diets

RESUMO

Título da dissertação: "Atitudes de jovens adultos em relação ao consumo de carne e efeitos nas preferências por substitutos de carne - Um estudo transcultural da Alemanha e da Coreia do Sul"

Autora: Anna Sophie Schwarze

mudanças no comportamento alimentar em todo o mundo. Os jovens adultos são cruciais nesta transição devido à sua crescente consciencialização ambiental e ao seu papel influente. Esta tese examina as atitudes dos jovens adultos em relação ao consumo de carne na Alemanha e na Coreia do Sul, centrando-se na forma como as tendências contraditórias no consumo de carne per capita se aplicam a este grupo etário, nos factores que influenciam estes comportamentos e nas preferências resultantes para substitutos de carne. Foi utilizada uma abordagem de métodos mistos, envolvendo análises quantitativas e qualitativas. No total, foram inquiridos 279 participantes (211 alemães, 68 sul-coreanos), que avaliaram factores como o apego à carne, padrões de consumo, influências culturais, neofobia alimentar, percepções de saúde e consciência ambiental. Os principais resultados mostraram que os sul-coreanos consomem carne com mais frequência do que os alemães (4-6 vezes vs. 2,3 vezes por semana) e têm um Índice de Apego à Carne médio mais elevado (3,48/5 vs. 2,90/5). Além disso, 61,8% dos sul-coreanos preferem carne de cultura a substitutos à base de plantas, enquanto os alemães são indiferentes. As percepções qualitativas revelam que, na Coreia do Sul, a carne continua fortemente ligada a atributos culturais e sensoriais, enquanto os alemães associam a carne mais a preocupações ambientais, mostrando uma maior abertura a substitutos. O estudo sugere estratégias adaptadas a cada país para promover dietas sustentáveis entre os jovens adultos, contribuindo para os esforços globais de redução do impacto ambiental do consumo de alimentos.

Palavras-chave: Consumo de carne, substitutos de carne, PBMA, carne de cultura, estudo transcultural, Alemanha, Coreia do Sul, jovens adultos, tradições culturais, preocupações ambientais, dietas à base de plantas

ACKNOWLEDGEMENTS

This dissertation marks the end of my master's degree in management with specialization in Strategic Marketing at Católica Lisbon – a chapter in my life that was filled by multiple new experiences: Living abroad, studying in a different country with people from different cultures, gaining new perspectives and most importantly friendships for life. I am very grateful to everyone who has supported me along these two years.

First and foremost, I wish to extend my biggest gratitude to my academic supervisor, Ana Isabel Costa. Ana's encouragement and insightful guidance, knowledge, expertise, and time was more than I could have wished for. Dear Ana, I am beyond grateful I was able to write my thesis together with you. Sharing your knowledge and fully spending time and your passion on my thesis is nothing I take for granted but with full gratitude. To Professor Kyryl and the entire master's affairs team, thank you for their understanding and support during my health-related delays. Their flexibility and encouragement allowed me to continue my studies without undue pressure, ensuring that I could complete this work to the best of my abilities.

A special thank you goes to my Papa, whose constant encouragement and belief in my abilities have been a source of strength ever since and whose perspective of a world full of opportunities gave me the broad horizon to study abroad, in Lisbon and South Korea. There is a German saying which you fully fulfilled: *"Es gibt zwei Dinge, die wir unseren Kindern mitgeben sollten: Wurzeln und Flügel."* Thank you for grounding me with strong roots, endless love and confidence and giving me the wings and the perspective to fly.

Additionally, I would like to extend my gratitude to Korea University, where I completed an exchange semester that inspired and facilitated this cross-cultural study. The academic and personal experiences gained during my time there were instrumental in shaping the direction of my research and the support in the translation and distribution was very helpful.

Finally, I wish to thank my friends and family for their unwavering support throughout my academic career. Your encouragement and understanding have been invaluable, and I am profoundly grateful for your presence in my life. Without your support, this achievement would not have been possible. Thank you all.

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LIST OF ABBREVIATIONS

CO ₂	Carbon dioxide
CM	Cultured meat
PBMS	Plant-based meat substitutes
SDG	Sustainable Development Goal

1 INTRODUCTION

1.1 Background and problem statement

Over the past centuries, meat consumption has been a crucial part of human nutrition, valued for its high-quality protein as well as essential nutrients like iron, zinc, and vitamin B12. On top of that, meat is deeply anchored in many culinary practices and cultural identities around the world (Koch et al., 2019; Leroy et al., 2023; Leroy & Praet, 2015). Nevertheless, livestock agriculture, which is necessary for meat production, is more and more getting recognized as a significant contributor to global climate change (Hedenus et al., 2014; Jia et al., 2019). As a result, ethical, environmental, and health concerns related to diets containing a lot of meat are leading to a worldwide reconsideration of consumers dietary behaviours (Buttler & Walther, 2018; Koch et al., 2019; OECD & Food and Agriculture Organization of the United Nations, 2023; Rosenfeld & Tomiyama, 2021; Whitton et al., 2021).

Over the last six decades, the amount of global meat consumption has been doubled. Even after in 2023 a new peak of meat consumption was reached, further increases are expected (FAO, 2023) with around 12% by 2032. This development will further worsen the environmental impact of agricultural activities by causing even higher greenhouse gas emissions from processes such as enteric fermentation in livestock farming and deforestation of pastures (OECD & Food and Agriculture Organization of the United Nations, 2023).

The ecological footprint of the agricultural and food sector is particularly large in the production of meat, especially beef. Compared to other types of meat such as pork or chicken (Figure 1), beef emits far more greenhouse gases per kilogramme. The difference is even greater when comparing emissions from beef with other protein sources such as plant-based meat substitutes (Figure 1). While beef production emits up to 100 CO₂ equivalents per kilogramme of meat (taking methane into account), tofu, for example, emits only 3 CO₂ equivalents (Ritchie, 2020).

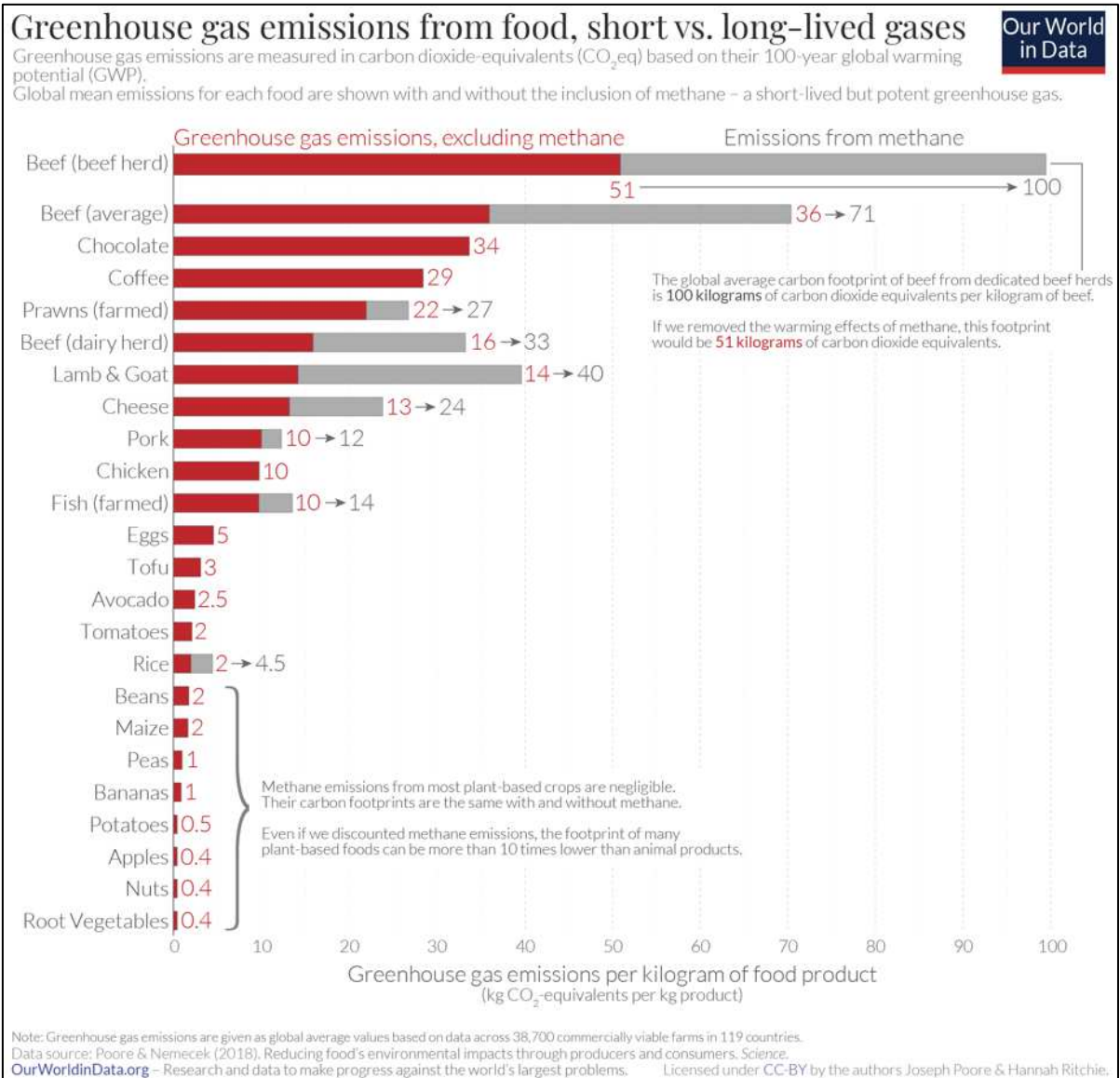


Figure 1: Emissions comparison of beef and other food products in kilograms of CO₂ equivalents produced per kilogram (Ritchie, 2020).

These strong differences highlight how attenuating the impact on global warming requires a shift from human diets containing high meat consumption towards the supply of more environmentally efficient protein sources. As requested by the EAT-Lancet Commission on Healthy Eating from Sustainable Food Systems, the “*transformation to healthy diets by 2050 will require substantial dietary shifts, including a greater than 50% reduction in global consumption of unhealthy foods, such as red meat (...)*” (Willett et al., 2019). Also, the United Nations' Sustainable Development Goals (SDGs), especially SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action), stated how important it is to transition to sustainable consumption patterns. To achieve this, a strong transformation of the

food sector is required, particularly in everything connected with meat production and consumption (United Nations, 2023). Additionally, changing consumers' dietary preferences appears to have a far greater ability to positively impact greenhouse gas emissions and global warming resulting from food consumption than developing improvements for food production methods (Cusack et al., 2021). Here, both types of meat substitutes – traditional (e.g., tofu, seitan, and tempeh) and modern ones (e.g. plant based meat substitutes (PBMS) and cultured meat (CM)) – are creating a key solution to address sustainability goals (Aschemann-Witzel et al., 2020). The rise in the adoption of plant-based diets and new meat creates a potential pathway to reduce the environmental footprint of human diets (Anusha Siddiqui et al., 2023; Font-i-Furnols, 2023; He et al., 2020; Hyun Jung Lee et al., 2020; Vural et al., 2023). Consumers acceptance of these products is crucial, and it strongly relies on the products' potential to meet their needs for adequate nutrition and provide enjoyable eating experiences that can replace the consumption of traditional meat-based meals (Aschemann-Witzel et al., 2020).

A successful introduction of alternative sources of protein, needs a deep understanding of attitudes towards meat consumption – especially in the case of nations that highly value and consume meat, or where meat is centrally connected to cultural and historical identities, such as Germany and South Korea (Heijnk et al., 2023a; Hwang et al., 2020; Hyun Jung Lee et al., 2020; Koch et al., 2019). The past and present meat consumption patterns in these two countries show significant differences – an almost opposite evolution. Historically, starting from different GDP per capita levels (high consumption for Germany and low consumption for South Korea), South Korea only reached Germany's level of meat consumption in 2019. By 2023, meat consumption per capita in South Korea had risen to 54.8 kg, even surpassing Germany's 51.6 kg per capita. While Germany continues to experience a decreasing trend in meat consumption, reaching record lows in 2021, 2022 and 2023 (Bundesinformationszentrums Landwirtschaft (BZL), n.d), South Korea's consumption is projected to continue increasing its per capita meat consumption over the coming years (OECD & Food and Agriculture Organization of the United Nations, 2021).

The fact that the historical evolution of meat consumption in South Korea seems to be relatively independent of that of its GDP level (Food and Agriculture Organization of the United Nations & Our World in Data, 2023), is contrasting with other countries, including Germany. Research has revealed an important connection between meat consumption and GDP per capita in 35 countries, forecasting a decline in meat consumption after a typical threshold of around \$40,000

GDP per capita (Whitton et al., 2021). South Korea sets a clear exception in this global pattern, with meat consumption rising far beyond this threshold (Nam et al., 2010).

The contrasts in the consumption of meat seen in Germany and South Korea raise an interesting question which current research has not discussed yet: *What differing factors influence consumers attitudes towards meat consumption in these two countries, leading to their distinct developments? Are these meat consumption developments also differing among younger demographics who might be increasingly aware of and concerned about sustainability issues? Moreover, how do these factors impact the acceptance and adoption of meat substitutes?*

1.2 Aim and scope

This thesis investigated consumer attitudes towards meat consumption and their effects on preferences for meat substitutes, seeking to understand the impact of cross-cultural differences on these processes. Its overall aim was to contribute to the environmental goal of meat consumption reduction by providing cross-cultural knowledge about consumers for improved meat substitute product adoption strategies. By examining the variables that influence dietary choices related to meat and meat substitutes in different countries, culturally related barriers to switching to the consumption of meat substitutes can be overcome and opportunities for this switch encouraged.

To achieve the aims of this dissertation, the following research questions were addressed:

1. How do the **meat consumption frequencies** of young adults in Germany and South Korea differ?
2. How do the **meat attachment levels** of young adults in Germany and South Korea compare?
3. Do higher meat attachment levels among young adults in Germany and South Korea influence their **preferences for meat substitutes** towards favouring those that closely mimic traditional meat?

Some restrictions applied to the scope of the research conducted:

- **Type of protein:** Attitudes towards beef consumption and preferences for plant-based meat substitutes (PBMS) and cultured meat (CM) were the objects of study. Scope was limited to the analysis of beef consumption due to the significant environmental impact of the production of this kind of meat (Cusack et al., 2021). Other potential meat substitutes such as insects were excluded, to set a focus on two forms of substitutes: CM seeking to mimic the taste, texture and protein profile of beef and traditional and plant-based substitutes.
- **Age:** Consumers aged 18-35 years old were selected to represent young adults. According to Heijnk et al. (2023), this demographic plays a critical role in shaping future market trends due to their openness to adopting new dietary practices and their ability to form independent consumption habits with increasing purchasing power. Their choices can significantly influence the demand for sustainable food options and the shift towards meat substitutes. By focusing on young adults this study enables to generate insights into the potentials of long-term dietary shifts that could lessen the environmental impacts of current beef consumption.
- **Nationality:** For reasons of access and practicality, only German and South Korean nationals and/or long-term residents (≥ 10 years) were included, to represent two cultures with diverging patterns of beef consumption.
- **Dietary pattern:** Given the topic of research, people currently excluding meat from their diet, namely vegetarians and vegans, were not included.

1.3 Research methods

This thesis used a descriptive research approach to uncover the associations between attitudes towards beef consumption, cross-cultural differences and preferences for modern meat substitutes. These associations and their relevance were investigated by designing and administering two culturally appropriate versions of an online questionnaire to samples of the two populations. The valid sample sizes contained 211 participants from Germany and 68 participants from South Korea. The questionnaire included the measurement of attitudes and other relevant individual characteristics, as well as a measure of preferences for meat substitutes and an open-ended question inquiring about spontaneous feelings and associations that come to

participants minds regarding the consumption of beef and its replacement by other food products.

A mixed-methods approach was used to gain a broad understanding of the factors influencing meat consumption and preferences for meat substitutes across these two specific cultural contexts. Quantitative data was analysed using descriptive and inferential statistics with descriptive statistics – used to summarize the demographic variables and general trends – and inferential statistics – used to identify differences between South Korean and German respondents. Also, qualitative data was explored with a thematic analysis of responses from open-ended questions, even deeper insights into cultural differences influencing attitudes and preferences were collected.

1.4 Relevance

With the increasing urgency of climate change, understanding the drivers of unsustainable food consumption is highly important. This research aligns with global efforts to promote environmental responsibility through changed consumption behaviours. The findings are not only relevant for companies producing or distributing meat substitutes, but also for policymakers, cultural analysts, and other readers seeking to influence food consumption patterns towards more sustainable practices in Germany and South Korea. Politicians can use the findings to shape country-specific economic factors and build an education program and knowledge base for sustainable food consumption patterns or guide businesses on environmental goals. To successfully address the target group of young adults with effective meat substitutes products, the right price, distribution and communication strategies, marketers and product developers can use the insights to tailor products to different cultural preferences. The findings are also relevant for translating to other individualistic/western and collectivistic/eastern cultures and are of interest to anyone invested in environmental conservation or understanding how nationality and culture shape consumer behaviour towards global issues.

1.5 Thesis outline

The following chapter 2 offers a review of the literature on factors influencing attitudes towards meat and preferences for meat substitutes. This includes an analysis of meat attachment, environmental concerns, cultural traditions, sensory preferences, health and nutrition, food

neophobia, and economic factors. Within chapter 3, the research methodology, the approach taken to investigate these attitudes and preferences among young adults in Germany and South Korea gets explained, including the study design, population sample and recruitment, and the methods used for data analysis. Chapter 4 presents the results and discussion, followed by chapter 5 summarizing the main conclusions and implications of the research, as well as the study's limitations, and recommendations for future research.

2 REVIEW OF LITERATURE AND CONCEPTUAL FRAMEWORK

2.1 Behaviour of meat substitution

Historically, the supply of meat replacements to the market was primarily associated with the restricted diets of vegan and vegetarian minorities. The goal was to offer alternative proteins that would suit their specific dietary requirements (Biscarra-Bellio et al., 2023). Over recent years, there has been a shift in consumer behaviour where meat replacements get more and more adopted beyond the vegan and vegetarian communities. This broader audience is known as flexitarians – people who primarily eat a vegetarian diet but occasionally consume meat. Motivated by an increasing awareness of the environmental and health impacts of conventional meat consumption, coupled with advancements in the quality and variety of alternative protein products (Biscarra-Bellio et al., 2023; Valente et al., 2019), already 46% of German consumers are following a flexitarian diet, while in South Korea this group comprises only 20% of the population (Bundesministerium für Ernährung und Landwirtschaft (BMEL), 2024; Sichong Wang, 2023).

Recent studies highlight the growing awareness, acceptance and the demand for alternative proteins, including plant-based and cultured meats, among broader consumer segments – even among traditional meat-eaters (Chriki et al., 2021; de Oliveira et al., 2021). Reducing meat consumption and replacing conventional meat with alternatives get more common, for reasons ranging from health benefits to environmental concerns. This transition is supported by alternative high-quality meat substitutes being further developed to closely mimic the taste and texture of conventional meat. This makes them more appealing to flexitarians than the traditional plant-based offerings targeting vegans and vegetarians and creates new solutions (He et al., 2020). Both traditional and modern meat substitutes not only complement existing meat sources but also play a crucial role in meeting the increasing global protein demand and reducing the environmental footprint of meat production (Hyun Jung Lee et al., 2020).

(1) Traditional meat substitutes have been integrated into human diets for a long time, particularly in regions with long-standing vegetarian traditions due to for example religion. These include tofu, seitan and tempeh. Tofu is made of soybeans and is a traditional dish in the Asian cuisine. It is high in protein, and versatile in cooking. Seitan is also known as wheat gluten. It is rich in protein as well, and has a texture like meat, which makes it a popular meat substitute in many vegetarian and vegan dishes. Tempeh is coming from Indonesia and is made

from fermented soybeans and as well is rich in protein, but also probiotics, and vitamins. Its firm texture and nutty flavour make it versatile in cooking (Hyun Jung Lee et al., 2020). Especially in South Korea, traditional PBMS are based in the local traditional cuisine, increasing its widespread acceptance (Bryant & Barnett, 2018; Hwang et al., 2020; Siegrist & Hartmann, 2020; Verbeke et al., 2015)

(2) Modern meat substitutes are designed to closely mimic the taste, texture, and nutritional profile of conventional meat. These not only include PBMS and CM, but also edible insects and jellyfish, for instance, which were not investigated in this thesis.

PBMS derive from the processing of non-animal protein sources, like wheat, soybeans, legumes, oil seeds or fungi, to create food products that align well with consumer expectations regarding the taste and texture of meat. Moreover, they are perceived to be more sustainable to produce than meat due to lower environmental impacts such as reduced greenhouse gas emissions and resource usage. Successful products in this category achieve closely mimicking the sensory experience of eating conventional meat, which is crucial for their acceptance in addition to sustainability benefits (H. J. Lee et al., 2020).

In Germany, traditional meat substitutes like tofu and seitan are particularly well accepted among younger, health-conscious consumers. Similarly, the market for PBMS has seen significant growth, which was driven by increasing awareness of health and environmental issues. (Heijnk et al., 2023b) In contrast, in South Korea, modern PBMS are gaining rising acceptance (Bryant & Barnett, 2018; Hwang et al., 2020; Siegrist & Hartmann, 2020; Verbeke et al., 2015).

CM, also known as cultured, lab-grown, or cell-based meat, is produced by culturing animal cells in vitro in a nutrient-rich environment. This method aims to replicate exactly the sensory attributes of animal meat, mimicking the taste and texture of conventional meat. This process undergoes the goal of addressing animal welfare and environmental concerns associated with conventional livestock rearing. These goals but also the creation of a secure trust in the underlying technology are success factors for the acceptance of this kind of meat replacement. (Hyun Jung Lee et al., 2020).

Consumer studies have shown that CM still compares negatively to conventional meat in terms of food safety perceptions, despite being perceived as free from the antibiotics and hormones

linked to animal production. Concerns about CM's long-term health risks and nutritional quality and perceptions of lack of naturalness, being produced in a lab create a barrier for CM's acceptance (Bryant & Barnett, 2018; Hwang et al., 2020; Lynch & Pierrehumbert, 2019; Onwezen et al., 2021a; Siegrist & Hartmann, 2020; Verbeke et al., 2015). The willingness to adopt PBMS is higher because of their plant origin (Bryant, Szejda, Parekh, Deshpande, et al., 2019; Graça et al., 2015; Heijnk et al., 2023b; Hwang et al., 2020; Onwezen et al., 2021a).

CM is still not commercially available in either Germany or South Korea, due to the strict regulations for novel foods in both countries (Jetzke & Dassel, 2023; Slade, 2018). Nevertheless, research shows that German consumers face CM with concerns about its safety, taste, and naturalness, coupled with uncertainty about its environmental impact (Heijnk et al., 2023b). A choice experiment study with German consumers (Slade, 2018) revealed that although there was interest in CM among participants, only 11% would choose to eat CM if prices were equal to those of traditional meat. The positive influence of familiarity on acceptance was clear, as those aware of CM were much more likely to view it positively (Heijnk et al., 2023b). In South Korea, CM is met both with curiosity and high scepticism by consumers, primarily due to concerns about unnaturalness and a strong distrust in biotechnology. Modern PBMS, on the other hand, are gaining popularity through rising awareness of health and environmental issues linked to meat consumptions (Bryant & Barnett, 2018; Hwang et al., 2020; Siegrist & Hartmann, 2020; Verbeke et al., 2015).

2.2 Traditions and social influences

Social norms and traditional dietary habits shape meat attachment and the acceptance of meat substitutes in multiple ways (Onwezen et al., 2021b). Historically, attitudes towards meat are tied to social class distinctions. Meat was seen as a luxury product consumed by the upper classes, symbolizing wealth and social status. Additionally, it was perceived as a predominantly "masculine" food, associated with physical strength and power, leading to its prioritization in diets for men in certain social contexts (Nungesser & Winter, 2021). These strong historical associations result in environmental awareness alone not being sufficient to lower meat consumption, unless it is combined with other motivators such as changing social norms (Leroy et al., 2023; Onwezen & Dagevos, 2024).

Meat consumption is deeply rooted in German culinary traditions, making many consumers unwilling to sacrifice or substitute it (Heijnk et al., 2023b; Koch et al., 2019). In the traditional

meal structure, meat serves as the centrepiece, often accompanied by potatoes and gravy. Given its special value in meals, particularly among men, meat is often associated with strength and power. Nevertheless, Germany is currently experiencing a shift in status symbol perception, where reducing meat consumption or abstaining from it serves as a new form of social distinction, reflecting awareness of the adverse effects of high meat consumption on health, the environment, and animal welfare (Koch et al., 2019).

Likewise, meat takes a central role in food-related cultural and social practices in South Korea, strongly determining its high level of consumption in this country (Hwang et al., 2020; Hyun Jung Lee et al., 2020). Cooking and eating meat is very important in the South Korean cuisine, which features a variety of ways to prepare meat dishes, such as grilling, steaming, and stewing. Meat is perceived as a valuable protein source and important part of dietary patterns by South Koreans (Nam et al., 2010). The comparably late shift from plant-based protein sources to meat consumption, gives reason for the remaining high and recent value of meat to South Korean consumers (Food and Agriculture Organization of the United Nations & Our World in Data, 2023; Nam et al., 2010).

2.3 Health and nutrition

Individual health perceptions and considerations about the correct nutrition affect consumer attitudes towards meat consumption as well as meat substitutes. Historically, meat consumption has played a vital role in human evolution and nutrition. Based on evolutionary biology humans have adapted to eating high amounts of meat, with physiological and metabolic changes indicating a dependency on meat for optimal health (Leroy et al., 2023).

Most people perceive meat as a rich source of protein and essential nutrients (such as protein, iron, zinc, and vitamin B12) and as essential to maintain good health (Buttlar & Walther, 2018; Koch et al., 2019). Nevertheless, research has found out that excessive meat consumption is linked to health issues such as heart disease and cancer (Schulze & Janssen, 2024). This knowledge about health risks associated with high meat consumption is increasingly reaching consumers awareness, who consequently are getting more open to substitutes or even perceive them as healthier (Siegrist & Hartmann, 2020). This effect and perspective is more and more applying to both, Germany and South Korea (Heijnk et al., 2023b; Hwang et al., 2020; Koch et al., 2019).

In Germany, the negative health impacts of high meat consumption are starting to influence meat consumption, with more consumers being aware of them (Schulze & Janssen, 2024). The German National Nutrition Survey II highlights that younger, more educated people tend to eat less meat, due to a growing awareness (Koch et al., 2019). A similar trend is also registered in South Korea, where a growing number of consumers seek to reduce meat consumption because of health reasons (Hwang et al., 2020). Nevertheless, the belief that meat has a high nutritional value and is irreplaceable in a nutritional diet remains (Nam et al., 2010).

Substituting meat by alternatives can offer health benefits, such as lower saturated fat and cholesterol levels. Still, concerns about their nutritional completeness persist, particularly regarding the amount and quality of protein and essential nutrients like iron and vitamin B12 (Heijnk et al., 2023b; Leroy et al., 2023). These perceptions of the health benefits depend on consumer age and education in both Germany and South Korea. Consumers attitudes towards these products are more positive among younger and more educated consumers. For them where meat substitutes are usually even seen as a healthier alternative to meat (Heijnk et al., 2023b; Hwang et al., 2020; Koch et al., 2019). In South Korea, traditional views on meat providing health value remain and concerns about lack of naturalness and high degree of processing act as barriers to the shift to modern meat substitutes (Hwang et al., 2020).

2.4 Sensory preferences

The sensory pleasure of meat bases on aspects like taste, texture, and overall sensory satisfaction and is closely tied to culinary traditions and the cultural significance. It contributes to the persistence of meat-eating habits even in the face of potential negative consequences to individual health and environmental issues (Buttler & Walther, 2018; Graça et al., 2019; Heijnk et al., 2023a).

With sensory preferences playing such a big role for meat, products that aim to substitute meat, both PBMS and CM, are strongly evaluated by their sensory quality as well (Heijnk et al., 2023b). Several studies have shown that large segments of consumers (e.g., flexitarians, open to reduce meat) are more likely to accept meat substitutes that closely mimic real meat in sensory attributes (He et al., 2020; Siegrist & Hartmann, 2020). Additionally, the perceived naturalness of meat substitutes plays a crucial role; products seen as less processed and more natural are generally preferred (Siegrist & Hartmann, 2020).

Both South Korean and German consumers prioritize sensory qualities and naturalness in meat (Hwang et al., 2020; Hyun Jung Lee et al., 2020) and its substitutes, ideally closely mimicking meat (Heijnk et al., 2023b; Hwang et al., 2020; Nam et al., 2010). When comparing both countries, South Korean consumers are requiring meat analogues that closely mimic traditional meat in flavor, texture, and appearance to be well-received (Hyun Jung Lee et al., 2020), while Germans are more tolerant of imperfections in meat substitutes (Schulze & Janssen, 2024) and prefer plant-based options over cultured meat (Heijnk et al., 2023b).

2.5 Meat attachment

Meat attachment serves as an umbrella for an evaluation of eating meat due to all the previous drivers. Graça et al. (2015) defined meat attachment as the strength of people' "positive bond with meat consumption", which reflects the strength of their beliefs regarding four interconnected dimensions of meat consumption which also cover the previous variables, sensory preferences, culture and society, health and nutrition:

1. **Hedonism:** This dimension is closely related to sensory preferences. It covers the pleasure derived from eating meat. People with high hedonism scores consider meat to be an important source of pleasure. Examples include statements such as "Eating meat is one of the greatest pleasures in life" and "A good steak is unrivalled."
2. **Affinity:** Affinity reflects the emotional attachment and positive feelings towards meat consumption. Higher values in this dimension indicate a stronger emotional attachment to meat consumption. The reverse of this dimension involves examples such as "By eating meat I'm reminded of the death and suffering of animals" and "To eat meat is disrespectful towards life and the environment".
3. **Entitlement:** This dimension is closely related to the way meat is embedded in culture and society and measures the belief that eating meat is a natural and unquestionable right. High scores on the entitlement dimension reflect a strong belief in the right to eat meat based on natural and social norms. Items on this dimension include: "To eat meat is an unquestionable right of every person" and "According to our position in the food chain, we have the right to eat meat."

4. **Dependence:** Dependence covers health and nutritional drivers and reflects a reliance on meat consumption. It includes both a physical and psychological dependence. Physically, it translates into the fear of not eating properly or not being well-fed without meat. Psychologically, it signifies that something feels amiss or abnormal if one does not consume meat or lacks the desire to eat meat. This dimension captures the perceived necessity of meat in one's diet, i.e. the fear of not eating properly or not being well fed. Higher scores indicate that participants feel they cannot imagine life without regular meat consumption. Items reflecting dependence include "I don't picture myself without eating meat regularly." (Graça et al., 2015).

These dimensions collectively contribute to a measure of meat attachment, explaining the complexity of the relationship between many driving variables, consumers and meat (Hidalgo & Hernández, 2001; Scannell & Gifford, 2010). Consumers with high meat attachment scores perceive meat as a source of pleasure, feel entitled to consume meat, and often exhibit a dependence on meat in their diet (Bryant, Szejda, Parekh, Deshpande, et al., 2019; Circus & Robison, 2019). Meat attachment not only has an impact on the consumption of meat, but also of its substitutes, as strong cultural or personal preferences for animal protein can act as a barrier to adopting a plant-based diet (Bryant et al., 2019).

2.6 Environmental concerns

Globally, consumers rising environmental responsibility is influencing consumer behaviour, with more a noticeable shift towards the promotion of sustainable consumption. Consumers' preference for products with a lower carbon footprint, ethical sourcing, and transparent supply chains is growing making them more and more willing to reduce meat consumption to mitigate their ecological impact (Cheah et al., 2020; Gatzer et al., 2023; Heijnk et al., 2023b; Hwang et al., 2020; Rasche et al., 2023; Schulze & Janssen, 2024). The direct influence of these concerns on reducing meat consumption varies by country, culture, and consumer profile. Overall, this influence is less pronounced compared to health concerns and the belief that reducing meat intake leads to a healthier diet (Seffen & Dohle, 2023; Xavier Medina et al., 2023; Koch et al., 2021).

The fact that the per capita meat consumption in Germany is at its lowest since 1989, bases on several factors but over the past five years, ethical considerations and concerns about animal welfare and the environment have significantly influenced this decline (Seffen & Dohle, 2023).

German consumers with strong environmental concerns are more likely to reduce their meat consumption and shift towards plant-based meat substitutes (Heijnk et al., 2023b; Rasche et al., 2023). Increased availability and awareness campaigns have played a crucial role in this transition (Koch et al., 2021).

In South Korea, consumer awareness of the environmental impact is gradually aligning with global trends towards sustainable consumption. It is positively influencing their purchase intention for meat substitutes (Hwang et al., 2020; Younghoon Kang & Jeongkeun Kim, 2023). Although the emerging Generation Z in particular reveals a growing interest in ethical and sustainably sourced food (Younghoon Kang & Jeongkeun Kim, 2023), this still does not translate into greater adoption of veganism or vegetarianism, as many South Koreans translate the wish for fighting environmental concerns more into actions like reducing plastic in food product packaging (Hwang et al., 2020).

2.7 Food neophobia

Besides these factors, also consumers' fear or avoidance of new or unfamiliar foods, known as food neophobia (Barnett, 1958), plays an important role for understanding barriers for meat substitute adoption. Food Neophobia is a self-protective behaviour that prevents the consumption of potentially harmful substances resulting in a reluctance to try new foods. Familiar ones are prioritized instead. Consumers with high levels of food neophobia are less likely to try new products, including meat substitutes, depending on prior familiarity and meat consumption levels (Hwang et al., 2020). Therefore, a higher product familiarity reduces food neophobia and also the barriers to trying meat substitutes. As consumers become more acquainted with these products, they are more likely to try them, especially as their interest and curiosity rise (Bryant & Barnett, 2018; Heijnk et al., 2023a; Hwang et al., 2020; Siegrist & Hartmann, 2023). This effect mainly applies to PBMS as CM remains unavailable in most countries (Jetzke & Dassel, 2023; Slade, 2018).

In Germany, food neophobia significantly hinders the acceptance of meat substitutes. Different to South Korea – PBMS such as Tofu were not embedded in the traditional German cuisine (Heijnk et al., 2023b). Therefore, CM and PBMS can act as novel foods to Germans in the same way. Innovative meat substitutes such as CM are often perceived as unfamiliar and unnatural (Kühn et al., 2023a).

Many Koreans are especially still reluctant to try novel food technologies due to a deep-rooted distrust in biotechnology and the perceived risks associated with it (Hwang et al., 2020). As familiarity with novel foods can reduce food neophobia, an increased exposure and positive experiences with meat substitutes can enhance their acceptance and build trust (Bryant & Dillard, 2019; Pliner & Hobden, 1992; Ritchey et al., 2003).

2.8 Economic factors

2.8.1 Physical and monetary accessibility

The more **physically accessible** and prominently displayed products are to consumers, the more likely they are to be chosen by consumers (Buttlar & Walther, 2018; Font-i-Furnols, 2023). Meat substitutes are increasingly available in local supermarkets and restaurants in Germany, which is crucial for increasing their consumption in this country (Heijnk et al., 2023a; Koch et al., 2021; Seffen & Dohle, 2023). The availability of healthy food options in local environments and the ease of getting these options are likewise vital for promoting healthy eating habits among South Koreans (Lee et al., 2022). Despite a cultural shift towards sustainable and health-conscious eating habits and a growing demand for plant-based products among younger generations (Hwang et al., 2020), product availability in South Korea still faces challenges (Gatzer et al., 2023). Convenience stores and smaller local markets play a critical role in providing access to food products and significantly influence daily food choices. These stores can be limited and homogenous in their product selection. A recent solution is the emerging growth of online food delivery services, which positively impact consumption patterns by providing access to a wider range of food products (Lee et al., 2022).

Monetary accessibility, i.e., affordability, is a major determinant of food choices. Historically, there is a connection between a country's GDP per capita and their average meat consumption (Bodirsky et al., 2015; Cole & McCoskey, 2013; OECD & Food and Agriculture Organization of the United Nations, 2023; Schmidhuber & Shetty, 2005; Vranken et al., 2014; Whitton et al., 2021). Meat substitutes may often sell at a higher price per kg than most meat products. This price premium can act as an important barrier, especially for consumers who have not tried them yet (Buttlar & Walther, 2018; Font-i-Furnols, 2023; Onwezen et al., 2021b; Slade, 2018).

Indeed, **price** is an important barrier to the adoption of meat substitutes in both Germany and South Korea, especially among non-users or light/medium users (Y. Lee et al., 2022; Michel et

al., 2021). South Korean consumers, particularly from lower-income groups like young adults, are especially price-sensitive (Lee et al., 2022). Compared to traditional meat, plant-based meat products are more expensive, which is demotivating consumers from purchasing them (Gatzer et al., 2023; Y. Kim & Zailani, 2024). Financial constraints often lead South Korean consumers to prioritize cost over other factors such as nutritional value or environmental benefits (Lee et al., 2022). German consumers also find meat more affordable than meat substitutes, with even flexitarians and non-meat eaters acknowledging price as an important factor in their choice for meat vs alternative proteins (Michel et al., 2021).

2.8.2 Governmental activities and education

Governments can significantly influence the acceptance of meat substitutes through economic incentives and education.

Financial subsidies for plant-based foods or higher taxes on meat products could reduce higher prices and encourage consumers to switch to meat substitutes (Onwezen & Dagevos, 2024; Siegrist & Hartmann, 2020). Informing and educating consumers about the benefits of reducing meat consumption can also motivate their consumption (Hwang et al., 2020; Verbeke et al., 2015). Prior knowledge about meat substitutes has a positive effect on consumers' willingness to buy them. Information about the benefits and production processes is crucial for product acceptance. This is particularly important for CMMs, which are often viewed with scepticism. Effective communication strategies that address concerns about biotechnology and the unnaturalness of meat substitutes are essential in this case. Emphasising safety, benefits and sustainability can help build consumer trust (Hwang et al., 2020). Positive messages that emphasise the environmental friendliness and innovative aspects of alternative meats can attract consumers who are interested in new food technologies. For plant-based meat substitutes, the promotion of sustainability and natural ingredients appeals to environmentally conscious consumers. At the same time, novelty and potential health benefits increase interest in CM (Hwang et al., 2020).

Germany is promoting sustainable protein sources through innovation and competition between plant-based producers, funding research into organic value chains and implementing regulatory measures for transparency. At the same time, educational programmes raise awareness of the overall benefits of a plant-based diet and policy initiatives to make alternatives more affordable (Bundesministerium für Ernährung und Landwirtschaft (BMEL), 2024; Michel et al., 2021;

Schulze & Janssen, 2024). South Korea supports meat substitutes with subsidies and research funding and is focussing on technological innovation and awareness campaigns. Public institutions are encouraged to offer plant-based options, which is why consumer awareness, especially among Generation Z, is increasing (Hwang et al., 2020; Market Intelligence Analytics Team, 2023; National Agricultural Quality Control Centre & Song Mei-ryung, 2023; Younghoon Kang & Jeongkeun Kim, 2023).

2.9 Conclusions and research hypotheses

Literature shows how attitudes towards meat consumption and preferences for meat substitutes emerge from the interplay of interconnected factors and drivers, including the country-specific economic situation, cultural influences, sensory preferences, environmental concerns, and personal health motivations. When comparing Germany to South Korea, notable differences and similarities can be observed.

Consumers in both countries hold a high attachment to meat (Bryant, Szejda, Parekh, Deshpande, et al., 2019; Circus & Robison, 2019; Graça et al., 2015), as this food is deeply rooted in culinary tradition and takes a central role in meals, being furthermore associated with strength and wealth (Hwang et al., 2020; Koch et al., 2019; Nam et al., 2010). Sensory qualities, such as taste and texture are also highly valued, leading to a general preference for naturalness in meat substitutes (Heijnk et al., 2023a; Hwang et al., 2020; Hyun Jung Lee et al., 2020; Nam et al., 2010; Schulze & Janssen, 2024).

Nevertheless, as environmental concerns and the awareness of the climate footprint of animal rearing grow, meat consumption is changing in growing segments of the population (Heijnk et al., 2023a; Hwang et al., 2020; Rasche et al., 2023; Younghoon Kang & Jeongkeun Kim, 2023). Still, attitudes towards meat consumption remain mostly positive due to favourable views of the role of meat in diet and the enjoyment of meals, acting as a barrier to adopting plant-based diets (Bryant et al., 2019; Circus & Robison, 2019; Graça et al., 2015).

The conceptual framework illustrates the variables, and their proposed relationships explored in this dissertation. These variables are the country of origin or long-term residence (Germany and South Korea), beef consumption, meat attachment and meat substitute preferences (CM and PBMS).

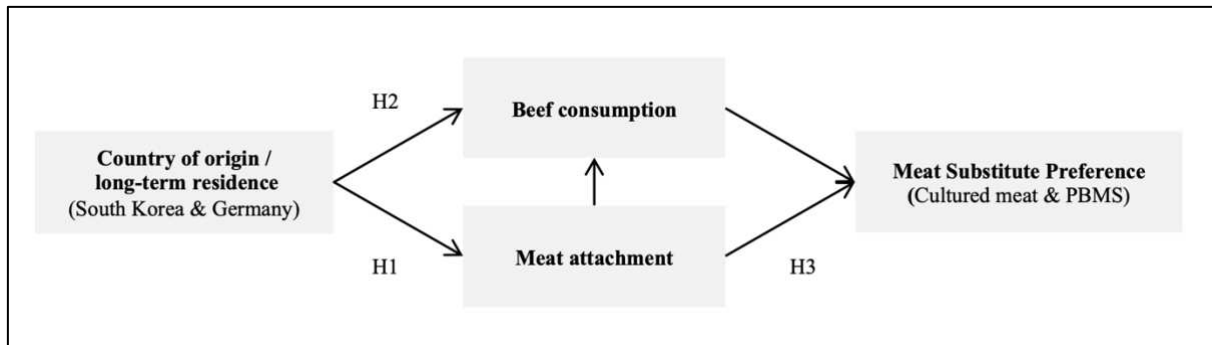


Figure 2: Conceptual framework illustrating the proposed relationships between the four variables explored in this dissertation and the assignment of the three hypothesizes to these relationships

Despite many similarities in attitudes towards meat consumption, significant differences exist between consumers in Germany and South Korea, especially in terms of meat consumption patterns. These differences are highlighted by opposite per-capita meat consumption trends in the past and in projections for the future. Starting from similar consumption levels and with comparable environmental awareness, South Koreans are not only less likely to translate this awareness into meat reduction actions, but there is also a trend seen that meat consumption is further increasing, driven by cultural and social practices. Oppositely, Germany exhibits a continuous and significant decline in per-capita meat consumption (Bryant, Szejda, Parekh, Desphande, et al., 2019; Bundesinformationszentrums Landwirtschaft (BZL), n.d.; Circus & Robison, 2019; Graça et al., 2015; Heijnk et al., 2023a; Hwang et al., 2020; OECD & Food and Agriculture Organization of the United Nations, 2021; Rasche et al., 2023; Younghoon Kang & Jeongkeun Kim, 2023). Based on this effect, the first hypothesis was formulated:

H1: South Korean young adults consume meat more frequently than German young adults.

Attitudes towards beef consumption and preferences for meat substitutes are based on the same influencing factors which – on its own but also in terms of its weight in influence – can differ across countries.

Based on South Koreans strong cultural anchoring of meat into the traditional cuisine, the less pronounced awareness for the translation of environmental issues into meat consumption reduction activities and lower considerations regarding the healthiness of meat (Nam et al., 2010) (Hwang et al., 2020; Lee et al., 2020; Nam et al., 2010; Younghoon Kang & Jeongkeun Kim, 2023), the second hypothesis was formulated:

H2: South Korean young adults exhibit higher levels of meat attachment compared to German young adults.

In Germany, the environmental and health drivers to lower meat consumption are very strong. Consequently, German consumers are likely to be more tolerant of minor imperfections in substitutes' mimicry of traditional meat than South Koreans and more likely to accept their inclusion in diets. Meanwhile, South Koreans are generally less open to replace meat by novel alternatives. They also exhibit higher levels of food neophobia and have stricter sensory requirements, being more receptive of products that closely mimic meat (Heijnk et al., 2023a; Hwang et al., 2020; Hyun Jung Lee et al., 2020; Kühn et al., 2023b; Nam et al., 2010; Schulze & Janssen, 2024). In view of this, it was proposed that:

H3: Due to a higher level of meat attachment, South Korean young adults have different preferences for meat substitutes compared to those in Germany, specifically preferring meat substitutes that more closely mimic traditional meat.

The next chapter describes the methods used to collect and analyse data to test these hypotheses. Results are presented and discussed in Chapter 4.

3 METHODOLOGY

3.1 Study design

This study fulfilled a cross-sectional observational design to analyse the influence of national culture on beef consumption and preferences for meat substitutes. Participants were naturally grouped based on their country of origin or long-term residence: Germany or South Korea. Therefore, the independent variable, country of origin or long-term residence, is the primary independent variable and influences both meat attachment and beef consumption patterns. It has two levels:

- **German** (Reference Group): Used as the baseline.
- **South Korean** (Treatment Group): Compared against the German group to identify differences.

As shown in Figure 2, the model posits the following relationships and scenarios for dependent variables (DV) and independent variables (IV):

- **H1**: Country of origin (IV) influencing the meat consumption frequency (DV).
- **H2**: Country of origin (IV) influencing the meat attachment level (DV).
- **H3**: Meat attachment level (IV1) and country of origin (IV2) influencing preferences for meat substitutes (DV).

Meat Attachment was measured by the Meat Attachment Scale (MAS) (Graça et al., 2015; Kühn et al., 2023a).

Constructed using the Qualtrics platform, the survey was available in both German and Korean versions to ensure cultural appropriateness. Detailed survey questions are provided in Appendix I (in German), with an English translation in Appendix II and a visual example of the Korean version in Appendix III. Appendix IV describes the measures administered (in English).

After a brief introduction covering the survey length, research background, voluntary participation, the importance of honest answers, data confidentiality, and author's contact

information for feedback or questions, respondents were screened for eligibility based on nationality/residency, age, and dietary preferences. Participants who were not relevant and reflective of the target demographic pertinent to the research hypotheses were excluded.

Next, the survey included questions on consumption patterns, namely weekly meat and meat substitute consumption frequencies, consumers experience with meat-substitutes, openness to trying new meat substitutes as well as motivations behind purchasing meat and meat substitutes.

Aimed at understanding preferences for meat substitutes across different cultural contexts, participants were shown photos of two hypothetical meat substitute products: a meat-alternative burger patty in Germany and meat-alternative Bulgogi in South Korea. These two dishes were chosen as both are one of the most popular dishes made from beef in each country. Beef-burgers are very common in German cuisine and the same applies for Bulgogi in South Korea (Jo et al., 2015). Each dish was presented as either a PBMS (Figure 3) or a CM alternative (Figure 4). The stimuli were designed to differ minimally in colours, icons, and product benefits to minimize biases. Participants were asked about their potential purchase motivators, depending on which substitute was selected or if none was selected.



Figure 3: PBMS Stimuli – German (left) and Korean survey example (right)



Figure 4: CM Stimuli - German (left) and Korean survey example (right)

Afterwards, meat attachment, environmental concerns, food neophobia, and health attitudes were measured using previously validated psychometric measures.

The survey ended with questions about country-specific economic factors, such as accessibility, information, the individual health-perception of beef compared to meat substitutes and social aspects of either meat or meat substitutes, and an open question about thoughts and feelings related to beef or substitutes for an additional qualitative analysis, as well as three further demographic questions: highest academic degree, gender, and employment status to ensure that the study's conclusions could be appropriately contextualized.

Although the survey encompassed a wide range of questions, only the data pertinent to the research hypotheses was analysed to maintain focus on the specific objectives of the study.

3.2 Population, sample, and recruitment

3.2.1 Population

The study population was defined as Germans (or people residing in Germany for more than ten years) and South Koreans (or people residing in South Korea for more than ten years) aged 18 to 35 years (i.e., young adults), who were not following a strict vegetarian or vegan diet. The age demographic was chosen due to its critical role in shaping future market trends and dietary practices, the dietary pattern was necessary for including only consumers eating meat. To ensure

the fulfilment of this criteria, three initial screening questions about age, nationality or country of residence and type of diet followed were administered. All ineligible respondents who reported to not meet one or more of the population requirements were dismissed with an information about required study requirements, and their data was removed from further analyses.

3.2.2 Sample & recruitment

A convenience sample of young adults from Germany and South Korea was recruited via Prolific, social media platforms, and professors and students from Korea University in Seoul, South Korea. The goal was to obtain a sum of N=140 and approximately n=70 respondents from each country. This goal was reached, as 261 respondents started the survey in Germany and 110 in South Korea (Table 1). Due to their answers to initial screening questions addressing population requirements, or not having completed the survey, 50 German and 37 South Korean respondents were excluded from further analysis. Therefore, a total valid response number of 211 German responses and 68 South Korean responses was reached (Table 2).

Table 1: Number of participants excluded from analysis and reasons

Country of Survey display	Accessed Survey	Did not continue	Did not meet screening requirements		Did not finish	Valid sample size
			Nationality / Residence	Diet		
Germany	261	8	5	30	7	211
South Korea	110	4	17	5	16	68

3.2.3 Sample characteristics

Table 2 provides an overview of the characteristics of the samples in both countries.

Table 2: Characteristics of the study samples.

Variable	Germany (n=221)		South Korea (n=68)		Difference
	Frequency	Percentage (%)	Frequency	Percentage (%)	
Age [Range 18-35 years]					
18-23	65	30.8	27	39.7	Pearson Chi square (2) =
24-29	82	38.9	21	30.9	

30-35	64	30.3	20	29.4	2.137 <i>p</i> =.344
Mean [95%CI]	26.43[25.74-27.11]		25.75[24.40-27.10]		
Gender					
Male	141	66.8	33	48.5	Pearson Chi square (1) = 8.354 <i>p</i> =.004
Female	64	30.3	34	50.0	
Other	6	2.8	1	1.5	Recorded as missing values
Academical background					
Primary school leaving certificate	2	0.9	2	2.9	Pearson Chi square (5) = 61.973 <i>p</i> <.001
Secondary school leaving certificate	105	49.8	1	1.5	
Bachelor's degree	52	24.6	41	60.3	
Master's degree	46	21.8	17	25	
Diploma	3	1.4	6	8.8	
Other	3	1.4	1	1.5	Recorded as missing values
Employment Status					
working full-time	88	41.7	18	26.5	Pearson Chi square (2) = 12.820 <i>p</i> =.025
working part-time	25	11.8	16	23.5	
not working	98	46.4	34	50.1	

Respondents showed an evenly spread age distribution across the age ranges of 18-23, 24-29, and 30-35 years in both countries, with a slightly higher concentration of younger respondents (18-23 years) in South Korea compared to Germany. The mean age of South Koreans and Germans is not significantly different at 5%. The gender distribution is very different between the two countries, with a higher percentage of male respondents in Germany compared to South Korea, where it is almost evenly split. Also, the academic qualifications vary significantly between the two countries. In Germany, half of the respondents are having a higher educational background, compared to South Korea, where a high majority have a higher educational background. This indicates a higher educational attainment level among the South Korean respondents. The employment status also shows smaller differences. In both countries, half of

the respondents are not working, while the working group of respondents is evenly split into half-time and full-time in South Korea, while in Germany, more respondents are working full-time.

3.3 Data analysis

3.3.1 Quantitative analysis

In the quantitative analysis of this study, statistical tests were used to examine meat consumption patterns and attachment levels among young adults in Germany and South Korea.

To address the first research question concerning differences in meat consumption frequencies between the two countries, cross-tabulations were calculated and analysed using a Pearson Chi-square test.

For a comparison of meat attachment levels, a reliability analysis was conducted, and the Cronbach's Alpha was computed for the 11 valid items in both countries. The meat attachment scale originally consisted of 15 items, including four reverse-coded items: "I would feel fine with a meatless diet," "By eating meat I'm reminded of the death and suffering of animals," "To eat meat is disrespectful towards life and the environment," and "Meat reminds me of diseases" (Appendix V). Nevertheless, inconsistencies in the responses to these reverse-coded items required methodological adjustments. German respondents generally responded to the survey instructions and answered the reverse-coded items correctly, resulting in a wide range of responses on the 5-point Likert scale. In contrast, South Korean respondents did not differentiate between reverse-coded and non-reverse-coded items and consistently gave similar ratings for all items, including the four reverse-coded items. This response pattern resulted in hiding the actual level of meat attachment. To address this issue and ensure clarity and accuracy, the analysis was restricted to the 11 unreversed items. This mean represents the meat attachment level and serves as the dependent variable in our analysis. Descriptive statistics, along with the computation of means and 95% Confidence Interval (95%CI), were used to evaluate differences between the two countries. Additionally, a Mann-Whitney U test, a non-parametric test, was conducted to further assess these differences.

To investigate whether higher levels of meat attachment influenced preferences for meat substitutes, the study analysed three aspects: (1) The frequency distribution of meat substitute

consumption as well as (2) previous experience with meat substitutes and (3) the product choice with regards to preferences for CM versus plant-based meat substitutes were all examined using cross-tabulations, displaying the data for Germany and South Korea. Also, the Pearson Chi-square test was used for all three analyses to test for statistically significant differences between the countries' consumption patterns.

3.3.2 Qualitative Analysis

In addition to quantitative analysis, qualitative methods were facilitated to gain deeper insights into the motivations behind meat and meat substitute preferences. The following question was stated “Please describe your thoughts and feelings when you think of beef or its substitutes. What comes to mind in terms of flavour, culture, health and environment?” (Appendix IV).

The open question provided respondents the opportunity to express their views in their own words, were analysed using *thematic analysis*. German Answers were analysed directly in German based on mother thong language knowledge and the Korean answers got translated first with the translator “DeepL Pro”.

Table 3 gives an overview about how many answers were made and used based on the appropriateness and understanding of the answers. Responses for the open-ended survey question were not mandatory, but from 211 German valid participants, 194 open responses were collected, out of which 183 were usable and for South Korean, out of 68 South Korean valid participants, 64 gave an open-ended response which were all useful.

After translation, responses were subsequently coded in English. Textual data from four distinct datasets: (1) Meat Associations in Germany (2) Meat Associations in South Korea (3) Meat Substitutes Associations in Germany and (4) Meat Substitutes Associations in South Korea, was systematically categorized to identify significant themes and patterns. Each response was reviewed and assigned relevant codes corresponding to key themes and terms (Appendix VI). These codes included describing keywords such as "tasty," "nottasty," "envgood," (environmentally good) "envbad," (environmentally bad) "noalternative," (no alternative to meat) among others. The total numbers were transformed in percentages from all answers in each country for each category (meat or meat substitutes) to build the relative weight of the associations (Appendix VII). Answers including associations with beef were 150 in Germany

and 41 in South Korea, while answers including associations with meat substitutes counted 102 in Germany and 40 in South Korea (Table 3).

Table 3: Number of open-ended responses used for analysis

Country of survey display	Valid sample size	Open responses	Used answers for analysis	Answers including associations with beef	Answers including associations with meat substitutes
Germany	211	194	183	150	102
South Korea	68	64	64	41	40

Afterwards, word clouds were graphically created through the word cloud generator “WordClouds.com”. All responses-keywords were provided as a text file and then the frequency of each keyword was counted, allowing us to quantify the prevalence of each theme within the dataset to highlight the most salient themes and terms. The size of each word indicates its frequency or importance within the dataset, providing a clear and immediate visual summary of the most prominent themes.

4 RESULTS AND DISCUSSION

4.1 Results from quantitative analysis

4.1.1 Cross-cultural frequencies of meat consumption

To answer research question 1 (*How do the meat consumption frequencies of young adults in Germany and South Korea differ?*), the meat consumption frequencies are compared between young adults within both countries; Germany and South Korea. Results show differences (Table 4), which, as the Pearson Chi square value of 28.453 with a p-value less than 0.001 indicates, are statistically significant (Table 4). In Germany, the median frequency of meat consumption among young adults is 2-3 times per week with an inter-quartile range (IQR) of 1. This IQR indicates that most German respondents have a relatively narrow range of meat consumption frequencies around the median. In contrast, in South Korea, the median frequency of meat consumption is 4-6 times per week with an IQR of 2, indicating a broader range of responses around the median. A substantial portion of South Korean young adults consume meat daily, and a notable percentage report consuming meat multiple times per day. The z-test with adjusted p-values and a Bonferroni correction revealed significantly different proportions (5%) between all frequencies besides “Never”.

Table 4: Meat consumption frequencies among young adults in Germany and South Korea

	Germany (n=221)		South Korea (n=68)		Difference
Variable	Frequency	Percentage (%)	Frequency	Percentage (%)	
Meat consumption frequency					
Never	2 ^a	1.0	0 ^a	0	Pearson Chi square (5) = 28.453 <i>p</i> <.001
1 time per week	22 ^a	10.4	1 ^b	1.5	
2-3 times per week	87 ^a	41.2	28 ^a	41.2	
4-6 times per week	67 ^a	31.8	10 ^b	14.7	
1 time per day	24 ^a	11.4	19 ^b	27.9	
2 or more times per day	9 ^a	4.3	10 ^b	14.7	
Median [IQR]	2-3 times per week [1]		4-6 times per week [2]		

Different letters in superscript indicate significantly different proportions (5%) between columns

4.1.2 Cross-cultural levels of meat attachment

To answer research question 2 (*How do the meat attachment levels of young adults in Germany and South Korea compare?*), the respondents meat attachment levels were compared. A non-parametric Mann-Whitney U test revealed a statistically significant difference in meat attachment between young adults in Germany and South Korea ($U = 8555.5$, $p = .017$), when comparing the mean values of the eleven non-reversed items between the two countries (Table 5).

Table 5: Levels of Meat Attachment among young adults in Germany and South Korea.

Variable	Germany (n=221)	South Korea (n=68)	Difference
Meat Attachment Index (11 items) Cronbach's $\alpha = 0.870$	Mean = 2.90 95%CI = [2.79-3.00] Median = 2.90 IQR = 1.0	Mean = 3.48 95%CI = [3.36-3.59] Median = 3.55 IQR = 0.5	Mann-Whitney's $U = 8555.5$ p -value = .017

German participants show a lower mean and median Meat Attachment Index compared to South Korean participants, with a wider range of responses as indicated by the interquartile range (Figure 5).

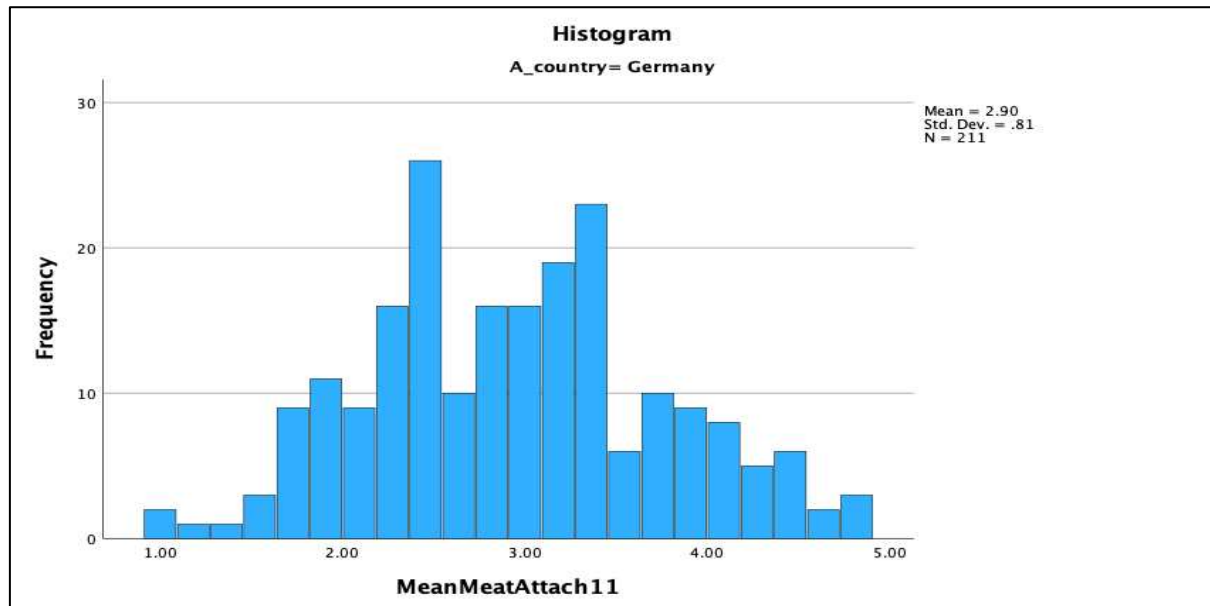


Figure 5: Meat attachment means histogram Germany

South Korean participants showed a higher average and median index, with a narrower range of responses (Figure 6). The Mann-Whitney U test confirms a statistically significant difference

between the two groups. Indicated by the Cronbach's alpha value, the reliability of the index is high.

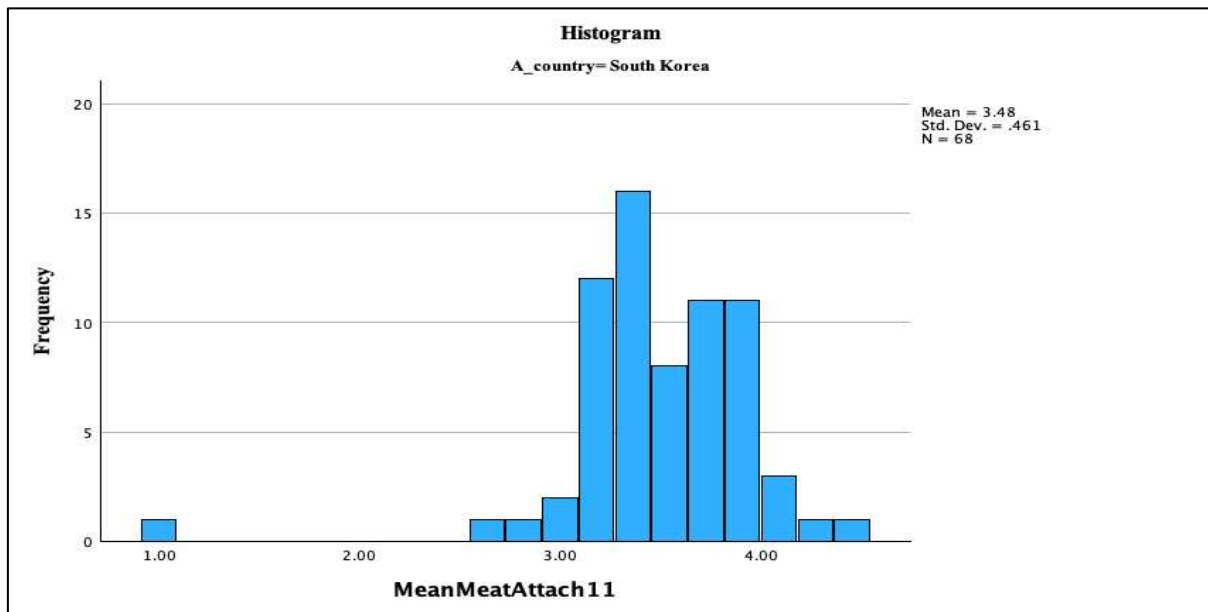


Figure 6: Meat attachment mean histogram South Korea

Table 6: Shapiro-Wilk and Kolmogorov-Smirnov test results for Germany and South Korea

4.1.3 Differences in cross-cultural preferences for meat substitutes

To answer the third research question (*Do higher meat attachment levels among young adults in Germany and South Korea influence their preferences for meat substitutes towards favouring those that closely mimic traditional meat?*), the respondents meat attachment levels are compared. The results by a non-parametric Mann-Whitney U test revealed a statistically significant difference in meat attachment between young adults in Germany and South Korea ($U = 8555.5, p = .017$), when comparing the mean values of the eleven non-reversed items between the two countries. To do so, three different data sources were analysed:

1. Experience with different kinds of meat substitutes

There are significant differences in the frequencies of consumption of meat substitutes in general between young adults in Germany and South Korea (Table 7). In Germany, the median frequency of meat substitute consumption is 1 time per week with an inter-quartile range (IQR) of 2, showing a wide range of consumption frequencies among German respondents. In South Korea, the median frequency of meat substitute consumption is also 1 time per week but with a

smaller IQR of 1, symbolizing more consistent consumption patterns among South Korean respondents. A notable portion of South Korean young adults consume meat substitutes 2-3 times per week, and some even report daily consumption.

Table 7: Meat Substitute Consumption Frequencies among Young Adults in Germany and South Korea

	Germany (n=221)		South Korea (n=68)		
Variable	Frequency	Percentage (%)	Frequency	Percentage (%)	
Frequency of consumption of meat substitutes					
Never	78 ^a	37.0	9 ^b	13.24	Pearson Chi square (5) = 25.248 <i>p</i> <.001
1 time per week	79 ^a	37.44	25 ^a	36.76	
2-3 times per week	43 ^a	20.38	23 ^b	33.82	
4-6 times per week	7 ^a	3.32	3 ^a	4.41	
1 time per day	2 ^a	0.95	5 ^b	7.35	
2 or more times per day	2 ^a	0.95	3 ^a	4.41	
Median [IQR]	1 time per week [2]		1 time per week [1]		

Different letters in superscript indicate significantly different proportions (5%) between columns

2. Meat substitute consumption frequencies

In Germany, PBMS have been tried mostly followed other plant-based products (Table 8). Only a small percentage of German respondents have tried CM. Additionally, some German young adults reported no experience with meat substitutes. In contrast, almost all South Korean young adults have tried plant-based products, and some have also experience with PBMS. Even a relatively big proportion have tried CM. A small percentage reported no experience with meat substitutes. The z-test with adjusted p-values and a Bonferroni correction revealed significantly different proportions (5%) of the meat frequencies “Never”, “2-3 times per week” and “1 time per day”.

Table 8: Experience with Meat Substitutes among Young Adults in Germany and South Korea

Variable	Germany (n=221)		South Korea (n=68)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
experience with meat substitutes				
CM	12	5.69	7	10.29

PBMS	179	84.83	28	41.18
plant based products (e.g. tofu / tempeh / seitan)	163	77.25	63	92.65
none	17	8.06	5	7.35
others	2	0.95	0	0.00

3. Product choice between PBMS and CM

When choosing between CM and plant-based meat substitutes in a fictive product choice scenario, the data reveals distinct preferences that are statistically significant, as indicated by the Chi-Square test results show with a value of 6.345 and a p-value with $p=.042$ less than 0.05 (Table 9). Among German young adults, the preferences are nearly equally divided, with of respondents favouring CM and vegan burger patties. A small proportion are undecided about which product they would choose. In South Korea, a much higher proportion of young adults prefer the cultured burger patty, over the vegan burger patty. Also, among South Korean young adults, only a very small percentage of respondents are indecisive.

Table 9: Product choice for meat substitutes among young adults in Germany and South Korea

Variable	Germany (n=221)		South Korea (n=68)		Differences
	Frequency	Percentage (%)	Frequency	Percentage (%)	
product choice					
Cultured burger patty (lab-grown meat)	96 ^a	45.5	42 ^b	61.8	Pearson Chi square (2) = 6.345 $p=.042$
Vegan burger patty (purely plant-based from soya)	97 ^a	46.0	24 ^a	35.3	
I do not know	18 ^a	8.5	2 ^a	2.9	

Different letters in superscript indicate significantly different proportions (5%) between columns

4.2 Results from qualitative analysis

4.2.1 Associations with meat

The qualitative analysis of beef and meat substitute associations in Germany and South Korea – visualized in word clouds (Figure 7 and 8, respectively) – reveals distinct patterns in how meat and its substitutes is perceived in these two cultures.

In Germany, responses showed a broad range of associations with meat with multiple keywords appearing frequently. The most common association was "tasty" (53.3%). The keyword

"envbad" (36.0%) was also prominent. Cultural aspects were often represented by terms like "culture" (22.7%) and "tradition" (20.0%) and specific references to "beef" (20.7%) were recorded, as well as health-related associations with both "healthy" (17.3%) and "nohealthy" (10.0%). In South Korea, the keyword "tasty" (70.7%) was also the most common. Moreover, associations with meat were frequently coded as "positive" (34.1%). Environmental concerns were noted with "envbad" (24.4%) appearing regularly. Health-related keywords included as well both "healthy" (24.4%) and "nohealthy" (10%).

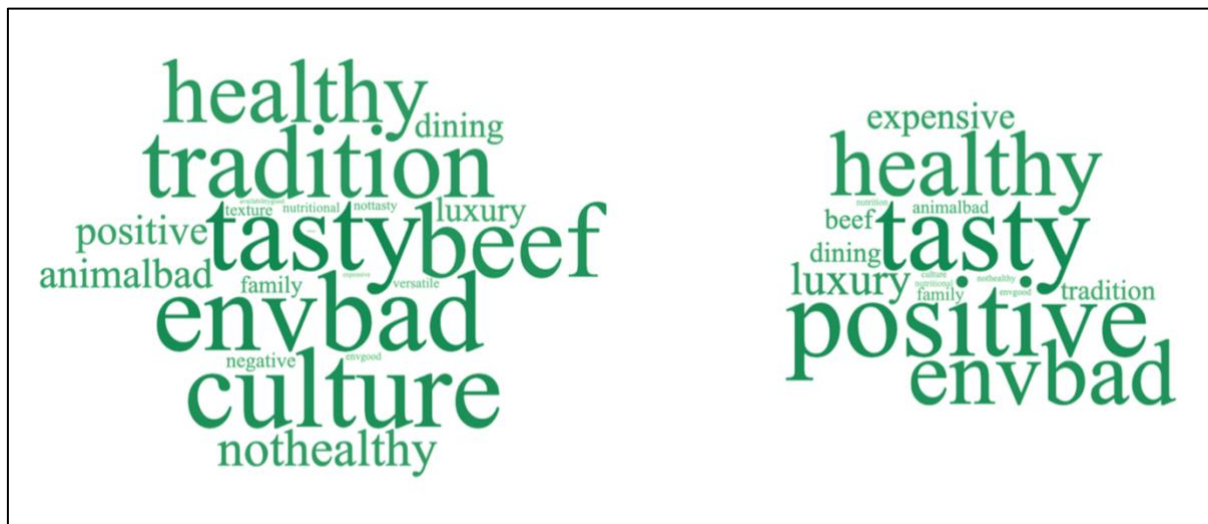


Figure 7: Word clouds of meat association keywords (left: Germany, right: South Korea)

4.2.2 Associations with meat substitutes

For meat substitutes, German responses often included the keyword "nottasty" (33.3%). Nevertheless, some respondents did find meat substitutes "tasty" (19.6%) (Figure 8). The keyword "envgood" (24.5%) was also mentioned. The perception of "noalternative" (20.6%) was noted, along with an openness to trying these substitutes (20.6%). In South Korea, the term "nottasty" (40.0%) was commonly associated with meat substitutes. The keyword "envgood" (32.5%) was frequently mentioned as well as "noalternative" (27.5%), and associations with substitutes made from soya with the term "soy" (20.0%). The high price of meat substitutes was a notable concern, with "expensive" (15.0%) being an additional common keyword.



Figure 8 Word clouds of meat substitute association keywords (left: Germany, right: South Korea)

4.3 Discussion

4.3.1 Meat consumption frequencies

By comparing the median values and interquartile ranges (IQRs), it was observed that South Korean young adults tend to have a higher median frequency of meat consumption, typically four to six times per week. These young adults have a greater variability in their meat consumption habits, with some people consuming meat less frequently and others even daily or multiple times per day. In contrast, while German young adults also consume meat frequently, they do so at a median frequency of two to three times per week. The narrower range of consumption frequencies around the median for German young adults indicates a more consistent pattern in their meat consumption habits. The z-test with adjusted p-values and a Bonferroni correction confirmed how – besides never consuming meat – young adults in Germany and South Korea differ very much when it comes to meat consumption frequencies.

This part of the analysis confirmed **Hypothesis 1**, which stated that South Korean young adults consume meat more frequently than Germans. This aligns with previous literature indicating that meat plays a more central role in the daily diet of South Koreans compared to Germans.

4.3.2 Meat attachment levels

The quantitative analysis of the meat attachment scale across different countries revealed that South Korean young adults have significantly higher levels of meat attachment compared to Germans, supporting **Hypothesis 2**. This finding is consistent with existing literature that

underscores cultural differences in dietary practices, highlighting the centrality of meat in South Korean diets. In Germany, the wider interquartile range (IQR) indicates a more varied distribution of meat attachment levels, suggesting more diverse attitudes toward meat. In contrast, South Korean respondents show a narrower IQR, reflecting a more concentrated distribution around higher values and indicating a stronger and more consistent attachment to meat. The Mann-Whitney U test confirms a statistically significant difference between the two groups, supporting these observations.

Qualitative data further revealed that in Germany the associations with meat are more mixed, with both positive and negative views. German young adults' associate meat more strongly with negative environmental impacts than South Korean young adults, potentially contributing to their lower meat attachment levels. In South Korea, the perception of meat is predominantly positive, with frequent positive associations, including those related to health, suggesting a strong attachment to meat. Interestingly, terms like "culture" and "tradition" were more frequently mentioned by German respondents, indicating a deeper reflection on the cultural and traditional significance of meat, or perhaps a greater cultural importance placed on these aspects.

4.3.3 Preferences for meat substitutes

When analysing the meat substitute consumption frequencies, most young adults from both countries consume meat substitutes about one time per week. When comparing the IQR ranges, German respondents show a wider range of consumption frequencies in both directions but more towards "Never" consuming meat substitutes. Comparably, even if the IQR range for South Korean respondents shows more consistent consumption patterns around "one time per week", data reveals a large proportion of South Korean respondents stating consuming meat substitutes "2-3 times per week".

Overall, young adults from both countries have gained previous experiences with substitutes and that they both highly recognize the environmental benefits of these substitutes, which seems to be a big motivator for the adaption of substituting products. Nevertheless, the analysis revealed significant differences in the experiences and familiarity with various meat substitutes between the two countries. German young adults show a high level of engagement with both, PBMS and plant-based products, reflecting a strong interest in integrating meat alternatives into their diets. In South Korea, almost all young adults have tried plant-based products, which is

not surprisingly, as products which are categorized as plant-based meat substitutes such as Tofu are common dishes in Korea since a long time. On the other hand, the engagement with PBMS is lower compared to Germany. Qualitative insights have shown how the perception of high costs associated with meat substitutes is larger in South Korea, which might impact the adoption of these products negatively.

The fact that in both countries a smaller percentage of young adults have tried CM is interesting, as in both countries these products are still not available yet. South Korean young adults showed even a relatively high percentage having tried CM, which could indicate a growing curiosity or greater market presence of this innovative product and the aim to try it out when traveling to different markets, where it is available.

Qualitative insights have shown how both countries show dissatisfaction with the taste of current meat substitutes. The general interest of both high-meat-consuming countries for CM could base on a projective preference for new products that could potentially better mimic traditional meat flavours compared to the substitutes currently available.

The fictive product choice between PBMA and CM substitutes revealed variations between German and South Korean young adults. German young adults were almost indifferent between the two options while South Koreans showed a stronger preference for CM over vegan burger patties. In Germany, this suggests a balanced openness to both innovative and plant-based meat alternatives and a diverse market where consumers are receptive to both types of substitutes.

The fact that South Koreans prefer CM while having a higher level of meat attachment and meat consumption frequencies, supports the conceptual model (Figure 2) and the connections of beef consumption (frequencies) and meat attachment with the preferences for meat substitutes. CM aims to closely mimic and replace traditional meat with all its characteristics, making it a favoured alternative for highly attached South Korean young adults. Adding qualitative insights, these findings match with South Korean respondents' associations with meat substitutes as they frequently highlighted the importance of taste and texture in meat substitutes or criticizing the irreplaceable nature of traditional meat. The fact that CM is not yet available on the South Korean market, but some South Korean young adults are already familiar to with these substitutes, further supports the curiosity towards this new technologically for advanced meat alternatives that closely mimic traditional meat in terms of look, taste and flavour. This

preference for authenticity in taste and texture aligns with the higher meat attachment levels, observed for South Korean young adults and their preference for CM.

This combination of findings supports **Hypothesis 3**, which suggests that South Korean young adults exhibit distinct preferences for meat substitutes compared to Germans, particularly favouring those that more closely resemble traditional meat.

5 CONCLUSIONS

5.1 Conclusions and implications

The purpose of this thesis was to explore factors that influence young adults' attitudes towards meat consumption in Germany and South Korea, which could explain the contradictory trends in per capita meat consumption (decreasing in Germany and increasing in South Korea). This work analysed whether these country specific consumption patterns also differ among young adults in the two countries, whose awareness and concern about sustainability issues are likely increasing in both countries, and how these factors influence the acceptance and adoption of meat substitutes.

Answering the research questions through the analysis enabled the aims of the study to be achieved. Findings revealed variations in meat consumption frequencies and meat attachment levels among young adults in Germany and South Korea, as well as their preferences for meat substitutes. Additionally, identified factors that influence both attitudes towards meat consumption and preferences for meat substitutes were identified. Factors such as meat attachment, health and nutrition consideration, economical factors, environmental concerns, culture and societal norms are individually shaped by the country's environment and rooted in their cultural, social, and personal contexts. Although young adults in both countries demonstrated growing global awareness of sustainability and environmental issues, these factors can potentially overshadow their concerns in consumption choices.

The cross-country analysis revealed that young adults in South Korea have higher meat consumption frequencies compared to Germans, matching the differing historical trends in per capita meat consumption. Also, the analysed levels of meat attachment were aligned with these consumption patterns, with South Korean young adults being stronger attached to meat compared to Germans. Overall, Germans showed varied sets of attitudes towards meat consumption, an increased awareness and concern about environmental and health impacts as well as a higher openness to reduce their meat intake and exploring alternative protein sources. South Korean young adults revealed a more positive picture of meat consumption, shaped by prominent cultural traditions as well as the societal perspective of meat being healthy and deriving a high sensory pleasure in terms of texture and taste.

South Koreans strong meat attachment was seen to translate into their choice of meat substitute type. While German young adults' were almost indifferent in their choice between CM and PBMS, South Korean young adults showed a strong preference for CM – a substitute that is the closest to traditional meat in terms of mimicry. This reflects the strong focus on the sensory experience of traditional meat.

These observations indicate that cross-cultural factors influencing meat consumption can also shape consumers' requirements for meat substitutes. In a country like South Korea, the value of the sensory experience of traditional meat appears so strong, that substitutes must closely mimic these sensory characteristics – a requirement that can overshadow the environmental benefits of meat substitutes in consumer choices.

For companies producing, marketing or selling meat substitutes, it is important to understand all these cultural differences to tailor products and marketing strategies to the different consumer segments. When targeting German young adults, emphasising the sustainability and health benefits of meat substitutes can increase acceptance, as environmental and health concerns play a big role. In contrast, South Korean young adults require more attention to meat substitutes attributes of taste and textural similarity to traditional meat. Here, traditional culinary values and sensory expectations are more relevant. With the right communication strategy, an early market entry for CM products could be a success here.

Politicians in both countries have the chance to use these findings for promoting more sustainable dietary choices, such as meat substitutes. Enhancing the availability and affordability of meat substitutes in their country and launching educational can have a strong impact. In South Korea, there is a strong opportunity to influence consumer behaviour through education, particularly by raising awareness of the health disadvantages of excessive meat consumption and the health advantages of meat substitutes, which are not yet widely recognized. In both countries, educating consumers about the safety and benefits of new food technologies, such as cultivated meat, is crucial to reduce scepticism and food neophobia towards CM once it becomes available in the German and South Korean markets.

5.2 Limitations and further research

Despite the positive aspects, this study has specific limitations which call for further research. First, the convenience sampling method employed may not fully represent the broader

populations in Germany and South Korea. Participants were recruited through platforms like Prolific and social media making it likely to be more engaged or have specific interests in food-related topics. This can potentially introduce selection bias which can affect the generalizability of the findings, when applying the results to young adults from other socio-economic backgrounds or geographic regions.

While the survey was translated into German and Korean, nuances in language and cultural expressions might not have been fully captured, potentially affecting participant responses, especially in open-ended qualitative sections. Future studies could improve upon this by employing more culturally sensitive translation practices or by involving native speakers more intensely in the design and interpretation of phrases.

In terms of survey setup, two limitations were undertaken. On the one hand, the study did not thoroughly investigate the reasons behind preferences for or against specific types of meat substitutes in South Korea. A technical error led to the skip of follow-up questions in the South Korean survey that would have explored respondents' choice reasoning in the fictive choice scenario. This was resulting in a more limited understanding of the factors influencing meat substitute preferences. Another issue was the reverse-coded answers from Korean respondents in the meat attachment scale. They limited the meat attachment scale – which was an essential part of the analysis – to 11 out of 15 answers. Future research should ensure accurate data collection and fully investigate these areas to provide a broader understanding of this important variable.

The study's focus was primarily on attitudes towards beef consumption due to having the highest contribution to greenhouse gas emissions in the production across all types of meat. Other significant types of meat like pork or chicken were not considered. These types of meat also play important roles in many diets and may reveal different cultural and health implications. Expanding future research to include a wider range of meat could offer a better view of dietary patterns and preferences, and how these influence the acceptance of meat substitutes.

The focus on meat-eating young adults and exclusion of vegetarians and vegans – who are likely early adopters of meat substitutes – limits the understanding of young adults' perceptions and the factors influencing their dietary choices. Future research could include these demographics

when exploring about meat substitute adaption, as it could provide some broader valuable insights for the potential market of meat substitutes.

Lastly, the study only offers an insight to attitudes and behaviours at a single point in time, which may not capture evolving trends or the developing impact of new products and marketing strategies. Long-term studies could provide a more dynamic understanding of how consumer attitudes and behaviours change over time and offer richer insights into the factors driving dietary shifts.

REFERENCES

- Anusha Siddiqui, S., Bahmid, N. A., Mahmud, C. M. M., Boukid, F., Lamri, M., & Gagaoua, M. (2023). Consumer acceptability of plant-, seaweed-, and insect-based foods as alternatives to meat: a critical compilation of a decade of research. In *Critical Reviews in Food Science and Nutrition* (Vol. 63, Issue 23, pp. 6630–6651). Taylor and Francis Ltd. <https://doi.org/10.1080/10408398.2022.2036096>
- Aschemann-Witzel, J., Gantriis, R. F., Fraga, P., & Perez-Cueto, F. J. A. (2020). Plant-based food and protein trend from a business perspective: markets, consumers, and the challenges and opportunities in the future. In *Critical Reviews in Food Science and Nutrition* (pp. 1–10). Taylor and Francis Inc. <https://doi.org/10.1080/10408398.2020.1793730>
- Barnett, S. A. (1958). Experiments on “Neophobia” in wild and laboratory rats. *British Journal of Psychology*, 49(3), 195–201. <https://doi.org/10.1111/j.2044-8295.1958.tb00657.x>
- Biscarra-Bellio, J. C., de Oliveira, G. B., Marques, M. C. P., & Molento, C. F. M. (2023). Demand changes meat as changing meat reshapes demand: The great meat revolution. *Meat Science*, 196. <https://doi.org/10.1016/j.meatsci.2022.109040>
- Bodirsky, B. L., Rolinski, S., Biewald, A., Weindl, I., Popp, A., & Lotze-Campen, H. (2015). Global Food Demand Scenarios for the 21st Century. *PLOS ONE*, 10(11), e0139201. <https://doi.org/10.1371/journal.pone.0139201>
- Bryant, C., & Barnett, J. (2018). Consumer acceptance of cultured meat: A systematic review. *Meat Science*, 143, 8–17. <https://doi.org/10.1016/j.meatsci.2018.04.008>
- Bryant, C., & Dillard, C. (2019). The Impact of Framing on Acceptance of Cultured Meat. *Frontiers in Nutrition*, 6. <https://doi.org/10.3389/fnut.2019.00103>
- Bryant, C., Szejda, K., Parekh, N., Deshpande, V., & Tse, B. (2019). A Survey of Consumer Perceptions of Plant-Based and Clean Meat in the USA, India, and China. *Frontiers in Sustainable Food Systems*, 3. <https://doi.org/10.3389/fsufs.2019.00011>
- Bryant, C., Szejda, K., Parekh, N., Deshpande, V., & Tse, B. (2019). A Survey of Consumer Perceptions of Plant-Based and Clean Meat in the USA, India, and China. *Frontiers in Sustainable Food Systems*, 3. <https://doi.org/10.3389/fsufs.2019.00011>
- Bundesinformationszentrums Landwirtschaft (BZL). (n.d.). Pro-Kopf-Verzehr von Fleisch sinkt auf unter 52 Kilogramm. Retrieved April 22, 2024, from https://www.ble.de/SharedDocs/Pressemitteilungen/DE/2024/240404_Fleischbilanz.html
- Bundesministerium für Ernährung und Landwirtschaft (BMEL). (2024). Gutes Essen für Deutschland Ernährungsstrategie der Bundesregierung.
- Buttlar, B., & Walther, E. (2018). Measuring the meat paradox: How ambivalence towards meat influences moral disengagement. *Appetite*, 128, 152–158. <https://doi.org/10.1016/j.appet.2018.06.011>
- Cheah, I., Sadat Shimul, A., Liang, J., & Phau, I. (2020). Drivers and barriers toward reducing meat consumption. *Appetite*, 149. <https://doi.org/10.1016/j.appet.2020.104636>
- Chriki, S., Payet, V., Pfanzer, S. B., Ellies-Oury, M.-P., Liu, J., Hocquette, É., Rezende-de-Souza, J. H., & Hocquette, J.-F. (2021). Brazilian Consumers’ Attitudes towards So-Called “Cell-Based Meat.” *Foods*, 10(11), 2588. <https://doi.org/10.3390/foods10112588>

- Circus, V. E., & Robison, R. (2019). Exploring perceptions of sustainable proteins and meat attachment. *British Food Journal*, 121(2), 533–545.
<https://doi.org/10.1108/BFJ-01-2018-0025>
- Cole, J. R., & McCoskey, S. (2013). Does global meat consumption follow an environmental Kuznets curve? *Sustainability: Science, Practice and Policy*, 9(2), 26–36. <https://doi.org/10.1080/15487733.2013.11908112>
- Cusack, D. F., Kazanski, C. E., Hedgpeth, A., Chow, K., Cordeiro, A. L., Karpman, J., & Ryals, R. (2021). Reducing climate impacts of beef production: A synthesis of life cycle assessments across management systems and global regions. In *Global Change Biology* (Vol. 27, Issue 9, pp. 1721–1736). Blackwell Publishing Ltd.
<https://doi.org/10.1111/gcb.15509>
- de Oliveira, G. A., Domingues, C. H. de F., & Borges, J. A. R. (2021). Analyzing the importance of attributes for Brazilian consumers to replace conventional beef with cultured meat. *PLOS ONE*, 16(5), e0251432.
<https://doi.org/10.1371/journal.pone.0251432>
- FAO. (2023). Food Outlook – Biannual report on global food markets. In *Food Outlook – Biannual report on global food markets*. FAO. <https://doi.org/10.4060/cc3020en>
- Font-i-Furnols, M. (2023). Meat Consumption, Sustainability and Alternatives: An Overview of Motives and Barriers. In *Foods* (Vol. 12, Issue 11). MDPI.
<https://doi.org/10.3390/foods12112144>
- Food and Agriculture Organization of the United Nations, & Our World in Data. (2023). "Per capita consumption of other meat – FAO" [dataset].
- Gatzer, S., Hoffman, S., Jakic, N., Jesse, B., Kang, Y., Kim, J., Mutell, B., & Roos, D. (2023). The state of grocery retail 2023.
- Gould, S. J. (1990). Health consciousness and health behavior: the application of a new health consciousness scale. *American Journal of Preventive Medicine*, 6(4), 228–237.
- Graça, J., Calheiros, M. M., & Oliveira, A. (2015). Attached to meat? (Un)Willingness and intentions to adopt a more plant-based diet. *Appetite*, 95, 113–125.
<https://doi.org/10.1016/j.appet.2015.06.024>
- Graça, J., Godinho, C. A., & Truninger, M. (2019). Reducing meat consumption and following plant-based diets: Current evidence and future directions to inform integrated transitions. In *Trends in Food Science and Technology* (Vol. 91, pp. 380–390). Elsevier Ltd. <https://doi.org/10.1016/j.tifs.2019.07.046>
- He, J., Evans, N. M., Liu, H., & Shao, S. (2020). A review of research on plant-based meat alternatives: Driving forces, history, manufacturing, and consumer attitudes. *Comprehensive Reviews in Food Science and Food Safety*, 19(5), 2639–2656.
<https://doi.org/10.1111/1541-4337.12610>
- Hedenus, F., Wirsenius, S., & Johansson, D. J. A. (2014). The importance of reduced meat and dairy consumption for meeting stringent climate change targets. *Climatic Change*, 124(1–2), 79–91. <https://doi.org/10.1007/s10584-014-1104-5>
- Heijnk, V., Espey, A., & Schuenemann, F. (2023a). A comparison of influencing factors on attitudes towards plant-based, insect-based and cultured meat alternatives in Germany. *Food Quality and Preference*, 110, 104966.
<https://doi.org/10.1016/j.foodqual.2023.104966>
- Heijnk, V., Espey, A., & Schuenemann, F. (2023b). A comparison of influencing factors on attitudes towards plant-based, insect-based and cultured meat alternatives in Germany. *Food Quality and Preference*, 110.
<https://doi.org/10.1016/j.foodqual.2023.104966>

- Hidalgo, M. C., & Hernández, B. (2001). Place attachment: conceptual and empirical questions. *Journal of Environmental Psychology*, 21(3), 273–281. <https://doi.org/10.1006/jevp.2001.0221>
- Hwang, J., You, J., Moon, J., & Jeong, J. (2020). Factors affecting consumers' alternative meats buying intentions: Plant-based meat alternative and cultured meat. *Sustainability (Switzerland)*, 12(14). <https://doi.org/10.3390/su12145662>
- Hyun Jung Lee, Hae In Yong, Minsu Kim, Yun Sang Choi, & Cheorun Jo. (2020). Status of meat alternatives and their potential role in the future meat market - A review. In *Asian-Australasian Journal of Animal Sciences (Vol. 33, Issue 10, pp. 1533–1543)*. Asian-Australasian Association of Animal Production Societies. <https://doi.org/10.5713/ajas.20.0419>
- Jetzke, T., & Dassel, K. (2023). Potenziale und Herausforderungen einer zellkultur-basierten Fleischproduktion. <https://doi.org/10.5445/IR/1000156303>
- Jia, G., Shevliakova, E., Artaxo, P., De Noblet-Ducoudré, N., Houghton, R., House, J., & Kitajima, K. (2019). Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. In *Climate Change and Land (pp. 131–248)*. Cambridge University Press. <https://doi.org/10.1017/9781009157988.004>
- Jo, S. G., Lee, S. M., Sohn, K. H., & Kim, K. O. (2015). Sensory characteristics and cross-cultural acceptability of Chinese and Korean consumers for ready-to-heat (RTH) type bulgogi (Korean traditional barbecued beef). *Food Science and Biotechnology*, 24(3), 921–930. <https://doi.org/10.1007/s10068-015-0119-7>
- Kim, S.-J., Park, H.-J., & Lee, K.-H. (2011). 한국인과 동남아시아인의 푸드네오포비아와 음식관여도 차이 비교 Comparison of Food Neophobia Scale and Food Involvement Scale Between Koreans and East-South Asians. *KOREAN J. FOOD CULTURE*, 26(5), 429–436.
- Kim, Y., & Zailani, S. (2024). Pull and push factors of Koreans' sustainable consumption behaviours from plant-based meat products. *Environmental Challenges*, 15, 100886. <https://doi.org/10.1016/j.envc.2024.100886>
- Koch, F., Heuer, T., Krems, C., & Claupein, E. (2019). Meat consumers and non-meat consumers in Germany: A characterisation based on results of the German National Nutrition Survey II. *Journal of Nutritional Science*. <https://doi.org/10.1017/jns.2019.17>
- Koch, F., Krems, C., Heuer, T., & Claupein, E. (2021). Attitudes, perceptions and behaviours regarding meat consumption in Germany: results of the NEMONIT study. *Journal of Nutritional Science*, 10. <https://doi.org/10.1017/jns.2021.34>
- Kühn, D., Profeta, A., Krikser, T., & Heinz, V. (2023a). Adaption of the meat attachment scale (MEAS) to Germany: interplay with food neophobia, preference for organic foods, social trust and trust in food technology innovations. *Agricultural and Food Economics*, 11(1). <https://doi.org/10.1186/s40100-023-00278-3>
- Kühn, D., Profeta, A., Krikser, T., & Heinz, V. (2023b). Adaption of the meat attachment scale (MEAS) to Germany: interplay with food neophobia, preference for organic foods, social trust and trust in food technology innovations. *Agricultural and Food Economics*, 11(1). <https://doi.org/10.1186/s40100-023-00278-3>
- Lee, Y., Kim, T., & Jung, H. (2022). The Relationships between Food Literacy, Health Promotion Literacy and Healthy Eating Habits among Young Adults in South Korea. *Foods*, 11(16), 2467. <https://doi.org/10.3390/foods11162467>
- Leroy, F., & Praet, I. (2015). Meat traditions. The co-evolution of humans and meat. *Appetite*, 90, 200–211. <https://doi.org/10.1016/j.appet.2015.03.014>

- Leroy, F., Smith, N. W., Adesogan, A. T., Beal, T., Iannotti, L., Moughan, P. J., & Mann, N. (2023). The role of meat in the human diet: Evolutionary aspects and nutritional value. *Animal Frontiers*, 13(2), 11–18. <https://doi.org/10.1093/af/vfac093>
- Lynch, J., & Pierrehumbert, R. (2019). Climate Impacts of Cultured Meat and Beef Cattle. *Frontiers in Sustainable Food Systems*, 3. <https://doi.org/10.3389/fsufs.2019.00005>
- Market Intelligence Analytics Team. (2023, November 27). South Korea's Progressive Step Towards a Plant-Based Future. Tridge. <https://www.tridge.com/stories/south-koreas-progressive-step-towards-a-plant-based-future#:~:text=On%20October%2024%2C%202023%2C%20the,the%20plant%2Dbased%20food%20industry.>
- Michel, F., Hartmann, C., & Siegrist, M. (2021). Consumers' associations, perceptions and acceptance of meat and plant-based meat alternatives. *Food Quality and Preference*, 87. <https://doi.org/10.1016/j.foodqual.2020.104063>
- Nam, K. C., Jo, C., & Lee, M. (2010). Meat products and consumption culture in the East. In *Meat Science* (Vol. 86, Issue 1, pp. 95–102). <https://doi.org/10.1016/j.meatsci.2010.04.026>
- National Agricultural Quality Control Centre, & Song Mei-ryung. (2023). Major Work Promotion Plan of Ministry of Agriculture, Food and Rural Affairs in 2024. <https://www.mafra.go.kr/bbs/2024plan/854/569626/artclView.do>
- Nungesser, F., & Winter, M. (2021). Meat and social change: Sociological perspectives on the consumption and production of animals. In *Osterreichische Zeitschrift fur Soziologie* (Vol. 46, Issue 2, pp. 109–124). Springer VS. <https://doi.org/10.1007/s11614-021-00453-0>
- OECD, & Food and Agriculture Organization of the United Nations. (2021). OECD-FAO Agricultural Outlook. <https://doi.org/10.1787/agr-data-en>
- OECD, & Food and Agriculture Organization of the United Nations. (2023). OECD-FAO Agricultural Outlook 2023-2032. OECD. <https://doi.org/10.1787/08801ab7-en>
- Onwezen, M. C., Bouwman, E. P., Reinders, M. J., & Dagevos, H. (2021a). A systematic review on consumer acceptance of alternative proteins: Pulses, algae, insects, plant-based meat alternatives, and cultured meat. *Appetite*, 159, 105058. <https://doi.org/10.1016/j.appet.2020.105058>
- Onwezen, M. C., Bouwman, E. P., Reinders, M. J., & Dagevos, H. (2021b). A systematic review on consumer acceptance of alternative proteins: Pulses, algae, insects, plant-based meat alternatives, and cultured meat. In *Appetite* (Vol. 159). Academic Press. <https://doi.org/10.1016/j.appet.2020.105058>
- Onwezen, M. C., & Dagevos, H. (2024). A meta-review of consumer behaviour studies on meat reduction and alternative protein acceptance. *Food Quality and Preference*, 114. <https://doi.org/10.1016/j.foodqual.2023.105067>
- Pliner, P., & Hobden, K. (1992). Development of a scale to measure the trait of food neophobia in humans. *Appetite*, 19(2), 105–120. [https://doi.org/10.1016/0195-6663\(92\)90014-W](https://doi.org/10.1016/0195-6663(92)90014-W)
- Rasche, L., Schneider, U. A., & Steinhauser, J. (2023). A stakeholders' pathway towards a future land use and food system in Germany. *Sustainability Science*, 18(1), 441–455. <https://doi.org/10.1007/s11625-022-01212-0>
- Ritchey, P. N., Frank, R. A., Hursti, U.-K., & Tuorila, H. (2003). Validation and cross-national comparison of the food neophobia scale (FNS) using confirmatory factor analysis. *Appetite*, 40(2), 163–173. [https://doi.org/10.1016/S0195-6663\(02\)00134-4](https://doi.org/10.1016/S0195-6663(02)00134-4)
- Ritchie, H. (2020, March 10). The carbon footprint of foods: are differences explained by the impacts of methane? Our World in Data.

- Rosenfeld, D. L., & Tomiyama, A. J. (2021). Gender differences in meat consumption and openness to vegetarianism. *Appetite*, 166, 105475. <https://doi.org/10.1016/j.appet.2021.105475>
- Scannell, L., & Gifford, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology*, 30(1), 1–10. <https://doi.org/10.1016/j.jenvp.2009.09.006>
- Schmidhuber, J., & Shetty, P. (2005). The nutrition transition to 2030. Why developing countries are likely to bear the major burden. *Food Economics - Acta Agriculturae Scandinavica, Section C*, 2(3–4), 150–166. <https://doi.org/10.1080/16507540500534812>
- Schultz, P. W. (2001). The structure of environmental concern: concern for self, other people and the biosphere.
- Schulze, M., & Janssen, M. (2024). Self-determined or non-self-determined? Exploring consumer motivation for sustainable food choices. *Sustainable Production and Consumption*, 45, 57–66. <https://doi.org/10.1016/j.spc.2023.12.028>
- Seffen, A. E., & Dohle, S. (2023). What motivates German consumers to reduce their meat consumption? Identifying relevant beliefs. *Appetite*, 187. <https://doi.org/10.1016/j.appet.2023.106593>
- Sichong Wang. (2023, November 2). Promoting plant-based food in South Korea: Government plans to get ahead in meat and dairy alternatives. *Oodingredientsfirst.Com*. <https://www.oodingredientsfirst.com/news/promoting-plant-based-food-in-south-korea-government-plans-to-get-ahead-in-meat-and-dairy-alternatives.html>
- Siegrist, M., & Hartmann, C. (2020). Perceived naturalness, disgust, trust and food neophobia as predictors of cultured meat acceptance in ten countries. *Appetite*, 155. <https://doi.org/10.1016/j.appet.2020.104814>
- Siegrist, M., & Hartmann, C. (2023). Why alternative proteins will not disrupt the meat industry. In *Meat Science* (Vol. 203). Elsevier Ltd. <https://doi.org/10.1016/j.meatsci.2023.109223>
- Slade, P. (2018). If you build it, will they eat it? Consumer preferences for plant-based and cultured meat burgers. *Appetite*, 125, 428–437. <https://doi.org/10.1016/J.APPET.2018.02.030>
- United Nations. (2023). The Sustainable Development Goals Report 2023: Special Edition. <https://unstats.un.org/sdgs/report/2023/>
- Valente, J. de P. S., Fiedler, R. A., Sucha Heidemann, M., & Molento, C. F. M. (2019). First glimpse on attitudes of highly educated consumers towards cell-based meat and related issues in Brazil. *PLOS ONE*, 14(8), e0221129. <https://doi.org/10.1371/journal.pone.0221129>
- Verbeke, W., Marcu, A., Rutsaert, P., Gaspar, R., Seibt, B., Fletcher, D., & Barnett, J. (2015). ‘Would you eat cultured meat?’: Consumers’ reactions and attitude formation in Belgium, Portugal and the United Kingdom. *Meat Science*, 102, 49–58. <https://doi.org/10.1016/j.meatsci.2014.11.013>
- Vranken, L., Avermaete, T., Petalios, D., & Mathijs, E. (2014). Curbing global meat consumption: Emerging evidence of a second nutrition transition. *Environmental Science & Policy*, 39, 95–106. <https://doi.org/10.1016/j.envsci.2014.02.009>
- Vural, Y., Ferriday, D., & Rogers, P. J. (2023). Consumers’ attitudes towards alternatives to conventional meat products: Expectations about taste and satisfaction, and the role of disgust. *Appetite*, 181. <https://doi.org/10.1016/j.appet.2022.106394>
- Whitton, C., Bogueva, D., Marinova, D., & Phillips, C. J. C. (2021). Are we approaching peak meat consumption? Analysis of meat consumption from 2000 to 2019 in 35

countries and its relationship to gross domestic product. *Animals*, 11(12).
<https://doi.org/10.3390/ani11123466>

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L. J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. A., De Vries, W., Majele Sibanda, L., ... L Murray, C. J. (2019). The Lancet Commissions Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems Executive summary. *Www.TheLancet.Com*, 393, 447.
[https://doi.org/10.1016/S0140-6736\(18\)31788-4](https://doi.org/10.1016/S0140-6736(18)31788-4)

Younghoon Kang, & Jeongkeun Kim. (2023). The state of grocery retail 2023 - McKinsey & Company. <https://www.mckinsey.com/industries/retail/our-insights/five-trends-that-will-define-south-korean-grocery-in-2023#/>

APPENDIX

Appendix I – Detailed survey questions in German

Thesis Anna Schwarze DE

Survey Flow

Standard: hello (1 Question)

Standard: Screening questions (3 Questions)

Branch: New Branch

If

If Sind Sie deutscher Staatsbürger oder leben Sie seit mehr als 10 Jahren in Deutschland? nein Is Selected

Or Wie alt sind Sie? jünger als 18 Is Selected

Or Wie alt sind Sie? älter als 35 Is Selected

Or Ernähren Sie sich vegetarisch oder vegan? ja Is Selected

EndSurvey: Advanced

Standard: Consumption 1 (5 Questions)

Standard: Consumption motivators (2 Questions)

Standard: Product display (5 Questions)

Standard: Scales (2 Questions)

Standard: Environment (1 Question)

Standard: Cross-Cultural aspects (1 Question)

Standard: Health (2 Questions)

Standard: open question (1 Question)

Block: Demografische Faktoren (3 Questions)

Standard: bye (1 Question)

Page Break

Start of Block: hello

Hello text Hallo,

ich freue mich sehr, dass Sie an meiner Umfrage teilnehmen. Das Ausfüllen sollte nicht mehr als **8 Minuten** Ihrer Zeit in Anspruch nehmen.

Durch ein Klicken auf "**weiter**", bestätigen Sie Ihr **Einverständnis** mit der **Teilnahme** und dass Sie die **Informationen** unten **gelesen** haben. Für Rückfragen oder Feedback, können Sie mich gerne per E-Mail kontaktieren.

Herzlichen Dank!!

Informationen zu dieser Survey:

- Diese Untersuchung ist ein wichtiger Bestandteil meiner Masterarbeit an der Católica Lisbon School of Economics
- Die Teilnahme ist völlig freiwillig
- Ehrliche Antworten sind von hohem Wert
- Daten werden streng vertraulich und anonym behandelt und ausschließlich für die akademischen Zwecke dieser Arbeit verwendet
- Die Umfrage sollte in einer einzigen Sitzung ohne Pausen ausgefüllt werden

End of Block: hello

Start of Block: Screening questions

Q1 Screening Country Sind Sie **deutscher Staatsbürger** oder **leben** Sie seit mehr als 10 Jahren in **Deutschland**?

ja (1)

nein (2)

Page Break

Q2 Screening Age Wie **alt** sind Sie?

▼ jünger als 18 (1) ... älter als 35 (21)

Page Break

Q3 Screening Diet **Ernähren** Sie sich **vegetarisch** oder **vegan**?

ja (2)

nein (1)

End of Block: Screening questions

Start of Block: Consumption 1



Q4 Consumption M&M Stellen Sie sich eine typische Woche vor.

	nie (1)	1 Mal pro Woche (2)	2-3 Mal pro Woche (3)	4-6 Mal pro Woche (4)	1 Mal pro Tag (5)	2 oder mehr Mal pro Tag (6)
Wie oft essen Sie Fleisch? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wie oft essen Sie Fleisch-Ersatzprodukte? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q27

Info:

Fleisch-Ersatzprodukte sind z.B.

- Burger Patties aus Soja
- Tofu / Tempeh / Seitan / ...
- Kultiviertes Fleisch (im Labor gezüchtet)
- sonstige Produkte, die geschmacklich, in der Konsistenz oder vom Eiweißgehalt her Fleisch ähnlich sind; teilweise können sie auch tierische Zutaten enthalten

Page Break



Q5.1 Welche der folgenden Fleisch-Ersatzprodukte haben Sie bereits ausprobiert?

- Pflanzliche Alternativen (z.B. Tofu / Tempeh / Seitan) (1)
- Pflanzliche Fleisch-Ersatzprodukte (z.B. Burger Patties aus Soja) (2)
- Kultiviertes Fleisch (im Labor gezüchtetes Fleisch) (3)
- Keine (4)
- andere (bitte definieren) (5) _____

Q5 _____

Info: **Fleisch-Ersatzprodukte** sind z.B.

- Burger Patties aus Soja
- Tofu / Tempeh / Seitan / ...
- Kultiviertes Fleisch (im Labor gezüchtet)
- sonstige Produkte, die geschmacklich, in der Konsistenz oder vom Eiweißgehalt her Fleisch ähnlich sind; teilweise können sie auch tierische Zutaten enthalten

Display This Question:

If Q5.1 = 4

Q5.2 Wären Sie allgemein offen, Fleisch-Ersatzprodukte auszuprobieren?

- Ja (1)
- Nein (2)
- Ich weiß es nicht (3)

End of Block: Consumption 1

Start of Block: Consumption motivators



Q6 Bitte geben Sie an, inwieweit Sie diese Faktoren dazu bewegen (würden), **Fleisch** zu kaufen:

	Überhaupt nicht (1)	kaum (2)	etwas (3)	moderat (4)	stark (5)	sehr stark (6)
Geschmack (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tradition (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ernährung (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preis (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soziale Faktoren (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Q7 purchase MS Bitte geben Sie an, inwieweit Sie diese Faktoren dazu bewegen (würden), **Fleisch-Ersatzprodukte** zu kaufen:

	Überhaupt nicht (1)	kaum (2)	etwas (3)	moderat (4)	stark (5)	sehr stark (6)
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Geschmack (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Umweltauswirkungen (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verfügbarkeit (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soziale Faktoren (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neugierde (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ernährung (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preis (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Consumption motivators

Start of Block: Product display

Q8 Stellen Sie sich nun vor, dass Sie einen **Burger zubereiten** wollen. Sie haben folgende zwei Fleisch-Ersatzprodukte zur Auswahl;

1. **Kultiviertes Burger Patty** (Im **Labor** gezüchtetes Fleisch)
2. **Veganes Burger Patty** (Rein pflanzlich aus **Soja**)

Bitte sehen Sie sich beide Produkte genau an.



Q5 product display Welches der beiden Produkte würden Sie wählen?

- Kultiviertes Burger Patty (im Labor gezüchtetes Fleisch) (1)
- Veganes Burger Patty (rein pflanzlich aus Soja) (2)
- Ich weiß es nicht (3)

Page Break

Display This Question:

If Q5 product display = 1



Q6 choice cultivated Welche der folgenden Gründe treffen auf Ihre Wahl zu?

- Ich möchte die Implementierung von kultiviertem Fleisch unterstützen (1)
- Ich bin neugierig es auszuprobieren (2)
- Ich wünsche mir einen Geschmack, wie bei echtem Rind (3)
- andere (bitte definieren) (4) _____

Display This Question:

If Q5 product display = 2



Q7 choice vegan Welche der folgenden Gründe treffen auf Ihre Wahl zu?

- Ich möchte vegane Produkte unterstützen (1)
- Ich kenne Fleisch-Ersatzprodukte aus Soja und finde sie lecker (2)
- Ich bin neugierig es auszuprobieren (3)
- Ich möchte keinen Fleisch-Geschmack (4)
- Ich finde im Labor hergestelltes Fleisch suspekt (5)
- andere (bitte definieren) (6) _____

Display This Question:

If Q5 product display = 3



Q8 choice don't know Welche der folgenden Gründe treffen auf Ihre Wahl zu?

- Ich kenne keine Fleisch-Ersatzprodukte (1)
- Für mich kommen keine Ersatzprodukte für Fleisch in Frage (2)
- Keines der Produkte spricht mich an (3)
- andere (bitte definieren) (4) _____

End of Block: Product display

Start of Block: Scales



Q10 food neophobia Bitte geben Sie an, wie sehr Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu (1)	Stimme nicht zu (2)	Stimme weder zu noch lehne ich ab (3)	Stimme zu (4)	Stimme voll und ganz zu (5)
Ich probiere ständig neue und andere Lebensmittel aus (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin skeptisch gegenüber neuen Arten von Lebensmitteln (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wenn ich nicht weiß, was in einem Lebensmittel enthalten ist, esse ich es nicht (24)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich mag Lebensmittel aus verschiedenen Ländern (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bei einer Dinnerparty probiere ich gerne neue Speisen (26)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich habe Angst davor, Dinge zu essen, die ich noch nie gegessen habe (27)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin sehr wählerisch, was die Lebensmittel angeht, die ich esse (28)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich esse fast alles (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Q10 meat attachment Bitte geben Sie an, wie sehr Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu (1)	Stimme nicht zu (2)	Stimme weder zu noch lehne ich ab (3)	Stimme zu (4)	Stimme voll und ganz zu (5)
Fleisch ist in meiner Ernährung unersetzlich (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Durch unserer Stellung in der Nahrungskette, haben wir das Recht Fleisch zu essen (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich kann mir ein Leben ohne regelmäßigen Fleischkonsum nicht vorstellen (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich würde mich mit einer fleischlosen Ernährung gut fühlen (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wenn ich gezwungen wäre, kein Fleisch mehr zu essen, würde ich mich traurig fühlen (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wenn ich kein Fleisch essen könnte, würde ich mich schwach fühlen (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fleisch zu essen, ist eine natürliche und unstrittige Praxis (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin ein großer Fan von Fleisch (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ein gutes Steak ist unvergleichlich (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich liebe Mahlzeiten mit Fleisch (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fleisch zu essen ist eine der größten Freuden in meinem Leben (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beim Essen von Fleisch werde ich an den Tod und das Leid der Tiere erinnert (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fleisch erinnert mich an Krankheiten (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fleisch zu essen ist ein nicht in Frage zu stellendes Recht jeder Person (16)

Fleisch zu essen ist nicht respektvoll gegenüber dem Leben allgemein und der Umwelt (17)

End of Block: Scales

Start of Block: Environment



env. concern Bitte geben Sie an, wie sehr Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu (1)	Stimme nicht zu (2)	Stimme weder zu noch lehne ich ab (3)	Stimme zu (4)	Stimme voll und ganz zu (5)
Es beunruhigt mich, wenn ich an die Umweltbedingungen denke, unter denen unsere Kinder und Enkelkinder leben müssen (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wenn ich fernsehe oder Zeitungsartikel über Umweltprobleme lese, bin ich oft beschämt und wütend (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wenn wir unseren derzeitigen Lebensstil beibehalten, steuern wir auf eine Umweltkatastrophe zu (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Es ist immer noch so, dass die Politiker nicht genug für den Umweltschutz tun. (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Zu Gunsten der Umwelt sollten wir alle bereit sein, unseren derzeitigen Lebensstandard zu reduzieren (26)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Umweltschutzmaßnahmen sollten auch dann durchgesetzt werden, wenn dadurch Arbeitsplätze verloren gehen (27)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Es gibt Grenzen des wirtschaftlichen Wachstums, die unsere industrialisierte Welt bereits überschritten hat oder bald erreichen wird (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meiner Meinung nach werden die Umweltprobleme von den Befürwortern der Umweltbewegung stark übertrieben (30)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wissenschaft und Technik werden viele Umweltprobleme lösen, ohne dass wir unsere Lebensweise ändern müssen (31)



End of Block: Environment

Start of Block: Cross-Cultural aspects



Q14 Aw., Acces. Info Bitte bewerten Sie die folgenden Aussagen Im Hinblick auf Ihr Land.

Überhaupt Ein wenig Mäßig Sehr Äußerst
nicht

Wie gut fühlen Sie sich über die Vor- und Nachteile von Fleisch informiert? ()	
Wie gut fühlen Sie sich über die Vor- und Nachteile von Fleisch-Ersatzprodukten informiert? ()	
Wie zugänglich sind Fleisch-Ersatzprodukte für Sie? ()	
Wie sehr liegen Fleisch-Ersatzprodukte in Ihrem Budget? ()	
Als wie hoch empfinden Sie die gesellschaftliche Akzeptanz von Fleisch-Ersatzprodukten? ()	

End of Block: Cross-Cultural aspects

Start of Block: Health



Q25 Wie bewerten Sie die Gesundheit von Rindfleisch im Vergleich zu Fleisch-Ersatzprodukten?

- Viel weniger gesund (1)
- Etwas weniger gesund (2)
- Ungefähr gleich gesund (3)
- Etwas gesünder (4)
- Viel gesünder (5)
- Ich weiß es nicht (8)



Q41 Bitte beantworten Sie mir die folgenden Fragen zum Thema Gesundheit:

	Trifft zu (1)	trifft teilweise zu (2)	Trifft nicht zu (3)	Ich weiß es nicht (4)
Ich denke viel über meine Gesundheit nach (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin sehr selbstbewusst, was meine Gesundheit angeht (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich achte allgemein auf mein inneres Gefühl, was meine Gesundheit betrifft (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich überprüfe meine Gesundheit häufig (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin gegenüber Veränderungen meiner Gesundheit aufmerksam (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin mir meiner Gesundheit im Allgemeinen bewusst (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin mir meines Gesundheitszustandes im Laufe des Tages bewusst (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich nehme wahr, wie ich mich im Laufe des Tages körperlich fühle (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich kümmere mich sehr um meine Gesundheit (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Health

Start of Block: open question

Q24 Bitte beschreiben Sie Ihre Gedanken und Gefühle, wenn Sie an Rindfleisch oder zugehörige Ersatzprodukte denken

Was fällt Ihnen in Bezug auf Geschmack, Kultur, Gesundheit und Umwelt ein? (1)

End of Block: open question

Start of Block: Demografische Faktoren

Q4 Was ist Ihr höchster akademischer Abschluss?

▼ Grundschulabschluss (1) ... keiner der oben genannten (6)

Page Break

Q22 Welchem Geschlecht fühlen Sie sich zugehörig?

▼ Männlich (1) ... Bevorzuge keine Angaben (4)

Page Break



Q48 Wie lässt sich Ihr Beschäftigungsstatus in den letzten 12 Monaten am besten beschreiben?

▼ Vollzeit-Arbeitend (1) ... Sonstiges (7)

End of Block: Demografische Faktoren

Start of Block: bye

Q23 Vielen Dank, dass Sie diese Umfrage ausgefüllt haben!
Ich wünsche Ihnen einen schönen Tag :)

End of Block: bye

Appendix II – Translation of survey in English and South Korean

English		German		Korean	
Questions	Answer Options	Questions	Answer Options	Questions	Answer Options
<p>Hello, I am very pleased that you are taking part in my survey. It should not take more than 8 minutes of your time to complete.</p> <p>By clicking "continue", you confirm that you agree to participate and that you have read the information below. If you have any questions or feedback, please feel free to contact me via e-mail.</p> <p>Thank you very much!</p> <p>_____</p> <p>Information about this survey:</p> <ul style="list-style-type: none"> - This survey is an important part of my Master's thesis at the Católica Lisbon School of Economics - Participation is completely voluntary - Honest answers are of high value - Data will be kept strictly confidential and anonymous and will be used exclusively for the academic purposes of this thesis - The survey should be completed in a single session without breaks 		<p>Hallo, ich freue mich sehr, dass Sie an meiner Umfrage teilnehmen. Das Ausfüllen sollte nicht mehr als 8 Minuten Ihrer Zeit in Anspruch nehmen.</p> <p>Durch ein Klicken auf "weiter", bestätigen Sie Ihr Einverständnis mit der Teilnahme und dass Sie die Informationen unten gelesen haben. Für Rückfragen oder Feedback, können Sie mich gerne per E-Mail kontaktieren.</p> <p>Herzlichen Dank!!</p> <p>_____</p> <p>Informationen zu dieser Survey:</p> <ul style="list-style-type: none"> - Diese Untersuchung ist ein wichtiger Bestandteil meiner Masterarbeit an der Católica Lisbon School of Economics - Die Teilnahme ist völlig freiwillig - Ehrliche Antworten sind von hohem Wert - Daten werden streng vertraulich und anonym behandelt und ausschließlich für die akademischen Zwecke dieser Arbeit verwendet - Die Umfrage sollte in einer einzigen Sitzung ohne Pausen ausgefüllt werden 		<p>안녕하세요, 설문조사에 참여해주셔서 매우 감사합니다. 해당 설문조사는 완료하는 데까지 8분 미만으로 소요될 예정입니다.</p> <p>설문조사 참여에 동의하시고 아래 정보를 읽으셨으면 ""continue"" 버튼을 클릭해주세요. 질문이나 의견이 있으시면 언제든지 이메일로 문의 부탁드립니다.</p> <p>감사합니다!</p> <p>_____</p> <p>해당 설문조사에 대한 정보:</p> <ul style="list-style-type: none"> - 이 설문조사는 제 카톨릭 리스본 경제학 석사 학위 논문의 중요한 부분입니다. - 참여는 전적으로 자발적입니다. - 정직한 답변은 높은 가치가 있습니다. - 데이터는 엄격하게 기밀로 유지되고 익명으로 처리되며 이 논문의 학술적 목적으로만 사용됩니다. - 설문조사는 휴식 시간 없이 한 세션에 완료해야 합니다." 	
Are you a X citizen or have you lived in X for more than 10 years?	yes no	Sind Sie deutscher Staatsbürger oder leben Sie seit mehr als 10 Jahren in Deutschland?	Ja Nein	대한민국 국민이신가요? 혹은 10년 이상 대한민국에 거주하셨나요?	예 아니요
How old are you?	younger than 18 , 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, older than 35	Wie alt sind Sie?	jünger als 18 18 19 20 21 22 23 24 25 26 27 28 29	본인의 나이를 알려주세요	18세 미만 18 19 20 21 22 23 24 25 26 27 28

			30 31 32 33 34 35 älter als 35		29 30 31 32 33 34 35 35 이상
Do you follow a vegetarian or vegan diet?	yes no	Ernähren Sie sich vegetarisch oder vegan?	Ja Nein	채식주의자 또는 비건 식단을 따르나요?	예 아니요
Imagine a typical week. How often do you eat meat? How often do you eat meat substitutes? Info: Meat substitutes are e.g. - Burger patties made from soy beans - Tofu / Tempeh / Seitan / ... - Cultured meat (created in a laboratory) - Other products that are similar to meat in terms of flavour, consistency or protein content; some may also contain animal ingredients	Never 1 time per week 2-3 times per week 4-6 times per week 1 time per day 2 or more times per day	Stellen Sie sich eine typische Woche vor. Wie oft essen Sie Fleisch? Wie oft essen Sie Fleisch-Ersatzprodukte? Info: Fleisch-Ersatzprodukte sind z.B. - Burger Patties aus Soja - Tofu / Tempeh / Seitan / ... - Kultiviertes Fleisch (im Labor gezüchtet) - sonstige Produkte, die geschmacklich, in der Konsistenz oder vom Eiweißgehalt her Fleisch ähnlich sind; teilweise können sie auch tierische Zutaten enthalten	nie, 1 Mal pro Woche, 2-3 Mal pro Woche, 4-6 Mal pro Woche, 1 Mal pro Tag, 2 oder mehr Mal pro Tag	평소의 일주일을 떠올려 보세요 일주일에 얼마나 자주 고기를 드시나요? 육류 대용품을 얼마나 자주 드시나요? 정보: 육류 대체 식품은 다음과 같습니다. - 콩으로 만든 버거 패티 - 두부 / 템페 / 세이탄 / ... - 배양육(실험실에서 사육) - 맛, 농도 또는 단백질 함량 측면에서 육류와 유사한 기타 제품; 일부 제품에는 동물성 성분이 포함될 수도 있습니다.	절대 주 1회 주 2~3회 1회당 4-6회 하루에 한 번 하루에 2회 이상
Which of the following meat substitutes have you already tried?	Plant-based alternatives (e.g. tofu / tempeh / seitan) Plant-based meat substitutes	Welche der folgenden Fleisch-Ersatzprodukte haben Sie bereits ausprobiert?	Pflanzliche Alternativen (z.B. Tofu / Tempeh / Seitan) Pflanzliche Fleisch-Ersatzprodukte (z.B. Burger Patties aus Soja) Kultiviertes Fleisch (im Labor gezüchtetes	다음 중 어떤 육류 대체품을 드셔 보셨나요?	식물성 대체 식품(예: 두부/템페/세이탄) 식물성 육류

	(e.g. burger patties made from soya) Cultured meat (lab-grown meat) None Other (please define)		Fleisch) Keine andere (bitte definieren)		대체품(예: 콩으로 만든 햄버거 패티) 배양육(실험실에서 키운 육류) 없음 기타(구체적으로 작성해주세요)
Would you generally consider trying out meat substitutes?	Yes No I don't know	Wären Sie allgemein offen, Fleisch-Ersatzprodukte auszuprobieren?	Ja Nein Ich weiß es nicht	일반적으로 육류 대체품을 사용해 볼 의향이 있으신가요?	네 아니오 모르겠다
Please indicate to what extent these factors (would) encourage you to buy meat: Social factors Flavour Tradition Nutrition Price	Not at all hardly at all moderately strongly very strongly	Bitte geben Sie an, inwieweit Sie diese Faktoren dazu bewegen (würden), Fleisch zu kaufen: Soziale Faktoren Geschmack Tradition Ernährung Preis	Überhaupt nicht kaum etwas moderat stark sehr stark	어떤 요인들로 육류 구매를 하시는지 표시해 주세요: 사회적 요인 맛 전통 영양 가격	전혀 중요하지 않음 거의 중요하지 않음 적당히 중요함 꽤 중요함 매우 중요함
Please indicate to what extent these factors (would) motivate you to buy meat substitutes: Price Flavour Social factors Curiosity Availability Nutrition	Not at all Slightly Moderately Strongly Very Strongly	Bitte geben Sie an, inwieweit Sie diese Faktoren dazu bewegen (würden), Fleisch-Ersatzprodukte zu kaufen: Preis Geschmack Soziale Faktoren Neugierde Verfügbarkeit Ernährung	Überhaupt nicht kaum etwas moderat stark sehr stark	각각의 요인들이 육류 대체품 구매에 어느 정도 영향을 미치는지 표시해 주세요: 가격 맛 사회적 요인 호기심 가용성 영양	전혀 중요하지 않음 거의 중요하지 않음 적당히 중요함 꽤 중요함 매우 중요함
Now imagine that you want to prepare a burger. You have the following two meat substitutes to choose from;	1. Korean BBQ Bulgogi cultured beef 2. Vegan burger patty (purely plant-based from soya)	Stellen Sie sich nun vor, dass Sie einen Burger zubereiten wollen. Sie haben folgende zwei Fleisch-Ersatzprodukte zur Auswahl; 1. Kultiviertes Burger Patty (Im Labor gezüchtetes Fleisch)	1. Kultiviertes Burger Patty (Im Labor gezüchtetes Fleisch) 2. Veganes Burger Patty (Rein pflanzlich aus Soja)	이제 햄버거를 준비한다고 상상해 보세요. 다음 두 육류 고기 대체품 중에서 선택할 수 있습니다;	1. 한국식 바베큐 불고기 배양 소고기 2. 비건 버거 패티 (콩으로 만든 식물성 고기)

<p>1. Korean BBQ Bulgogi cultured beef 2. Vegan burger patty (purely plant-based from soya)</p> <p>Please take a close look at both products.</p> <p>Which of the two products would you choose?</p>		<p>2. Veganes Burger Patty (Rein pflanzlich aus Soja)</p> <p>Bitte sehen Sie sich beide Produkte genau an.</p> <p>Welches der beiden Produkte würden Sie wählen?</p>		<p>1. 한국식 바베큐 불고기 배양 소고기 2. 비건 버거 패티 (콩으로 만든 식물성 고기)</p> <p>두 제품을 꼼꼼히 고민해주세요.</p> <p>두 제품 중 어떤 제품을 선택하시겠습니까?</p>	
<p>Which of the following reasons apply to your choice?</p>	<p>I want to support the implementation of cultured meat I am curious to try it I want a flavour like real beef other (please define)</p>	<p>Welche der folgenden Gründe treffen auf Ihre Wahl zu?</p>	<p>Ich möchte die Implementierung von kultiviertem Fleisch unterstützen Ich bin neugierig es auszuprobieren Ich wünsche mir einen Geschmack, wie bei echtem Rind Ich möchte vegane Produkte unterstützen Ich kenne Fleisch-Ersatzprodukte aus Soja und finde sie lecker andere (bitte definieren)</p>	<p>다음 중 귀하의 선택에 해당하는 이유는 무엇인가요?</p>	<p>배양육 도입을 지지하고 싶습니다. 궁금해서 먹어보고 싶어요 진짜 소고기와 같은 맛을 원합니다 기타(구체적으로 작성해주세요)</p>
<p>Which of the following reasons apply to your choice?</p>	<p>I would like to support vegan products I know meat substitutes made from soy and find them delicious I am curious to try it out I don't want a meat flavour I find lab-grown meat suspicious Other (please define)</p>	<p>Welche der folgenden Gründe treffen auf Ihre Wahl zu?</p>	<p>Ich möchte vegane Produkte unterstützen Ich kenne Fleisch-Ersatzprodukte aus Soja und finde sie lecker Ich bin neugierig es auszuprobieren Ich möchte keinen Fleisch-Geschmack Ich finde im Labor hergestelltes Fleisch suspekt andere (bitte definieren)</p>	<p>다음 중 귀하의 선택에 해당하는 이유는 무엇인가요?</p>	<p>비건 제품을 지지하고 싶습니다 콩으로 만든 육류 대용품이 맛있다는 것을 알고 있습니다. 궁금해서 먹어보고 싶어요 고기 맛을 원하지 않아요 실험실에서 키운 고기가 의심스럽습니다 기타(구체적으로)</p>

					로 작성해 주세요)
Which of the following reasons apply to your choice?	I don't know any meat substitutes No meat substitutes are an option for me None of the products appeal to me Other (please define)	Welche der folgenden Gründe treffen auf Ihre Wahl zu?	Ich kenne keine Fleisch-Ersatzprodukte Für mich kommen keine Ersatzprodukte für Fleisch in Frage Keines der Produkte spricht mich an andere (bitte definieren)	다음 중 귀하의 선택에 해당하는 이유는 무엇인가요?	육류 대체 식품을 모릅니다. 육류 대체 식품은 제 선택지에 없습니다 마음에 드는 제품이 없습니다 기타(구체적으로 작성해 주세요)
I love meals with meat To eat meat is one of the good pleasures in life I'm a big fan of meat A good steak is without comparison By eating meat I'm reminded of the death and suffering of animals To eat meat is disrespectful towards life and the environment Meat reminds me of diseases To eat meat is an unquestionable right of every person According to our position in the food chain, we have the right to eat meat Eating meat	Strongly Disagree Disagree Neutral Agree Strongly Agree	Ich liebe Mahlzeiten mit Fleisch Ich kann mir ein Leben ohne regelmäßigen Fleischkonsum nicht vorstellen Ich würde mich mit einer fleischlosen Ernährung gut fühlen Fleisch erinnert mich an Krankheiten Fleisch zu essen ist eine der größten Freuden in meinem Leben Wenn ich gezwungen wäre, kein Fleisch mehr zu essen, würde ich mich traurig fühlen Ich bin ein großer Fan von Fleisch Fleisch zu essen ist ein nicht in Frage zu stellendes Recht jeder Person Beim Essen von Fleisch werde ich an den Tod und das Leid der Tiere erinnert Fleisch zu essen, ist eine natürliche und unstrittige Praxis Wenn ich kein Fleisch essen könnte, würde ich mich schwach fühlen Ein gutes Steak ist unvergleichlich Durch unserer Stellung in der Nahrungskette, haben wir das Recht Fleisch	Stimme überhaupt nicht zu Stimme nicht zu Neutral Stimme zu Stimme voll zu	고기가 들어간 식사를 좋아합니다 고기를 먹는 것은 인생의 좋은 즐거움 중 하나입니다. 나는 고기를 좋아한다 좋은 스테이크는 비교할 수 없이 좋다 고기를 먹으면 동물의 죽음과 고통이 생각난다. 고기를 먹는 것은 생명과 환경에 대한 무례한 행동이다. 고기는 질병을 생각나게 합니다. 고기를 먹는 것은 모든 사람의 당연한 권리입니다.	전혀 동의하지 않음 동의하지 않음 중립 동의 적극 동의

<p>is a natural and indisputable practice I don't picture myself without eating meat regularly If I couldn't eat meat I would feel weak I would feel fine with a meatless diet If I was forced to stop eating meat I would feel sad Meat is irreplaceable in my diet</p>		<p>zu essen Fleisch ist in meiner Ernährung unersetzlich Fleisch zu essen ist nicht respektvoll gegenüber dem Leben allgemein und der Umwelt</p>		<p>먹이 사슬에서 우리의 위치에 따라 우리는 고기를 먹을 권리가 있습니다. 고기를 먹는 것은 자연스럽게 당연한 관행입니다. 나는 정기적으로 고기를 먹지 않는 나 자신을 상상하지 않는다. 고기를 먹지 못하면 몸이 약해질 것이다. 나는 고기 없는 식단으로도 괜찮을 것이다 강제로 고기를 먹지 못한다면 슬플 것입니다. 내 식단에서 고기는 대체할 수 없다.</p>	
<p>Please answer the following questions about Health: I reflect about my health a lot. I am very self-conscious about my health. I am generally attentive to my inner feeling about my health. I am</p>	<p>Strongly Disagree Disagree Neutral Agree Strongly Agree</p>	<p>Bitte beantworten Sie mir die folgenden Fragen zum Thema Gesundheit: Ich bin gegenüber Veränderungen meiner Gesundheit aufmerksam Ich achte allgemein auf mein inneres Gefühl, was meine Gesundheit betrifft Ich denke viel über meine Gesundheit nach Ich kümmere mich sehr um meine Gesundheit Ich bin sehr selbstbewusst, was meine Gesundheit angeht</p>	<p>Trifft zu Trifft teilweise zu Trifft nicht zu Ich weiß es nicht</p>	<p>다음 질문에 답해 주세요. 건강: 저는 건강에 대해 많이 생각해요. 저는 건강에 대해 매우 의식하고 있습니다. 나는 일반적으로 내 건강에 대한 내면의 느낌에 주의를</p>	<p>전혀 동의하지 않음 동의하지 않음 중립 동의 적극 동의</p>

<p>constantly examining my health. I am alert to changes in my health. I am usually aware of my health. I am aware of the state of my health as I go through the day. I notice how I feel physically as I go through the day. I am very involved with my health.</p>		<p>Ich überprüfe meine Gesundheit häufig Ich bin mir meiner Gesundheit im Allgemeinen bewusst Ich bin mir meines Gesundheitszustandes im Laufe des Tages bewusst Ich nehme wahr, wie ich mich im Laufe des Tages körperlich fühle</p>		<p>기울인다. 나는 지속적으로 내 건강을 점검한다. 나는 내 건강의 변화에 주의를 기울인다. 나는 평소 내 건강에 대해 잘 알고 있다. 나는 하루를 보내면서 내 건강 상태를 잘 알고 있다. 나는 하루를 보내면서 신체적으로 어떻게 느끼는지 알아차린다. 나는 내 건강에 매우 신경쓴다</p>	
<p>Please indicate how much you agree with the following statements. I am very picky about the food I eat If I don't know what's in a food, I don't eat it I eat almost everything I am constantly trying new and different foods I like to try new foods at a dinner party I am sceptical about new types of</p>	<p>Strongly Disagree Disagree Neutral Agree Strongly Agree</p>	<p>Bitte geben Sie an, wie sehr Sie den folgenden Aussagen zustimmen. Ich bin sehr wählerisch, was die Lebensmittel angeht, die ich esse Wenn ich nicht weiß, was in einem Lebensmittel enthalten ist, esse ich es nicht Ich esse fast alles Ich probiere ständig neue und andere Lebensmittel aus Bei einer Dinnerparty probiere ich gerne neue Speisen Ich bin skeptisch gegenüber neuen Arten von Lebensmitteln Ich mag Lebensmittel aus verschiedenen Ländern Ich habe Angst davor, Dinge zu essen, die ich noch nie gegessen habe</p>	<p>Stimme überhaupt nicht zu, Stimme nicht zu, Neutral, Stimme zu, Stimme voll zu</p>	<p>다음 문항에 얼마나 동의하는지 표시해 주세요. 나는 먹는 음식에 매우 까다롭다. 음식에 무엇이 들어있는지 모르면 먹지 않는다. 나는 거의 모든 음식을 먹는다. 나는 끊임없이 새롭고 다양한 음식을 시도한다. 나는 디너 파티에서 새로운 음식을 시도하는 것을</p>	<p>전혀 동의하지 않음 동의하지 않음 중립 동의 적극 동의</p>

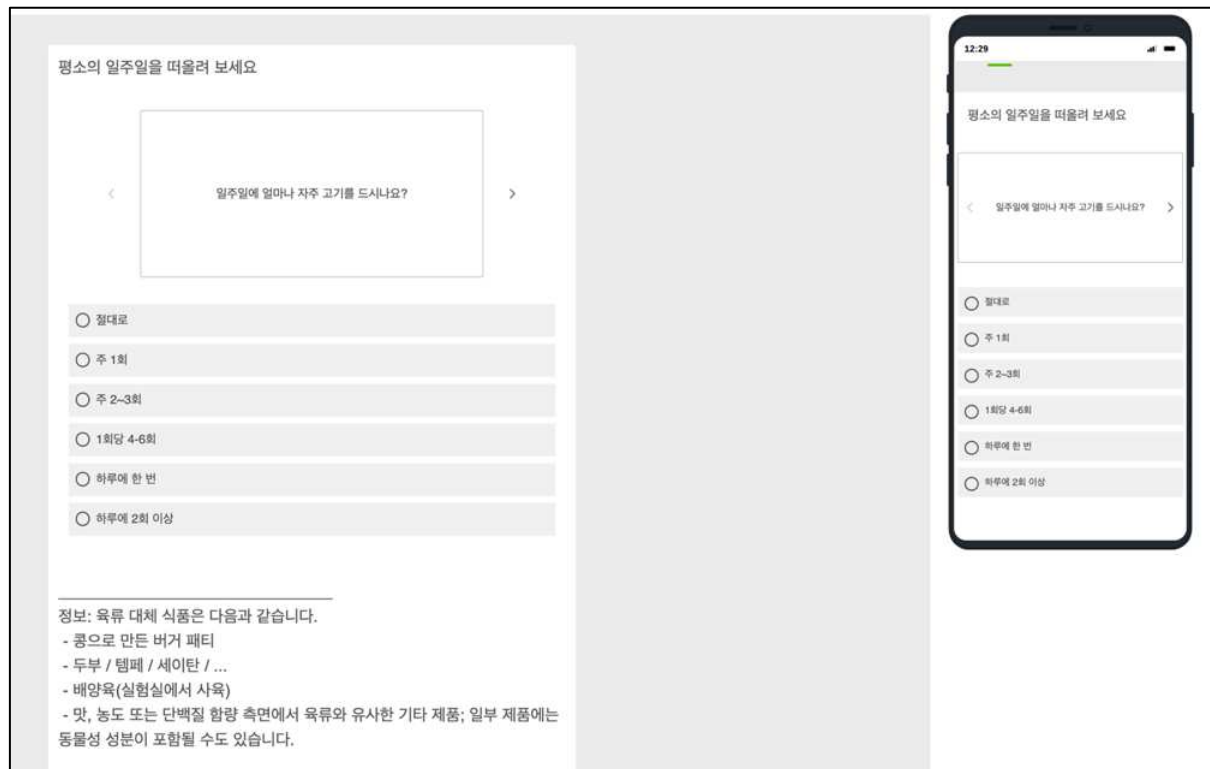
<p>food I like food from different countries I am afraid of eating things I have never eaten before</p>				<p>좋아한다. 나는 새로운 종류의 음식에 대해 회의적이다. 나는 다른 나라의 음식을 좋아한다. 나는 전에 먹어 본 적이없는 음식을 먹는 것이 두렵다.</p>	
<p>Please indicate how much you agree with the following statements. It is still the case that politicians are not doing enough to protect the environment . When I watch television or read newspaper articles about environmental problems, I often feel ashamed and angry It worries me to think about the environmental conditions our children and grandchildren will have to live in If we continue with our current lifestyle, we are heading for an environment</p>	<p>Strongly Disagree Disagree Neutral Agree Strongly Agree</p>	<p>Bitte geben Sie an, wie sehr Sie den folgenden Aussagen zustimmen. Es ist immer noch so, dass die Politiker nicht genug für den Umweltschutz tun. Wenn ich fernsehe oder Zeitungsartikel über Umweltprobleme lese, bin ich oft beschämt und wütend Es beunruhigt mich, wenn ich an die Umweltbedingungen denke, unter denen unsere Kinder und Enkelkinder leben müssen Wenn wir unseren derzeitigen Lebensstil beibehalten, steuern wir auf eine Umweltkatastrophe zu Wissenschaft und Technik werden viele Umweltprobleme lösen, ohne dass wir unsere Lebensweise ändern müssen Zu Gunsten der Umwelt sollten wir alle bereit sein, unseren derzeitigen Lebensstandard zu reduzieren Umweltschutzmaßnahmen sollten auch dann durchgesetzt werden, wenn dadurch Arbeitsplätze verloren gehen Es gibt Grenzen des wirtschaftlichen Wachstums, die</p>	<p>Stimme überhaupt nicht zu Stimme nicht zu Neutral Stimme zu Stimme voll zu</p>	<p>다음 진술에 얼마나 동의하는지 표시해 주세요. 미래 세대의 기후 환경을 생각하면 두렵습니다. 지금과 같은 생활 방식을 지속한다면 환경 재앙으로 다가가는 것입니다. 환경 문제에 관한 TV를 보거나 신문을 읽으면 종종 부끄럽고 화가 납니다. 대다수의 사람들이 환경적으로 책임감 있는 방식으로 행동하지 않습니다. 산업화 된 세계가 이미 도달했거나 곧 도달 할 경제 성장의 한계가</p>	<p>전혀 동의하지 않음 동의하지 않음 중립 동의 적극 동의</p>

<p>al catastrophe Science and technology will solve many environmental problems without us having to change our way of life In favour of the environment , we should all be prepared to reduce our current standard of living Environmental protection measures should be enforced even if jobs are lost as a result There are limits to economic growth that our industrialised world has already exceeded or will soon reach In my opinion, the environmental problems are greatly exaggerated by those in favour of the environmental movement</p>		<p>unsere industrialisierte Welt bereits überschritten hat oder bald erreichen wird Meiner Meinung nach werden die Umweltprobleme von den Befürwortern der Umweltbewegung stark übertrieben</p>		<p>있습니다. 제 생각에 환경 문제는 환경 운동 지지자들에 의해 크게 과장되어 있습니다. 정치인들이 환경을 보호하기 위해 너무 적은 일을하는 것은 여전히 사실입니다. 환경을 보호하기 위해 우리 모두는 현재의 생활 수준을 바꾸어야합니다 . 경제에서 일자리 수를 줄이더라도 환경 보호 조치를 수행해야합니다 .</p>	
<p>Please rate the following statements with regard to your country. How well informed do you feel about the advantages</p>	<p>Strongly Disagree Disagree Neutral Agree Strongly Agree</p>	<p>Bitte bewerten Sie die folgenden Aussagen im Hinblick auf Ihr Land. Wie gut fühlen Sie sich über die Vor- und Nachteile von Fleisch informiert? Wie gut fühlen Sie sich über die Vor- und Nachteile von Fleisch-</p>	<p>Stimme überhaupt nicht zu Stimme nicht zu Neutral Stimme zu Stimme voll zu</p>	<p>귀하의 국가와 관련하여 다음 문항에 대해 평가해 주세요. 육류의 장단점에 대해 얼마나 잘 알고 있다고</p>	<p>전혀 동의하지 않음 동의하지 않음 중립 동의 적극 동의</p>

<p>and disadvantages of meat? How well informed do you feel about the advantages and disadvantages of meat substitutes? How accessible are meat substitutes for you? How much are meat substitutes within your budget? How high do you feel the social acceptance of meat substitutes is?</p>		<p>Ersatzprodukten informiert? Wie zugänglich sind Fleisch-Ersatzprodukte für Sie? Wie sehr liegen Fleisch-Ersatzprodukte in Ihrem Budget? Als wie hoch empfinden Sie die gesellschaftliche Akzeptanz von Fleisch-Ersatzprodukten?</p>		<p>생각하십니까? 육류 대체품의 장단점에 대해 얼마나 잘 알고 있다고 생각하십니까? 육류 대체 식품에 대한 접근성은 어느 정도인가요? 예산 범위 내에서 육류 대체 식품을 구매할 수 있는 금액은 어느 정도인가요? 육류 대체 식품에 대한 사회적 수용도가 얼마나 높다고 생각하십니까?</p>	
<p>Please describe your thoughts and feelings when you think of beef or its substitutes. What comes to mind in terms of flavour, culture, health and environment?</p>	Text entry	<p>Bitte beschreiben Sie Ihre Gedanken und Gefühle, wenn Sie an Rindfleisch oder zugehörige Ersatzprodukte denken Was fällt Ihnen in Bezug auf Geschmack, Kultur, Gesundheit und Umwelt ein?</p>	Text entry	<p>소고기 또는 소고기 대체품을 생각할 때 떠오르는 생각과 느낌을 설명해 주세요. 맛, 문화, 건강, 환경 측면에서 떠오르는 것은 무엇인가요?</p>	Text entry
<p>What is your highest academic qualification?</p>	<p>Primary school leaving certificate Secondary school leaving certificate Bachelor's degree Master's degree Diploma None of the above</p>	<p>Was ist Ihr höchster akademischer Abschluss? Grundschulabschluss Abschluss weiterführende Schule Bachelor Master Diplom keiner der oben genannten</p>	<p>Grundschulabschluss ugnis Abschluss der weiterführenden Schule Bachelor-Abschluss Master-Abschluss Diplom Keiner der oben genannten Abschlüsse</p>	<p>당신의 최종 학력(현재에도 진행 중)은 무엇인가요?</p>	<p>초등학교 졸업 중학교 졸업 학사 학위 석사 학위 전문대학 위에 해당하지 않음</p>

Which gender do you feel you belong to?	Male Female Diverse Prefer not to say	Welchem Geschlecht fühlen Sie sich zugehörig? Männlich Weiblich Divers Bevorzuge keine Angaben	Männlich Weiblich Divers Bevorzuge keine Angaben	자신이 어느 성별에 속한다고 생각하시나요?	남성 여성 다양성 말하고 싶지 않음
What is the best way to describe your employment status in the last 12 months?	Full-time working Part-time working Student Working student Unemployed and looking for work Parent who stays at home Other	Wie lässt sich Ihr Beschäftigungsstatus in den letzten 12 Monaten am besten beschreiben? Vollzeit-Arbeitend Teilzeit-Arbeitend Student Werkstudent Arbeitslos und arbeitssuchend Elternteil, das zuhause bleibt Sonstiges	Vollzeitarbeitend Teilzeitarbeitend Student Werkstudent Arbeitslos und arbeitssuchend Elternteil, das zu Hause bleibt Andere	지난 12개월 동안 귀하의 고용 상태를 가장 잘 설명할 수 있는 방법은 무엇인가요?	풀타임 근무 파트타임 근무 학생 일하는 학생 실업자 및 구직 중 집에 머무는 부모 기타
Thank you for completing this survey! Have a nice day :)	Vielen Dank, dass Sie diese Umfrage ausgefüllt haben! Ich wünsche Ihnen einen schönen Tag :)		설문조사를 완료해 주셔서 감사합니다! 좋은 하루 되세요 :)		

Appendix III – Visual example of survey in Korean



Appendix IV – Administered variables and scales from survey

Variable	Category	Question	Scale	Description
-	Introduction text	No question	No scale	Information about the length of the survey, the background of the research, the voluntary nature of the participation, the importance of honesty of answers, data analysis confidentiality, contact information in case of feedback or questions.
Nationality	Screening questions	Q1) Are you a German / South Korean citizen or have you been living in Germany / South Korea for more than 10 years?	Nominal	Citizenship or residence duration
		Q2) How old are you?	Ordinal	Age
		Q3) Do you follow a vegetarian or vegan diet?	Nominal	Diet preference
Attitudes towards meat consumption, preferences for meat substitutes	Background information	Q4) How often do you eat meat?	Ordinal	Frequency of meat consumption
		Q4) How often do you eat meat substitutes?	Ordinal	Frequency of meat substitute consumption
		Q27) Which of the following meat substitutes have you already tried?	Nominal	Experience with meat substitutes
		Q5.2) Would you be open to trying meat substitutes in general?	Nominal	Willingness to try meat substitutes
5 influencing Variables	Purchase motivating variables I	Q6) Please indicate to what extent these factors (would) motivate you to buy meat:	Ordinal	Motivators for buying meat
		Q7) Please indicate to what extent these factors (would) encourage you to buy meat substitutes	Ordinal	Motivators for buying meat substitutes
Preferences for meat substitutes	Preferences for meat substitutes	Q5) Which of the two products would you choose?	Nominal	Product choice between cultured and vegan substitutes
5 influencing Variables	Purchase motivating variables II	Q6,7,8) Which of the following reasons apply to your choice? (Individually for each option chosen)	Nominal	Reasons for choosing the cultured meat / the soy substitute/ none
Food Neophobia	Food Neophobia	Please indicate how much you agree with the following statements: (Food Neophobia)	Ordinal, Food Neophobia Scale (FNS) (S.-J. Kim et al., 2011; Kühn et al., 2023a; Pliner & Hobden, 1992; Ritchey et al., 2003)	Agreement with statements about food neophobia
Meat Attachment	Meat Attachment	Please indicate how much you agree with the following statements: (Meat Attachment)	Ordinal, Meat Attachment Scale (MAS) (Graça et al.,	Agreement with statements about meat attachment

			2015; Kühn et al., 2023a)	
Environmental Concern	Environmental Concern	Please indicate how much you agree with the following statements: (Environmental Concerns)	Ordinal, Environmental Concern Scale (ECS) by Schultz (2001).	Agreement with statements about environmental concerns
Economic factors,	Background Information	Please rate the following statements about your country:	Ordinal	Assessment of information and accessibility of meat and substitutes
	Economic factors - Information	How do you rate the healthiness of beef compared to meat substitutes?	Ordinal	Health comparison of beef and meat substitutes
Health and Nutrition	Health and Nutrition	Please answer the following questions about health:	Ordinal, Health Consciousness Scale (HCS) (Gould, 1990)	Health consciousness
Attitudes towards meat consumption, preferences for meat substitutes	Associations with meat and meat substitutes	Please describe your thoughts and feelings when you think of beef or related substitutes	Open-ended	Open-ended thoughts on beef and its substitutes
-	Demographics	What is your highest academic degree?	Ordinal	Highest academic degree
		Which gender do you identify with?	Ordinal	Gender identity
		How would you best describe your employment status in the last 12 months?	Ordinal	Employment status in the past 12 months

Appendix V - Meat attachment scale: reverse-coded and non-reverse-coded items

Environmental Concern Scale statement	coding
I love meals with meat	normal
To eat meat is one of the good pleasures in life	normal
I'm a big fan of meat	normal
A good steak is without comparison	normal
If I was forced to stop eating meat I would feel sad	normal
Meat is irreplaceable in my diet	normal
To eat meat is an unquestionable right of every person	normal
According to our position in the food chain, we have the right to eat meat	normal
Eating meat is a natural and indisputable practice	normal
I don't picture myself without eating meat regularly	normal
If I couldn't eat meat I would feel weak	normal
I would feel fine with a meatless diet (r)	Reverse-coded
By eating meat I'm reminded of the death and suffering of animals (r)	Reverse-coded
To eat meat is disrespectful towards life and the environment (r)	Reverse-coded
Meat reminds me of diseases (r)	Reverse-coded

Appendix VI – Open survey responses Glossary

Variable	Keyword	Description
Types of Meat	beef	Responses mentioning beef or beef products.
Types of Meat Substitutes	soy	Responses mentioning soya meat or substitutes.
	vegan	Responses related to veganism and preferences for meat substitutes.
	noalternative	Responses indicating meat substitutes are no alternative for meat.
Environment	envgood	Responses indicating substitutes are better for the environment.
	envbad	Responses discussing the environmental impact of meat substitutes.
Economic Factors	expensive	Responses mentioning the cost of meat substitutes.
	availabilitybad	Responses discussing the poor availability of meat substitutes.
	availabilitygood	Responses discussing the good availability of meat substitutes.
	animalbad	Responses indicating that meat consumption is bad for animals.
Sensory Qualities	nottasty	Responses indicating meat substitutes are not tasty.
	tasty	Responses indicating meat substitutes are tasty.
	texturegood	Responses describing the texture of meat substitutes as dry or hard.
	texturebad	Responses describing the texture of meat substitutes as good.
Health and Nutrition	healthy	Responses about the health benefits of meat substitutes.
	nohealthy	Responses about meat substitutes being not healthy.
Food Neophobia	foodneophobia	Fear or reluctance to try new foods, including meat substitutes.
General Sentiment	positive	Responses that are mentioned positively about meat substitutes.
	negative	Responses that are mentioned negatively about meat substitutes.
	openess	Responses discussing the openness to meat substitutes.
	versatility	Responses indicating that meat is versatile.
	notversatile	Responses indicating that meat substitutes are not versatile.
culture & tradition	culture	Responses mentioning cultural importance of meat consumption.
	tradition	Responses mentioning the tradition of meat consumption.
	luxury	Responses indicating that meat is seen as a luxury or part of fine dining.
	dining	Responses related to the overall dining experience with meat.
	family	Responses mentioning family or social gatherings involving meat consumption.

Appendix VII – Keyword Coding frequency percentage of total association comments per category

Keyword	Germany			
	meat	meat substitutes	meat	meat substitutes
Total associations responses	53.3%	19.6%	70.7%	5.0%
tasty	36.0%	6.9%	24.4%	0.0%
envbad	22.7%	0.0%	2.4%	0.0%
culture	20.7%	0.0%	7.3%	0.0%
beef	20.0%	0.0%	7.3%	0.0%
tradition	17.3%	4.9%	24.4%	5.0%
healthy	10.0%	9.8%	2.4%	10.0%
nohealthy	8.0%	0.0%	4.9%	0.0%
animalbad	8.0%	13.7%	34.2%	7.5%

positive	6.7%	0.0%	7.3%	0.0%
dining	6.7%	0.0%	12.2%	0.0%
luxury	4.7%	0.0%	4.9%	0.0%
family	4.0%	2.9%	0.0%	5.0%
negative	3.3%	0.0%	0.0%	5.0%
texture	2.7%	33.3%	0.0%	40.0%
nottasty	2.7%	0.0%	2.4%	0.0%
nutritional	2.7%	0.0%	0.0%	0.0%
versatile	2.0%	24.5%	2.4%	32.5%
envgood	1.3%	0.0%	0.0%	0.0%
availabilitygood	1.3%	11.8%	9.8%	15.0%
expensive	0.7%	0.0%	0.0%	0.0%
tender	0.0%	2.0%	0.0%	10.0%
availabilitybad	0.0%	2.9%	0.0%	2.5%
foodneophobia	0.0%	20.6%	0.0%	27.5%
noalternative	0.0%	2.9%	0.0%	0.0%
notversatile	0.0%	20.6%	0.0%	10.0%
openess	0.0%	1.0%	0.0%	20.0%
soy	0.0%	7.8%	0.0%	5.0%
texturebad	0.0%	1.0%	0.0%	5.0%
vegan	53.3%	19.6%	70.7%	5.0%