The Role of Gender Identity in Meat Substitutes Consumption: Exploring the Influence of Social Norms on Dietary Choices

Francesca Poli

Dissertation written under the supervision of Ana Isabel de Almeida Costa and Alberto Saccardi

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ABSTRACT

Global meat consumption poses environmental, public health, and animal welfare challenges, making the shift toward meat substitutes crucial. The traditional association of meat with masculinity hinders this transition, leading to higher meat consumption, stronger attachment to meat, and negative attitudes toward vegetarianism among males and those with strong traditional masculine identities.

This dissertation investigates the influence of gender identity on meat substitute consumption and evaluates the effectiveness of social norm-based messaging (in-group, dissociative, and aspirational) in encouraging these dietary shifts.

Quantitative methods are employed, collecting primary data through an online experimental survey from Italian individuals aged 18 to 67 of all genders. The survey investigates the relationship between gender identity and meat substitute consumption and evaluates the impact of social norm messages on consumption intentions, willingness to pay, and willingness to participate in an experiment (non-hypothetical consumption). Data analysis was conducted using IBM SPSS software.

Findings indicate significant relationships between gender identity and meat substitute consumption frequency, with females consistently consuming more than males. Masculinity was found to directly decrease the consumption of pulses and pulses products and indirectly reduce tofu and vegetable meat consumption, mediated by attitudes toward animal welfare, healthy diet, and environmental concerns. Femininity, on the other hand, directly increased the frequency of tofu, pulses, vegetable meat, and pulse products.

Unexpectedly, social norm messaging did not significantly influence any dependent variables for either gender, suggesting that food preferences are deeply ingrained, requiring alternative strategies to promote meat substitute adoption. Managerial implications and future research directions are discussed.

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Author: Francesca Poli

Keywords: gender identity, meat substitutes, social norms, behavioural interventions

SUMÁRIO

O consumo global de carne enfrenta desafios ambientais, de saúde pública e de bem-estar animal, destacando a necessidade de substitutos. A associação entre carne e masculinidade é uma barreira, resultando em maior consumo e atitudes negativas em relação ao vegetarianismo entre homens e indivíduos com alta masculinidade tradicional.

Este estudo investiga a influência da identidade de gênero no consumo de substitutos de carne e avalia a eficácia de mensagens baseadas em normas sociais (grupo interno, dissociativo e aspiracional) na promoção de mudanças dietéticas. Utilizou-se um questionário online com italianos entre 18 e 67 anos de todos os gêneros, examinando a relação entre identidade de gênero e consumo de substitutos de carne, além do impacto de mensagens sociais nas intenções de consumo, disposição para pagar e participação em experimentos.

Os resultados mostram que a identidade de gênero influencia significativamente a frequência de consumo de substitutos de carne, com mulheres consumindo mais que homens. A masculinidade reduz o consumo de leguminosas e produtos relacionados, e indiretamente o consumo de tofu e carne vegetal, mediado por atitudes em relação ao bem-estar animal, dieta saudável e preocupações ambientais. A feminilidade, por outro lado, aumenta o consumo de substitutos. Mensagens baseadas em normas sociais não influenciaram significativamente as variáveis dependentes, sugerindo que preferências alimentares são profundamente enraizadas, exigindo estratégias alternativas para promover a adoção de substitutos de carne. Implicações gerenciais e direções para pesquisas futuras são discutidas.

Título da dissertação: O Papel da Identidade de Gênero no Consumo de Substitutos de Carne: Explorando a Influência de Normas Sociais em Escolhas Alimentares

Autora: Francesca Poli

Palavras-chave: identidade de gênero, substitutos de carne, normais sociais, intervenções comportamentais

TABLE OF CONTENTS

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CHAPTER I: INTRODUCTION

1.1 Background & Problem Statement

In the past, meat was considered a luxury that could only be enjoyed by a few, while today it is a staple that can be found in nearly every restaurant and countless home kitchens worldwide. Both the global average per capita consumption of meat and the aggregate amount of meat consumed have been rising worldwide since the 20th century (Delgado et al., 2001) and throughout the 21st (OECD, 2022), driven by population growth and increasing average individual incomes (Godfray et al., 2018). Between 1961 and 2011, the world population rose from 3 to almost 7 billion (by 128%), while the global average meat consumption per capita increased by 75%, accounting for an almost quadrupled global meat consumption and production (Milford et al., 2019). On a global level, it seems that this trend will not be inverted shortly, since per capita consumption of meat is forecasted to continue to grow globally until 2031 (OECD, 2022). However, in Europe, overall meat consumption is forecasted to decrease, with some Western European countries, such as Switzerland and the UK, being at the forefront of this transition (Meat Trend in Europe, 2024).

Rising global meat consumption poses several threats and challenges to environmental sustainability, public health, and animal welfare. Meat is considered the food product with the greatest environmental impact, mainly due to livestock farming (Djekic & Tomasevic, 2016). Overall, the livestock sector is responsible for approximately 14.5% of global GHG emissions and 44% of the sector's emissions are in the form of methane, making livestock the single most important source of CH_4 (Gerber et al., 2013). The livestock sector also contributes to a variety of environmental impacts including land footprints, water footprints, several types of pollution (Lentz et al., 2018), environmental degradation, and loss of biodiversity (Mathur et al., 2021). Within the broad term of "livestock" differentations have to be made. Production and consumption of different kinds of meat contribute differently to the overall threat posed by meat to the environment. One of the methods to measure the environmental impact of meat is the life cycle assessment (LCA), an environmental tool used to assess the potential environmental impacts and consumption of resources through a meat's life cycle (Djekic & Tomasevic, 2016). The LCA has been used to estimate the environmental effects of different kinds of meat both from a consumption and from a production perspective (Djekic & Tomasevic, 2016). Focusing on meat consumption, several studies confirmed that meat products are the foods with the highest environmental impact (Bruno et al., 2019; Veeramani et al., 2017; Heard et al., 2019).

A study conducted in Denmark (Bruno et al., 2019) used LCA to estimate the carbon footprint of four diet scenarios (standard, carnivore, vegetarian, vegan) and found that carnivore diets emitted the most CO2 (1.83 t CO2eq/person/year), while vegetarian and vegan diets showed lower emissions (0.89 and 1.37 t CO2eq /person/year, respectively). These findings were reflected in a similar study by Veeramani et al. (2017) which confirmed that diets including beef meat showed the highest carbon footprint while vegetarian and vegan diets had the lowest carbon footprint. On the other hand, from a production perspective, data suggests that consuming white meat or red meat derived from pork and lamb has a lower environmental impact than the consumption of red meat coming from beef (González et al., 2020). Furthermore, meat overconsumption poses a threat to public health. Consumers in industrialized countries exceed the recommended nutritional amount of red and processed meat intake (Kwasny et al., 2022) and such overconsumption has been linked to obesity, heart disease, specific cancers, diabetes, and other non-communicable diseases (Lentz et al., 2018). Lastly, meat consumption raises animal welfare concerns. Europe is often considered to be the most advanced region in the world in terms of animal welfare legislation which concerns norms at the farm, during transport, and in slaughterhouses (European Court of Auditors, 2018). However, a significant portion of farm animals are raised in intense farming conditions, confined in cages and environments without outdoor access (Bonnet et al., 2020). For instance, more than half of hens in Europe are raised in cages (ITAVI, 2017). Additionally, painful practices within the industry, such as castration without anesthesia, dehorning, tail docking, teeth clipping, beak trimming, and slaughter without stunning are legal and widespread throughout European countries (Bonnet et al., 2020).

Considering these three aspects, the necessity to reduce meat consumption becomes evident, as scientific consensus points out that large-scale shifts in consumers' dietary patterns can achieve environmental benefits, improve consumers' health, and reduce the number of animals suffering (Graça et al., 2015). One way to foster this necessary dietary change is to promote the transition from eating meat to adopting meat substitutes. However, incentivizing a more climate-friendly, healthier, and ethically conscious dietary behaviour, centered around the substitution of meat with substitutes, is challenging. Meat consumption is deeply rooted in cultural practices, societal norms, and daily habits, being strongly influenced by a variety of factors such as taste preferences, knowledge, skills, food production, supply systems, social identity, and food environment (Stoll-Kleemann & Schmidt, 2017). In Western cultures specifically, meat consumption assumes a significant ideological and symbolic value that is

constructed in people's everyday lives, particularly concerning religious, communal, racial, national, class, and gender identity (Chiles & Fitzgerald, 2018).

Throughout Western history, meat consumption has been strongly associated with power, wealth, and masculinity (De Backer et al., 2020, Adams, 2015). The gendered aspect of meat consumption and its link to masculinity is of particular interest and relevance as its consequences are tangible to this day. They are reflected in individuals' behaviours and are deeply intertwined with perceptions and notions of gender (Rosenfeld & Tomiyama, 2021). Today, men consume more meat than women, and meat is strongly associated with masculinity by both genders (Rosenfeld & Tomiyama, 2021; Ruby & Heine, 2011). Moreover, meat consumption plays an identitarian role for many men who still believe that eating meat makes them stronger and more masculine, lowering their willingness to reduce their meat consumption (Love & Sulikowski, 2018). Overall, gender is the most significant predictor of willingness to reduce meat consumption, with higher willingness being observed in women compared to men (Tobler et al., 2011).

Gender differences in the relevance attributed to meat consumption are partially reflected by preferences for meat substitutes, with studies showing that women tend to have a higher preference for meat substitutes than men (De Boer et al., 2014; De Boer & Aiking, 2011). Furthermore, recent research has shifted away from the traditional gender binary and investigated the intricated relationship between meat consumption and the different nuances of masculinity and femininity, highlighting within-gender differences. A study by De Backer et al. (2020) found that men who identify more strongly with new forms of masculinity, that drift away from the traditional construction of masculinity based on the notions of power, virility, and strength, have a weaker attachment to meat. This translates into a tendency to reduce meat intake and a more positive attitude towards vegetarians compared to their counterparts. Similarly, Stanley et al. (2023) uncovered that men identifying as more masculine had a lower likelihood of reducing meat consumption or considering veganism. Lastly, Mesler et al. (2022) investigated within-gender differences in meat consumption and meat attachment through the concept of masculinity stress, conceptualized as an ongoing distress experienced from not living up to gender norms. Their study found a positive effect of masculinity stress on red meat consumption, attenuated when meat consumption was associated with women through a descriptive social norm communicating an increase in red meat consumption by women. This last finding poses an opportunity for future research to investigate the role of in-group and out-group descriptive social norms, together with their relationship with gender identity, in shifting consumption away from animal meat and towards meat substitutes.

An extensive body of research has explored the potential for social norms to shift consumers' behaviours in the context of food, namely regarding healthy food choices (Salmon et al., 2015), organic food consumption (Hilverda et al., 2018), food in general (Begho & Liu, 2023) and sustainably sourced food (Dowd & Burke, 2013). Meanwhile, an equally extensive body of research has investigated the use of social norms to incentivize sustainable behaviours, with successful examples being observed in the context of energy and water consumption (Dowd & Burke, 2013; Pellerano et al., 2017), sustainable recycling (Hopper et al., 1991), and participation in a hotel program to reuse towels, saving up on water and decreasing pollution from detergent use (Goldstein et al., 2008). However, the potential application of social norms to incentivize consumers to switch from animal meat consumption to meat substitute consumption, with a specific focus on gender identity and in-group and out-group references, remains unaddressed by current research.

1.2 Aim & Scope

This dissertation aims to investigate the role of gender identity on the consumption of meat substitutes, as well as the effectiveness of messages employing descriptive in-group and out-group social norms on intention to consume meat substitutes and willingness to pay for this type of food. The overarching aim is to advance the formulation of communication strategies that market meat substitutes. To achieve this goal, the following research questions are addressed:

RQ1: Does gender identity influence the consumption of meat substitutes?

RQ2 Does gender identity affect the response to messages including different types of social norms promoting the consumption of meat substitutes?

1.3 Research Methods

To address the aforementioned research questions, this dissertation adopted a deductive, applied research method based on the collection of primary quantitative data through an online survey, administered to respondents between 18 and 67 years old of all genders. The first part of the

survey investigated the relationship between gender and the frequency of consumption of meat substitutes. The relationship was studied through self-reporting in the online survey. The second part of the survey examined the effect of social norms, referring to different social groups, on respondents' intention to consume meat substitutes, their willingness to pay for them, and their willingness to participate in an experiment to evaluate meat substitutes. Data was collected through a Qualtrics online survey and analyzed with the statistical software IBM SPSS.

1.4 Relevance

Guiding consumers through the transition from eating meat regularly to adopting meat substitutes is hindered by several obstacles, among which is the strong link that persists in our society between meat consumption and masculinity. This disincentivizes some men to reduce meat consumption. The literature explores different actions to encourage the shift towards reduced meat consumption and indicates that tailored measures aimed at specific target groups are more effective than one-size-fits-all approaches since different target segments entail different barriers (Fantechi et al., 2024). Therefore, understanding consumer segments in the function of the relationship between gender and consumers' responses to different social norms on meat substitutes offers an important contribution for companies active in the meat substitute sector. By understanding how gender identity intersects with meat substitute consumption habits, and how gender identity affects consumers' response to social norms, the abovementioned companies can gain a deeper understanding of consumer segments and effectively target them with tailored marketing messages. Companies in the meat substitutes sector can optimize their marketing efforts, increase the frequency of meat substitutes consumption among current consumers, and unlock untapped market segments, driving business success. Furthermore, the relevance of the topic extends to all stakeholders who hold an interest in incentivizing the transition from meat consumption to the adoption of meat substitutes, namely environmentalists, public health officials, and policymakers. All interested stakeholders can gain insights into possible ways to communicate and incentivize the consumption of meat substitutes, contributing to the broader societal shift towards more sustainable, healthier, and more ethical food systems.

CHAPTER II: LITERATURE REVIEW

2.1 Global and Local Trends in Meat Consumption

The human population has grown dramatically in the last two centuries, going from 1 billion circa in 1800 to 8.1 billion at present, being expected to reach 8.5 billion by 2030 and 9.7 billion by 2050 (United Nations World Population Prospects, 2022). Such growth called for innovations in food production, preservation and storage, technology, transport, and the creation of a global food supply system which, as of today, is extremely complex and in continuous change and expansion to meet world population needs (Stubbs et al., 2018). In this rapidly changing food supply system, one food has been produced more intensively than ever before: meat.

Meat consumption has been rising steadily worldwide since the 20th century (Delgado et al., 2001b) and throughout the 21st (OECD, 2022), driven by increasing average individual incomes and population growth (Godfray et al., 2018). Growth rates of meat consumption vary across geographies, with high-income countries experiencing static or declining consumption, middle-income countries having a moderate to strong increase, and low-income countries reporting low and stable meat consumption (Godfray et al., 2018). Furthermore, studies show evolving trends in the type of meat eaten, with chicken and pork consumption largely increasing, together with the portion of processed meat (González et al., 2020). More precisely, pork has increased mainly in Southeast Asia while poultry meat consumption has increased in all world regions (González et al., 2020). Total meat consumption per capita reached 34.1 kg/year worldwide in the 2014-2016 period, with almost 60% of it corresponding to the consumption of red meat, i.e., beef and pork (González et al., 2020). This is widely recognized as the most problematic type of meat because of its negative impact on environmental degradation and human health. In Europe, overall meat consumption is forecasted to decrease (Meat Trend in Europe, 2024) and while the market shares of other types of meat are shrinking (Meat Trend in Europe, 2024), the consumption of poultry continues to grow. The decrease is guided by changes in consumer demand for meat, motivated by animal welfare, environmental concerns, personal health, and rising meat prices (Meat Trend in Europe, 2024).

Europeans are indeed adopting diets that either cut out meat altogether, such as pescatarianism, veganism, or vegetarianism, or reducing their meat intake, such as flexitarianism. Around 9% of people living in the EU-27 have adopted diets that cut out meat completely and 14% are eating meat less frequently (Meat Trend in Europe, 2024). Overall, nearly a quarter of all

Europeans are reportedly avoiding or lowering their consumption of meat, with some Western European countries, such as Switzerland and the UK, being at the forefront of this transition (Meat Trend in Europe, 2024). In the European context, Italy is among those countries with a slower pace of decrease in meat consumption. In fact, per capita meat consumption may even have increased in the last few years, going from 41.3kg in 2018 to 44.1kg in 2023 (Statista, 2023). This largely exceeds the annual per capita recommended meat consumption of a maximum of 19.2kg (FBDG, 2024). A variety of studies that estimate meat consumption point out that the ranking of meat types consumed in Italy is consistently led by pig meat, followed by poultry, cattle, and other types (Ferronato et al., 2021). According to the Food-Based Dietary Recommendations for Meat Consumption by the European Commission (FBDG, 2024), promoting health and disease prevention, Italians should reduce meat consumption overall, substitute red with white meat types, and avoid processed meat (FBDG, 2024). Despite recommendations, Italians resist the shift towards reduced meat consumption, with only 4.2% of the population being vegetarians (EURISPES, 2023), 2.4% vegans (EURISPES, 2023) and 10% flexitarians (Meat Trend in Europe, 2024).

2.2 Meat Substitutes: Market Developments, Consumption Drivers, and Barriers

2.2.1 What are Meat Substitutes?

Due to the increasing demand for more sustainable, healthier, and more ethical meals, food manufacturers have accelerated the development and marketing of meat substitutes. The term "Meat Substitute", also referred to as meat replacer, meat alternative, or meat analogue (Hoek et al., 2011), refers to a food that is like meat in structure, but significantly different in composition (Ahmad et al., 2022; Bakhsh et al., 2021). Substantially, meat substitutes are vegan or vegetarian replacements for meat products, designed to imitate the form, texture, flavor, and color of the meat without the necessity to moisten or cook them with components that contain meat (Ahmad et al., 2022). Major constituents of meat substitutes are soy proteins, myco proteins, cereal proteins, vegetables, and pulses (Bakhsh et al., 2021). In this dissertation, a comprehensive definition of meat substitutes is employed, encompassing the most prevalent meat substitutes in Italy. Due to the lack of official statistics and data, the identification of the most common meat substitutes in Italy was based on various articles addressing meat substitutes and vegan and vegetarian diets (Bio P.A., 2024; NutriDocIt, 2021; Hub, 2023, Vegolosi, 2021),

as well as product assortments of major supermarket chains (Carrefour, 2024; Esselunga, 2024; Conad, 2024; Eurospin, 2024; Lidl, 2024). Hence, the selected meat substitutes include tofu, tempeh, seitan, pulses, vegetable meat, and pulse-based products such as falafel.

2.2.2 Market and Consumers of Meat Substitutes

The origins of meat substitutes can be traced back to ancient Asian civilizations, while these products entered Western countries' markets during the 1960s (He et al., 2020). In recent years, meat substitutes have become increasingly common in the food market (Meat Trend in Europe, 2024). Today, they hold a significant presence in retail and the food service industry, with an estimated market in the EU-27 valued at around 1.96 billion U.S. dollars in 2023 and expected to reach 3.17 billion U.S. dollars in 2028 (Meat Trend in Europe, 2024). Italy is the fourth country in Europe in terms of sales of plant-based meat substitutes, showing an aggregate sales value of 168 million euros in 2022, a relatively low average annual per capita spending of 2.9 euros, and 15% of the population declaring that they regularly consume meat substitutes (Meat Trend in Europe, 2024). Italian meat substitute consumers tend to be young (38% millennials, 17% Gen Z), female (61%), highly educated (28% with a Master's degree), wealthy (37% with high annual household income), and living in cities and urban areas (69% living in medium-sized towns to cities with over 1 million inhabitants). Furthermore, consumers of meat substitutes tend to eat healthier and are more concerned with climate change than the rest of the population (Target Audience Meat Substitutes Consumers in Italy, 2024).

2.2.3 Meat Substitutes Consumption Determinants

A study by Giacalone et al. (2022) provides a summary of the determinants of consumer acceptance of meat substitutes, classifying them across product-related factors and person-related factors. The first component of product-related factors is the taste and sensory quality of meat substitutes (Giacalone et al., 2022; Onwezen et al., 2021), which includes the appearance, flavour, and texture of food. Sensory quality (either expected or experienced) is indeed consistently rated as the most important driver of individual food choices (Martins & Pliner, 2005), and the reduced sensory quality of meat substitutes represents a major barrier to their widespread adoption (Fiorentini et al., 2020). This insight is supported by several studies that recognized taste as highly relevant for the acceptance of alternative proteins, such as pulses (De Boer et al., 2013; Lea et al., 2005) and plant-based meat alternatives (Weinrich, 2018). Furthermore, research on willingness to adopt a nonmeat diet has highlighted that, among the

largest perceived barriers to switching diets, there is the enjoyment of meat, namely its distinct texture, taste, and smell which cannot be fully simulated by plant-based foods (Corrin et al., 2017, Pohjolainen et al., 2015). A second key product-related factor is represented by familiarity (Giacalone et al., 2022; Onwezen et al., 2021). Familiarity with plant-based products is consistently associated with higher acceptance (Hoek et al., 2011; Hoek et al., 2013; Bryant et al., 2019; Davitt et al., 2021) as current users of plant-based meat substitutes hold significantly better attitudes toward these products than non-users (Jaeger et al., 2021). A systematic review of consumer acceptance of alternative proteins by Onwezen et al. (2021), included other product-related factors, namely healthiness and environmental benefits. Healthiness was revealed to be highly relevant for the acceptance of all alternative proteins, but especially in the cases of pulses (Lea et al., 2005). Studies have indicated health consciousness as one of the key drivers that contribute to the acceptance and consumption of meat substitutes (Ahmad et al., 2022; De Boer et al., 2014; Lea et al., 2005; Circus & Robinson, 2019). For instance, a study by De Boer et al. (2014) found that following a healthy lifestyle is important in accepting snacks made from pulses, while Lea et al. (2005) indicated healthiness as highly relevant for the acceptance of pulses. Health and environmental concerns further prove to be among the main drivers of meat substitute consumption in the context of meat reduction interventions since interventions based on health (Lemken et al., 2017) and environmental (Warne et al., 2019) benefits have shown to support the acceptance of pulses. These findings are aligned with data on meat substitute consumers in Italy, indicating that, in comparison with all respondents, meat substitute consumers care more about a healthy diet and are more concerned with climate change (Target Audience Meat Substitutes Consumers in Italy, 2024). Lastly, Giacalone et al., (2022) expanded on the list of product-related attributes by adding credence attributes, such as the perceived "naturalness" and "healthiness" of plant-based alternatives, and search attributes such as price, labeling, and information barriers that prevent consumers from obtaining knowledge on plant-based products and their benefits (Pohjolainen et al., 2015).

On the other hand, differences in consumer acceptance of meat substitutes are underlined by person-related factors. First, sociodemographic factors play a role since greater income, higher educational levels, younger age, and more liberal and progressive views are consistently associated with higher acceptance (Onwezen et al., 2021, Hoek et al., 2013; Bryant et al., 2019). As for gender, studies have shown that plant-based alternative proteins are more accepted by females (Gomez-Luciano et al., 2019; Melendrez-Ruiz et al., 2019). Another significant person-related factor is attitudes towards meat substitutes. Attitudes are consistently shown to be

relevant in explaining intentions to consume meat substitutes such as pulses (Lemken et al., 2017) and plant-based meat alternatives (Hoek et al., 2011). Differences in attitudes exist based on, among other factors, familiarity since heavy users of meat substitutes tend to have more positive attitudes toward them (Hoek et al., 2011). Lastly, food neophobia, disgust, and related feelings affect consumers' acceptance of meat substitutes (Bryant et al., 2019; Hoeak et al., 2011; Onwezen et al., 2021). The systematic review by Onwezen et al., (2021) also emphasizes the importance of external factors. Among them, the most relevant for meat substitute consumption is the social environment. Social norms provide information on appropriate behavior and have the potential to drive one's behavior. Therefore, they appear to be a relevant factor in explaining consumer acceptance of a range of alternative proteins such as pulses and seaweed (Onwezen, et al., 2019), especially for those who do not regularly consume those particular products (Vainio et al., 2016).

Overall consumer acceptance of meat substitutes remains a challenge to tackle. A study conducted by Slade (2018) on a randomized stratified (age, gender, region, and education) sample of n = 533 Canadians, concluded that, if prices and tastes were equal, 65% of consumers would still purchase a beef burger, and only 21% a plant-based one. This indicates that most consumers remain unwilling to transition from meat consumption to meat substitutes, highlighting the significant barriers that still need to be addressed.

2.3 The Social Value of Meat Consumption: The Meat-Male Link

The substitution of meat with its alternatives is hindered by the symbolically charged value of meat in Western society. Meat consumption has played a fundamental role in human societies over time, to the extent that meat consumption is often considered natural, normal, necessary, and, therefore, justified (Joy, 2011). Biophysical explanations of meat consumption recognize meat as a fundamental element of human nutrition that is taken for granted and not problematized (Peñaloza, 2000). On the contrary, research by Chiles & Fitzgerald (2018) highlights that discourses on the naturalism of meat are narrow-minded and that meat demand cannot be exclusively justified by economic, nutritional and environmental utility. Rather, meat consumption is intrinsically tied to rituals, habits, traditions, and desires, and it carries a significant ideological and symbolic value, particularly tied to religious, communal, racial, national, class, and gender identity. Meat has indeed been instrumentalized to serve important social purposes, such as to demonstrate cultural status and superiority, and it has been strongly

associated with power, wealth, and masculinity throughout Western history (De Backer et al., 2020, Adams, 2015). The link between meat and masculinity is of relevance and interest since it has tangible consequences on meat consumption patterns and behaviours today.

The meat-masculinity link is extensively conceptualized by ecofeminist theory, as described in Adam's seminal work "The Sexual Politics of Meat: a Feminist-Vegetarian Critical Theory" (Adams, 2015), which delves into the intersection of feminism, vegetarianism, and cultural symbolism surrounding meat consumption. Adams argues that the subordination of women and the subordination of animals in society are meaningfully linked. According to the author, both women and animals undergo a process of objectification, fragmentation, and consumption which turns them into use products for men. Women's lower status in society is justified by viewing them as less mature and rational than men, reducing them to their reproductive functions, and making them an object for consumption, similarly to how animals are objectified by being reduced to their function as meat for human consumption. Adam's work highlights the use of meat as a symbol of male dominance which is perpetuated through advertising, literature, and popular culture: "Real" men don't eat quiche. It is not only an issue of privilege, it is an issue of symbolism. Manhood is constructed in our culture, in part, by access to meat and control of other bodies".

Today, the idea conceptualized by Adams (2015) that "real men eat meat" is still widespread, especially in Western societies (De Backer et al., 2020). Research by Rozin et al. (2012) highlighted the reflection of the meat masculinity link in the use of language. In 20 gendered languages, meat-related words were assigned male gender in 66% of cases and respondents more quickly paired meat-related words with male names and vegetable-related words with female names. Speaking of data, men and women differ in their attitudes and habits related to meat and plant product consumption, with global statistics showing that men consistently consume more meat than women (FAO, 2023) across time, and cultures (Salmen & Dhont, 2023), and phases of life (Ritzel & Mann, 2021). Men today, more than women, still believe that eating meat is natural for human beings and agree that meat consumption makes them "feel like real men" (Rothgerber, 2013). Furthermore, men and women significantly differ in their level of meat attachment (Graça et al., 2015). Meat attachment refers to a positive relation with meat consumption and it is strongly related to consumption habits: people with high meat attachment tend to eat meat more often, hold more positive attitudes towards meat, perceive more social pressure to eat meat, and endorse values of human dominance over animals (Graça et al., 2015). Consequently, high meat attachment is related to an unwillingness to reduce meat

consumption and follow a plant-based diet (Graça et al., 2015). Men generally also score higher than women in all four dimensions of meat attachment (hedonism, affinity, entitlement, dependence) (Graça et al., 2015).

In research by Graça et al. (2015), the affinity factor towards meat consumption was measured in opposition to feelings of repulsion (i.e. "By eating meat I'm reminded of the death and suffering of animals", "I feel bad when eating meat"): men were less likely than women to relate meat to its animal origin and less likely to reflect on such origins (Kubberød et al., 2002a). Men also reported a higher enjoyment of meat compared to women (hedonic factor), a higher dependency on eating meat and considering it an irreplaceable component of their diet (dependence factor), and a higher likelihood to believe that eating meat is a natural, unquestionable right of humans, acquired as a virtue of their position in the food chain (entitlement factor). These findings are aligned with research by Rothgerber, (2013) on the justification of meat consumption: men rely on more direct strategies to justify meat consumption such as hierarchical fate, denying animal suffering, and pro-meat justification while women, on the other hand, adopt more indirect justification strategies such as dissociating and avoiding thinking about the treatment of animals (Rothgerber, 2013). Similarly, gender differences emerge in the tendency to view vegetarianism from an ethical perspective. A study by Kalof et al. (1999) found that women were more likely than men to believe that a vegetarian diet is less harmful to the environment and helps prevent animal cruelty, while Beardsworth et al. (2002) observed that women reported less support for using animals for food, greater support for producing food in a way that minimizes animal suffering and greater tendency to purchase environmentally friendly products. In summary, significant gender differences exist in meat attachment, justification of meat consumption, and subsequent ethical approaches, and such gender differences are reflected in consumption habits and attitudes towards meat and meat reduction.

Gender differences in food preferences are developed and observed early in childhood (Modlinska et al., 2020). Studies show that girls tend to prefer fruit and vegetables (Reynolds et al., 1999) more than boys, while boys eat more meat, fish, and poultry foods compared to girls (Caine & Scheule, 2009). Rather than mere food preferences, these differences may reflect different attitudes toward girls' and boys' upbringing when a link between meat and masculinity exists (Modlinska et al., 2020a). On the contrary, some studies have advanced hypotheses that resemble biophysical explanations of meat consumption, highlighting biological factors that might explain differences in meat consumption between men and women. For instance, Fessler (2002) argues that women's immune defences might be lowered during pregnancy and the luteal

phases of the menstrual cycle, making them more vulnerable to pathogen risks and causing them to consume less meat, which poses more of a pathogen risk than plants. Despite this theory, women's meat consumption is sometimes socially regulated which limits pregnant women's consumption of certain foods, making it virtually impossible to attribute women's choice of consuming less meat to exclusive biological reasons (Çınar, 2024). Furthermore, Çınar (2024), in her Ph.D. thesis studying twins and siblings of twins, found that genetic factors play a role in shaping individuals' preferences for consuming meat during childhood and that genes underpinning meat consumption vary between the sexes. Partially aligned with these findings, research by Ritzel & Mann (2021) revealed that gender differences in meat consumption, to a certain extent, move in parallel with the development of biological differences between the sexes.

However, biological explanations of meat consumption only tell half of the story, exclusively focusing on a binary distinction between the sexes and failing to consider the different nuances of gender identity. Studies that consider the interplay of gender identity and masculinities in meat consumption have confirmed the necessity to move beyond the boundaries of biological explanations and differences between binary sexes. These studies have shown that what truly matters in meat consumption is not the mere fact of being a man, but rather, one's gender identity and level of masculinity, together with the extent to which one's gender identity resembles traditional gender roles (De Backer et al., 2020b; Mesler et al., 2022b; Mycek, 2018; Nakagawa & Hart, 2019; Rothgerber, 2013; Stanley et al., 2023; Sumpter, 2015). Therefore, discourse on gender roles and gender identity is key to understanding the link between meat and masculinity.

2.3.1 Gender Roles: An Obstacle For Meat Consumption Reduction In Men

Gender roles are a set of beliefs and understandings regarding appropriate emotions and behaviours of men and women, which set expectations as to what masculinity and femininity are, inferring what men and women are and are not supposed to do or feel (Anselmi & Law, 1998). Therefore, masculinity and femininity are largely social constructs rather than biological phenomena, which are manifested through social displays (Ruby & Heine, 2011a). In Western culture, for instance, boys are taught to express independence, self-assertion, and dominance while girls are expected to be caring, kind, and focused on others (Korlat et al., 2022). Not conforming to these roles has social and personal consequences. Pleck (1995) elaborated on the

concept of discrepancy strain to suggest that stereotypical gender roles exist, and individuals try to conform to them because "not conforming to these standards has negative consequences for self-esteem and other outcomes reflecting psychological well-being because of negative social feedback as well as internalized negative self-judgments". Therefore, individuals in society tend to conform to the gender role that is expected of them to avoid social condemnation and negative evaluations.

Speaking in binary terms, if individuals manage to adhere to the gender role that is expected of them, they can achieve manhood or womanhood. Still, how this status can be achieved, and the stability of such status, varies greatly between men and women. Vandello & Bosson (2013) argue that while womanhood is considered natural, permanent, and biological, manhood is characterized by a precarious state and needs to be earned and constantly maintained through publicly verifiable actions and social achievements. Consequently, men will take measures to demonstrate manhood (i.e. eating meat, especially red meat) while simultaneously avoiding situations that undermine their manhood status (i.e. consuming "feminine" foods or adopting a vegetarian or vegan diet). This tendency is expressed in food consumption choices as Sobal (2005) observes that "men and women "do gender" by consuming gender-appropriate foods.

Meat, and especially red meat, is an archetypical masculine food. Men often emphasize meat, and women often minimize meat, in displaying gender as individuals". Timeo & Suitner (2018), in their research on the link between meat consumption and gender role norms, carried out among Italian men, found that those who perceived vegetarianism as feminine preferred meat-based dishes for themselves and expected their female partners to choose meatless dishes. In a study by White & Dahl (2006), men were less likely to choose and report a more negative evaluation of a steak when it was associated with women, and the effect was more pronounced when consumption was happening in a public rather than private space, perfectly aligned with the concept of discrepancy strain elaborated by Pleck (1995). Furthermore, Rozin et al. (2012) found that individuals (both men and women) eating a beef diet were judged to be significantly more masculine than those eating a vegetable or fish diet. The attribution of masculinity to meat eaters and the recognition of a decreased masculinity to non-meat eaters is confirmed in several studies: Thomas (2016) found that vegan men tend to be perceived as less masculine than omnivore men, while Ruby & Heine (2011a) observed that the same association holds for vegetarian men. Lastly, a study by Timeo & Suitner (2018) confirmed Ruby and Heine's findings, observing that females perceive vegetarian men as less masculine and, therefore, less attractive. This provides an example of negative social consequences that men incur when deciding to adopt a meatless diet. Further negative social consequences have been pointed out

by Torti (2017) in a study based on individual and group interviews, which highlighted that vegetarian men are often teased and mocked as their sexuality and masculinity are called into question. Men's tendency to avoid "feminine" food consumption behaviours is reflected also in the data: across Western societies, women are twice as likely as men to be vegan or vegetarian (Modlinska et al., 2020). In Italy, in 2023, the share of vegetarian individuals was 2.6% among men and 5.9% among female respondents (EURISPES, 2023), and, in 2024, 61% of meat substitute consumers are female (Target Audience Meat Substitutes Consumers in Italy, 2024). However, a study by Thomas (2016) has reported no difference in masculinity evaluations of vegetarian and omnivorous men, suggesting that attitudes towards meat-eating and masculinity might be shifting. Research on the interplay between gender identity and masculinity indicates that emerging forms of different masculinity, which dissociate themselves from traditional masculinity, are establishing a new relationship with meat consumption and an increased openness towards vegetarian options (De Backer et al., 2020).

2.3.2 The Interplay of Gender Identity, Masculinities, and Meat Consumption

Gender identity can be conceptualized as one's self-identification as male, female, a combination of both, or neither (Wood & Eagly, 2010). Two main approaches to gender identity have been taken by psychology whereby the former one is based on masculine/feminine personality traits (agency/communion), while, the latter, is based on one's self-categorization along a female-male continuum, together with the importance of this categorization for one's self-definition (Wood & Eagly, 2015). Additionally, social identity theory defines gender identity as a function of gender roles, highlighting their intricated nature, conceptualizing it as a form of one's identity deeply rooted in masculinity and femininity roles, widely displayed and accepted in society (Tajfel & Turner, 2004). According to current gender theory, one's gender is not predetermined but it is constructed in interaction, whereby gendered behaviour is an interaction of both structural forces and conscious choices of individuals (Sumpter, 2015).
Gender identity plays an important role in consumer behaviour because it has been significantly linked to several consumer variables, such as leisure activities and shopping behaviours. Additionally, consumer brand consumption is congruent with consumer gender-image as the gender-self can generate gender-congruent effects on brand loyalty (Ye & Robertson, 2012). Put simply, when consumers have a certain gender identity, they prefer brands that match that identity: if, for instance, someone strongly identifies as a woman, they might feel more loyalty

towards brands that they perceive as more feminine. As previously conceptualized, food consumption is no exception: consumers express their gender identity through food consumption, and dietary practices and food habits themselves can be classified along a masculinity-femininity continuum (Sobal, 2005), in a context in which masculinity, more than femininity, needs to be constantly proven and exercised (Vandello & Bosson, 2013).

Literature on the interplay between gender identity and meat consumption has emphasized that what truly matters for meat consumption is not whether the consumer is, biologically speaking, a man or a woman, but rather their masculinity and femininity, together with the extent to which different forms of masculinity and femininity resemble traditional gender roles. For instance, in the previously mentioned study on meat consumption justification by Rothgerber (2013), carried out with US undergraduate students (45 women, 44 men), the interplay between masculinity and meat-eating justification (MEJ) was studied. In the study, participants' masculinity was considered through traditional masculinity lenses and it was assessed based on three scales: status norm ("Success in his work has to be a man's central goal in life"), toughness ("When a man is feeling a little pain he should try not to let it show very much"), and antifemininity ("it bothers me when a man does something that I consider feminine"). The study found that masculinity was positively correlated with beef, chicken, and pork consumption, and negatively correlated with the consumption of vegetarian meals. Furthermore, masculinity was significantly related to "male-oriented" MEJ strategies: pro-meat, denial of animal suffering, hierarchical, religious, health justifications, and human destiny/fate justification, and negatively related to female-oriented strategies such as dissociation and avoidance. Most importantly, when controlling for masculinity, gender alone had little influence on justifying meat consumption, confirming that meat justification depends on one's sense of masculinity, in this case, defined through the lenses of traditional masculinity, rather their gender alone.

Several studies further show the link between meat consumption and adherence to traditional masculinity roles. In a study on gender differences and openness to vegetarianism (Rosenfeld & Tomiyama, 2021), gender conformity to traditional gender roles predicted more frequent consumption of beef and chicken and lower openness to vegetarianism among men, while the effect did not hold for women. Moreover, men who showed a lower traditional gender role conformity were more open to becoming vegetarians for environmental reasons, proving that the meat-masculinity link intensifies when masculinity resembles traditional gender roles. The link between low identification with traditional gender roles and vegetarianism was further investigated in a study by De Backer et al. (2020), which confirmed that men who do not identify with traditional forms of masculinity had more positive attitudes towards vegetarians,

reported weaker meat attachment, had a stronger tendency to reduce their meat intake, and generally consumed less meat. Similarly, Stanley et al. (2023) conducted a study that related self-rated gender typicality with meat consumption in Australian men and women. They found that men who identified as more masculine were less likely to reduce meat consumption or consider veganism, while being more likely to believe that eating meat was normal.

Overall, the literature consistently highlights that meat consumption is intricately linked to one's sense of masculinity, as defined by adherence to traditional masculinity roles, rather than one's biological sex alone. Furthermore, recent research highlights the precarious nature of masculinity and relates it to meat consumption. Two interesting studies by Nakagawa & Hart (2019) showed that men who were subjected to a masculinity threat, compared to men in a control (non-threatening) condition, expressed higher meat attachment and lower willingness to consider becoming a vegetarian or vegan in the future. Similarly, Mesler et al. (2022) found that when men's masculinity was affirmed, they chose to eat less red meat out of a cafeteria menu, while men who did not receive the masculinity affirmation were significantly more likely to choose red meat. This study analysed further the relationship between masculinity and meat consumption through the concept of masculinity stress, defined as an ongoing stress experienced from not living up to gender norms. Men high in masculinity stress consumed more red meat because red meat consumption was seen as a way to augment one's masculinity. Furthermore, Mesler et al. (2022) carried out a study on both men and women in which meat consumption was associated with an in-group (men for men and women for women) and an out-group (women for men and men for women), through a descriptive social norm ("… it seems that humble steak has a new biggest fan: men/women"). The study found that men had a lower willingness to pay for meat when meat consumption was associated with an out-group and men's willingness to pay was even lower when they were experiencing high masculinity stress. Hence, this study suggests that meat consumption becomes less attractive for men when it is associated with women or another out-group because men no longer perceive meat as a possible mean to enhance masculinity. This suggests that men are sensitive to reference group information when evaluating meat, a finding also highlighted in work by White & Dahl (2006). Therefore, interventions that highlight shifting social norms among men, away from meat consumption or away from traditional masculinity, could be implemented to reduce meat consumption in men and incentivize them to pursue a plant-based diet.

Considering all the aforementioned studies, it is also interesting to notice how men who reduce their meat intake reconcile their choice with their masculinity. Vegan men tend to frame their choices as driven by rational conclusions and expert research. By doing so, they masculinize a

perceived feminine practice rather than accepting a feminized identity, they "redo" gender rather than "undoing" it by telling themselves that they are still adhering to fundamental masculinity principles (Mycek, 2018). In light of these justifications, one possible route to convince men to reduce their meat intake and adopt more plant-based diets, including the integration of meat substitutes, could be to promote meatless diets in ways that are compatible with masculine norms (Rothgerber, 2013). For instance, the 2018 Netflix documentary "Game Changers" follows plant-based athletes who embody traditional masculine stereotypes of strength and athleticism, in contrast with the derogatory image that portrays vegan men as effeminate and physically weak (Salmen & Dhont, 2023). Therefore, promoting meatless diets through masculine role models and as a function of stereotypically manly traits such as determination, discipline, and rationality could pave the way to more plant-based diets.

Meanwhile, research on how the interactions between gender identity, gender roles, masculinity, and meat consumption play out for women yields contradictory results. Rosenfeld & Tomiyama (2021) observed that while traditional gender roles conformity predicted more frequent meat consumption and less frequent vegetarianism for men, the effect did not hold for women. Morevove, Rothgerber (2013) found that meat consumption justification for women depended on their level of masculinity. A study byStanley et al. (2023), however, found evidence that both men and women who had higher self-reported gender typicality viewed meat as more natural, necessary, and nice, that is, that women's femininity and men's masculinity were associated with meat-related attitudes much in the same way. This suggests that adhering to one's traditional gender role as well as the traditional expression of one's respective gender might play a role in meat consumption. Two studies by Nakagawa & Hart (2019) investigating the impact on respondents of threatening their gender also produced conflicting findings. The first study did not find any difference in meat attachment between the femininity-threatened group of women and the control group, while the second study reported that women whose femininity was threatened expressed an increased attachment to meat. These findings suggest that meat consumption might be a tool to express and reinforce one's gender for both men and women who identify with traditional masculinity and femininity roles. Contradictory findings regarding women and meat consumption highlight the need for more targeted and nuanced investigation in this area.

2.4 Social Norms Interventions Towards Meatless Diets

In the context of the complex relationship between masculinity and meat consumption, and given the precarious state of manhood as well as the need for men to constantly affirm and exercise masculinity in a gender-congruent way, social norms might be effective in promoting meat reduction and the shift towards the consumption of meat substitutes.

Social norms are beliefs about what is socially appropriate and approved of in a specific context and they can have a powerful influence on sustainable consumer behaviour (Cialdini et al., 2006; White et al., 2019). Social norms predict sustainable behaviours such as avoiding littering (Cialdini et al., 1990), composting and recycling (Oskamp et al. 1991; White et al., 2013), conserving energy (Schultz et al. 2007), selecting eco-friendly transportation (Harland et al., 1999), choosing green hotels (Teng et al., 2015), opting for solar panels (Bollinger et al., 2012), and participating in a hotel program to reuse towels, saving up on water and decreasing pollution from detergent use (Goldstein et al., 2008). The use of social norms to incentivize specific food behaviours has been applied to choices of healthy food (Salmon et al, 2015), organic product (Hilverda et al, 2018), food in general (Begho & Liu, 2023), choosing sustainably sourced food (Dowd & Burke, 2013), and willingness to eat insect-based proteins (Berger & Wyss, 2020).

Research on the use of social norms to change meat and meat substitute consumption in particular has yielded few but significant contributions. For instance, Sparkman et al. (2020) used dynamic and static message norms to incentivize meat reduction. In the study, static norms refer to those that explain the current state of behaviour, such as the percentage of people currently having a vegetarian diet, while dynamic norms describe a changing behaviour against the current norm, such as the percentage of people who have recently become vegetarians (Sparkman et al., 2020). This study found that participants – café patrons waiting in line to order a meal – in the dynamic norm had higher intent to reduce meat consumption than those in the the static norm group. Namely, customers were more likely to order a meatless dish when exposed to the dynamic norm message rather than the static norm message. Most importantly, Fantechi et al. (2024) employed an extension of the Theory of Planned Behaviour in the food context to explain the antecedents of the intention to reduce meat consumption, from a gender perspective. The study found that social pressure in the context of meat consumption is represented by a single construct: subjective norm. Traditionally, social norms theories have differentiated between descriptive and injunctive norms, whereby the former refers to what other people are doing or commonly do (Cialdini et al., 1990), while the latter conveys behaviours other people approve or disapprove of (Cialdini et al., 1990). The concept of

subjective norm in the study by Fantechi et al. (2024) comprises both descriptive and injunctive norms, meaning that for meat consumption the individual's perception of what relevant others expect from them (injunctive norm) coincides with the perception of what relevant others actually do (descriptive norm). Subjective norm was found to predict intention to reduce meat in both men and women (Fantechi et al., 2024), suggesting that social norms interventions might be effective in determining people's intention to reduce their meat intake and might translate into actual dietary behaviour change.

Social norms might be particularly effective in promoting a shift from the consumption of meat to that of meat substitutes because of the unfamiliarity of the latter. People especially tend to look to the expectations and behaviours of others in uncertain situations (Cialdini, 2008), and research shows that unfamiliar behaviours are more likely to be influenced by norms than familiar behaviours (White et al., 2019). Meanwhile, unfamiliarity with meat substitutes was identified as one of the key barriers for non-users and light/medium users (Hoek et al., 2011). Signalling that other consumers are becoming acquainted with meat substitutes might overcome the product's unfamiliarity and incentivize people to buy them.

Discourse on social norms intervention would be incomplete without addressing the social identity component (White et al., 2019). A relevant portion of individuals' social identity stems from group membership (Tajfel and Turner, 1986) and consequences are tangible. For instance, consumers are more likely to engage in sustainable actions if their ingroup members are doing so (Goldstein et al., 2008). Additionally, one of the implications of social identity is that individuals tend to view their ingroup positively and have more negative evaluations of outgroups, which is particularly true for dissociative groups (Rabinovich et al., 2012). Reference group literature distinguishes between three types of reference groups: membership, aspirational, and dissociative groups. Membership reference groups encompass those the individual identifies with, belongs to, or feels psychologically involved with, such as family groups, peer groups, or one's gender group (Turner, 1991). Aspirational reference groups, similarly, positive, are groups the individual aspires to join, like celebrities or desired social groups (White & Dahl, 2006). Conversely, dissociative reference groups have negative connotations and include those groups the individual does not want to be associated with, and actively dissociates from (White & Dahl, 2006; Turner, 1991). Dissociative reference groups are not merely an out-group. Rather, they represent groups the individual is strongly motivated to avoid being associated with (White & Dahl, 2006). Research consistently demonstrates that membership reference groups can influence people's intentions, attitudes and behaviours related, for instance, to exercise intentions (Terry & Hogg, 1996), evaluations of products and

advertisements (Whittler & Spira, 2002), reports of information seeking and purchasing decisions (Moschis, 1976), as well as brand usage (Childers, 1992). Aspirational reference groups, such as celebrities or athletes, have also been proven to affect consumer preferences (Erdogan et al., 2001; Batra & Homer, 2004) and purchasing intentions (Madrigal, 2000), especially when individuals identify with the aspirational groups (Madrigal, 2000). Lastly, research by White & Dahl (2006) investigated the effects of dissociative reference groups, showing their effectiveness in influencing consumer preferences, especially when the product is publicly rather than privately consumed. The latter was carried out in the specific context of meat consumption and showed that men were less likely to choose a steak when its consumption was associated with an out-group, namely women, by calling the product "lady's cut". A similar result was found in the previously mentioned study by Mesler et al. (2022), whereby men's willingness to pay for meat decreased when meat was associated with an outgroup (i.e. women) while the same effect did not hold for women, suggesting that men, more than women, are sensitive to reference group information when evaluating meat. Unsurprisingly, men tended to avoid consumption when consumption is associated with women because it might undermine their precarious manhood, which is "hard won and easily lost" (Vandello & Bosson, 2013). Hence, according to extant literature, social norms associated with specific reference groups show potential to influence men's evaluations of meat and its substitutes.

2.5 Conclusions and Research Hypothesis

Excessive meat consumption has tangible negative consequences for the environment (Djekic & Tomasevic, 2016; Lentz et al., 2018; Mathur et al., 2021), human health (Kwasny et al., 2022; Lentz et al., 2018), and animal welfare (Scherer et al., 2019). Global trends are showing an increase in meat consumption worldwide (OECD, 2022), while, in Europe, meat consumption appears to have already reached its peak, being forecasted to decline in the future (Meat Trend in Europe, 2024). Italy represents an exception to the European trend, nonetheless, as per capita meat consumption in this country is well above the recommended (FBDG, 2024), being even expected to increase in the upcoming years (Statista, 2023). Consequently, it is crucial to incentivize consumers to reduce their meat intake or embrace an overall meatless diet. Meat substitutes can provide a tool for this transition, but their widely spread adoption is still hindered by several barriers including the enjoyment of meat (Corrin et al., 2017, Pohjolainen et al., 2015, Elzerman et al. 2013), the belief that a meatless diet is nutritionally unbalanced (Corrin

et al., 2017), well-established eating habits (Corrin et al., 2017, Pohjolainen et al., 2015), information (Elzerman et al., 2013b) and social barriers (Pohjolainen et al., 2015), convenience in preparing meatless dishes (Lea et al., 2006), food neophobia (He et al., 2020; Hoek et al., 2011), unfamiliarity (Elzerman et al., 2013), negative attitudes and beliefs towards meat substitutes (Elzerman et al., 2013).

When crafting tactics to encourage consumers to shift from the consumption of meat to that of eat substitutes, it is essential to consider the role of gender and gender identity on meat consumption, particularly considering the widely discussed meat-masculinity link (De Backer et al., 2020; Adams, 2015; Rozin et al., 2012; Joy, 2011; Rosenfeld et al., 2021; Ruby et al., 2011; Stanley et al., 2023; Modlinska et al., 2020; Graca et al., 2015). Data indicates clear disparities in the meat consumption patterns between men and women (FAO, 2023), which are reflected by the date on the prevalence of vegetarians, vegans, and meat substitute consumers. Men consume significantly more meat than women across time, cultures (Salmen et al., 2023), and stages of life (Ritzel et al., 2021). Conversely, women represent a larger portion of vegetarian, vegan, and meat substitute consumers compared to men (Meat Trend in Europe, 2024). This trend persists in the Italian market, where statistics from 2023 indicate that the proportion of vegetarian individuals is 2.6% among men and 5.9% among female respondents. Additionally, in 2024, 61% of meat substitute consumers are female (Target Audience Meat Substitutes Consumers in Italy, 2024).

Furthermore, men tend to have a higher level of meat attachment (Graça et al., 2019; Kubberød et al., 2002b; Rothgerber, 2013), and to engage in direct strategies to justify meat consumption such as hierarchical fate, denying animal suffering, and pro-meat justifications (Kubberød et al., 2002; Rothgerber, 2013). Higher meat attachment translates into men having a lower willingness to become vegetarian (Rosenfeld & Tomiyama, 2021) and adopt plant-based options (Graça, Calheiros, et al., 2015). While some biological justifications between the sexes have been advanced to explain this disparity (Fessler, 2002; Çınar, 2024; Ritzel, 2021), they do not explain differences in meat consumption accounted for by diverse levels of masculinity and femininity, namely gender identity, which impact meat consumption regardless of biological sex (De Backer et al., 2020; Modlinska et al., 2020; Rosenfeld & Tomiyama, 2021; Rothgerber, 2013; Ruby & Heine, 2011; Stanley et al., 2023).

Gender identity is indeed key to understanding the meat-masculinity link and its impact on meat attachment and meat consumption, consequently, its role has been extensively investigated (De Backer et al., 2020; Modlinska et al., 2020; Rosenfeld & Tomiyama, 2021; Rothgerber, 2013; Ruby & Heine, 2011; Stanley et al., 2023). Indeed, a high level of masculinity was found to be

positively correlated with meat consumption and negatively correlated with vegetarian diets, being likewise, associated with male-oriented meat justification strategies regardless of whether individuals are men or women (Rothgerber, 2013). Furthermore, men who identify more strongly with traditional forms of masculinity reported more frequent meat consumption (Rosenfeld & Tomiyama, 2021), lower openness to vegetarianism (Rosenfeld & Tomiyama, 2021) and veganism (Stanley et al., 2023), lower likelihood to reduce meat consumption (Stanley et al., 2023), and higher tendency to believe that meat is normal (Stanley et al., 2023). Conversely, men who identify less strongly with traditional forms of masculinity were more open to becoming vegetarians for environmental reasons (Rosenfeld & Tomiyama, 2021), had more positive attitudes towards vegetarians (De Backer et al., 2020), reported weaker meat attachment (De Backer et al., 2020), had a stronger tendency to reduce their meat intake (De Backer et al., 2020), and generally consumed less meat (De Backer et al., 2020).

On the other, research on meat consumption and gender identity among women remains and yields contradictory results (Rothgerber, 2013; Stanleyet al., 2023; Nakagawa & Hart, 2019; Rosenfeld & Tomiyama, 2021). Rothgerber (2013) found that meat consumption justification for women depended on their level of masculinity. Still, Stanleyet al. (2023) found some evidence that women's view of meat depends on their femininity: women with higher gender typicality are more likely to see meat as natural, necessary and nice. Similarly, Nakagawa & Hart (2019) found contradictory results on how threatened femininity translated into higher or lower meat attachment, while Rosenfeld & Tomiyama (2021) found no significant effect of high gender typicality on the frequency of meat consumption for women. In sum, there seems to be a connection between gender identity and meat, and meatless, consumption behaviours. While research points out a direct relationship between men, traditional masculinity, and meat consumption, the direction of this relationship for women and femininity remains an open question needing further inquiry.

The goal of this dissertation is to explore the translation, or lack thereof, of the meat-masculinity link into meat substitute consumption, examining how this translation varies among consumers based on their gender identity and masculinity and femininity levels. In this dissertation, gender identity will be measured in two ways. On one hand, respondents will be asked which gender they identify with, choosing between male, female, and non-binary. Simultaneously, the Traditional Masculinity-Femininity Scale will measure respondents' overall masculinity and femininity levels. The masculinity and femininity levels will be defined according to traditional gender roles, meaning that, for instance, a person high in what is here defined as "overall masculinity" will be high in traditional masculinity. To measure the link between gender

identity and meat substitutes consumption, respondents will be asked about their current levels of meat substitutes consumption. Consumption of the most common types of meat substitutes in Italy will be considered. The following chapter contains specific indications and reasoning on how the above mentioned variables have been measured.

Figure 1 illustrates the relationships between gender identity, masculinity and femininity levels and meat substitute consumption studied in this dissertation.

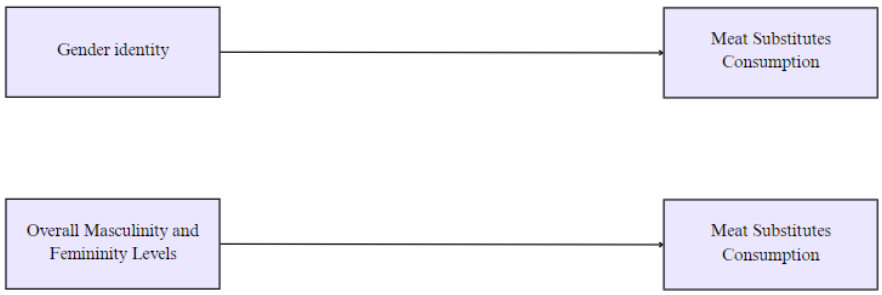


Figure 1 – Hypothesized relationship between gender identity, masculinity and femininity levels, and meat substitute consumption.

Based on this, the following hypotheses are proposed:

H1a: Individuals who identify as "male" have lower consumption of meat substitutes compared to individuals who self-categorize as "female".

H1b: Individuals high in (traditional) masculinity have lower consumption of meat substitutes compared to individuals low in (traditional) masculinity

Both hypotheses are aimed at understanding whether the meat masculinity link persists in the realm of meat substitute consumption. Regarding non-binary people, the complete lack of research on how the meat-masculinity link plays out for them makes it virtually impossible to

formulate the hypothesis. This dissertation does not aim at filling this research gap and it exclusively focuses on males and females.

The necessity to shift consumer behaviour towards meatless diets raises the question of how to incentivize the shift, possibly through message interventions. One of the possible routes to consists of social norms interventions. Social norms have proven to be effective in incentivizing a variety of sustainable (Cialdini et al., 2006; White et al., 2019; Cialdini et al., 1990; Oskamp et al. 1991; White et al., 2013; Schultz et al. 2007; Harland et al., 1999; Teng et al., 2015; Bollinger et al., 2012; Goldstein et al., 2008) and food (Salmon et al, 2015; Hilverda et al, 2018; Begho & Liu, 2023; Dowd & Burke, 2013) behaviours. In the context of meat reduction interventions, subjective norms, which include both injunctive and descriptive norms, were found to predict intention to reduce meat intake in both men and women. This suggests that social norms interventions might be effective in determining people's intention to reduce their meat intake, it and might ultimately translate into actual behaviour change (Fantechi et al., 2024). Additionally, social norm interventions might be particularly effective in incentivizing meat substitute consumption, because they could facilitate the removal of the obstacle of lack of familiarity that still hinders consumption of meat substitutes.

When crafting social norms interventions, it is fundamental to consider the reference groups integrating messages. Research consistently demonstrates how membership reference groups (Terry & Hogg, 1996; Whittler & Spira, 2002; Moschis, 1976; Childers, 1992), aspirational reference groups (Erdogan et al., 2001; Batra & Homer, 2004, Madrigal, 2000) and dissociative reference groups (White et al., 2006) can affect consumer behavior. Research by Mesler et al., 2022 and White & Dahl, 2006 show that men are sensitive to reference group information when evaluating meat: their preference for meat (White & Dahl, 2006) and willingness to pay for it (Mesler et al., 2022) both decrease when meat consumption is associated with women. Indeed, it can be argued that women represent a dissociative group for men because men need to constantly preserve and exercise their masculinity in society so as not to incur negative social consequences (Vandello & Bosson, 2013). Consequently, men will take measures to demonstrate manhood while simultaneously avoiding situations that undermine their manhood status, such as consuming products associated with women. Aligned with these findings, Rothgerber (2013) suggested that one possible route to convince men to reduce their meat consumption could be to promote meatless diets in ways that are compatible with masculine norms (Rothgerber, 2013). To this purpose, aspirational reference groups that embody traditional masculine roles might be instrumental in incentivising the consumption of meat

substitutes (Salmen & Dhont, 2023). Inspired by “The Game Changers” documentary, the aspirational reference group utilized in this dissertation will be male professional athletes, assumed to be examples of masculinity that males can look up to.

This dissertation aims therefore to test the relative effectiveness of three forms of social norm messages in promoting the consumption of meat substitutes. Each message refers to the behavior of a different type of reference group:

- Men
- Women
- Professional Male Athletes

In this thesis, three dependent variables will be measured to assess messages’ effectiveness in promoting the consumption of meat substitutes, namely, intention to increase meat substitute consumption in the future, willingness to pay for a bundle of meat substitutes, and willingness to participate in an experiment where participants would consume meat substitutes. The latter aims to simulate a non-hypothetical form of consumption and an actual choice to consume meat substitutes.

Figure 2 illustrates the expected impact of social norms messages referencing different groups, namely men, women, and professional male athletes, on the intention to consume meat substitutes, the willingness to pay, and the willingness to participate in an experiment.

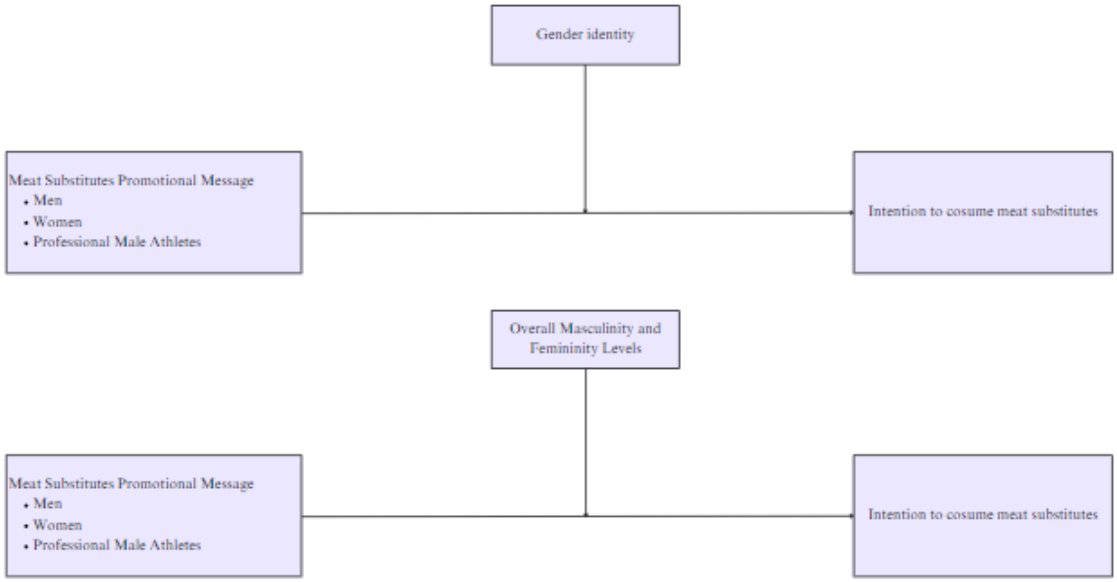


Figure 2 – Relationship between intention to consume meat substitute, gender identity and masculinity and femininity levels.

Based on this, the following hypotheses are proposed:

H2a: People who identify as "male" will have a higher intention to increase meat substitute consumption, higher willingness to pay, and higher willingness to participate in an experiment (non-hypothetical consumption) when the social norm message refers to other men (membership group) rather than women (dissociative group).

H2b: People with high levels of overall masculinity will have a higher intention to increase meat substitute consumption, higher willingness to pay, and higher willingness to participate in an experiment (non-hypothetical consumption) when the social norm message refers to other men (membership group) rather than women (dissociative group).

H2c: For people who identify as "male" the intention to increase meat substitute consumption, the willingness to pay, and the willingness to participate in an experiment (non-hypothetical consumption) will be maximized when the social norm message refers to a professional male athlete (aspirational group).

H2d: For people with high levels of overall masculinity, the intention to increase meat substitute consumption, the willingness to pay, and the willingness to participate in an experiment (non-hypothetical consumption) will be maximized when the social norm message refers to a professional male athlete (aspirational group).

H2e: For people who identify as "female" and for people with high femininity levels, there will be no significant difference in the intention to increase meat substitute consumption, willingness to pay, and willingness to participate in an experiment(non-hypothetical consumption) after being exposed to the three social norm messages.

It is assumed that the effect does not hold for females because their need to express and exercise their gender is lower than for males. Males might be more sensitive to reference group information because, contrarily to women and non-binary people, they are under greater societal pressure to adhere to traditional masculinity roles (Vandello & Bosson, 2013).

CHAPTER III: RESEARCH METHODOLOGY

3.1 Research Approach

The primary objectives of this dissertation were to examine the interplay between gender identity and consumption of meat substitutes. The study aimed to investigate how gender identity and masculinity and femininity levels moderate the effects of various messaging strategies on the intention to increase meat substitute consumption, willingness to pay for a bundle of meat substitutes, and willingness to participate in an experiment. To pursue these goals, an explanatory research methodology was adopted. In Chapter II, several testable hypotheses were formulated drawing upon an extensive review of academic literature. These hypotheses were evaluated using deductive quantitative research methods. Data collection was carried out through an online survey conducted through Qualtrics' survey software. Lastly, the collected data underwent descriptive and multivariate statistical analyses for comprehensive examination.

3.2 Population and Sample

The population of the study was defined as Italian citizens or people living in Italy for over a decade with internet access, aged between 18 and 67 years old. Overall, a total convenience sample of $n = 497$ individuals accepted to participate in the study voluntarily and provided informed consent.

3.3 Survey Design and Administration

At the outset, participants were introduced to the purpose of the survey, which was to support a master's thesis. They were assured of the anonymity of their responses and the strict adherence to current privacy policies regarding their data. Eligibility for the study was then assessed with two screening questions: confirming Italian nationality or residency and an age range of 18 to 67 years. Those who qualified were asked to report the frequency of their meat substitute consumption over the past month.

Participants were then randomly exposed to one of three stimuli messages. Following this, data were collected on dependent variables, including their intention to increase meat substitute consumption, their willingness to pay, and their willingness to participate in an experiment. Psychometric measures of meat attachment (Graça et al., 2015) and gender identity (Kachel et

al., 2016) were subsequently administered. The psychometric assessment of gender identity was carried out through the traditional masculinity-femininity scale (TMF) (Kachel et al., 2016) which has been previously utilized in studies assessing the interplay between gender identity and meat consumption (Mesler et al., 2022; Rosenfeld & Tomiyama, 2021). The Traditional Masculinity-Femininity (TMF) scale is a 6-item tool used to assess a person's self-concept regarding gender roles. It examines three key areas: gender-role adoption, gender-role preference, and gender-role identity. The inclusion of this scale aimed at assessing respondents' masculinity and femininity levels, which was utilized to test the hypotheses.

Toward the end of the survey, participants provided information about their diet (omnivorous, vegetarian, vegan, pescetarian, flexitarian) and exercise frequency. They were also asked to what extent they cared about three common reasons for reducing meat consumption (animal welfare, healthy diet, environmental impact).

Additional questions covered eating habits, such as whether they eat meals alone, purchase their own groceries, buy groceries online, and enjoy trying new foods both at home and outside were administered. Finally, demographic information regarding gender, age, income, and educational level was collected. In this section of the survey, to measure the "gender" variable, respondents were asked which gender they identify with among four options: male, female, non-binary/non-conforming, or prefer not to say. The non-binary option was included because it is an inclusive umbrella term that includes but is not limited to: people whose gender identity falls between or outside male and female identities, people who can experience being a male or a female at separate times, people who do not experience having a gender identity or reject having a gender identity (Matsuno & Budge, 2017). Therefore, the non-binary umbrella includes genderqueer, gender*uck, neutrosis, agender, gender-fluid, bigender, and third-gender people (LGBT Foundation, 2023). A complete printout of the survey is available in English in the Appendix III.

The survey was administered using the Qualtrics Software. To recruit eligible participants, the survey was distributed through personal contacts of the author via direct communication and social media.

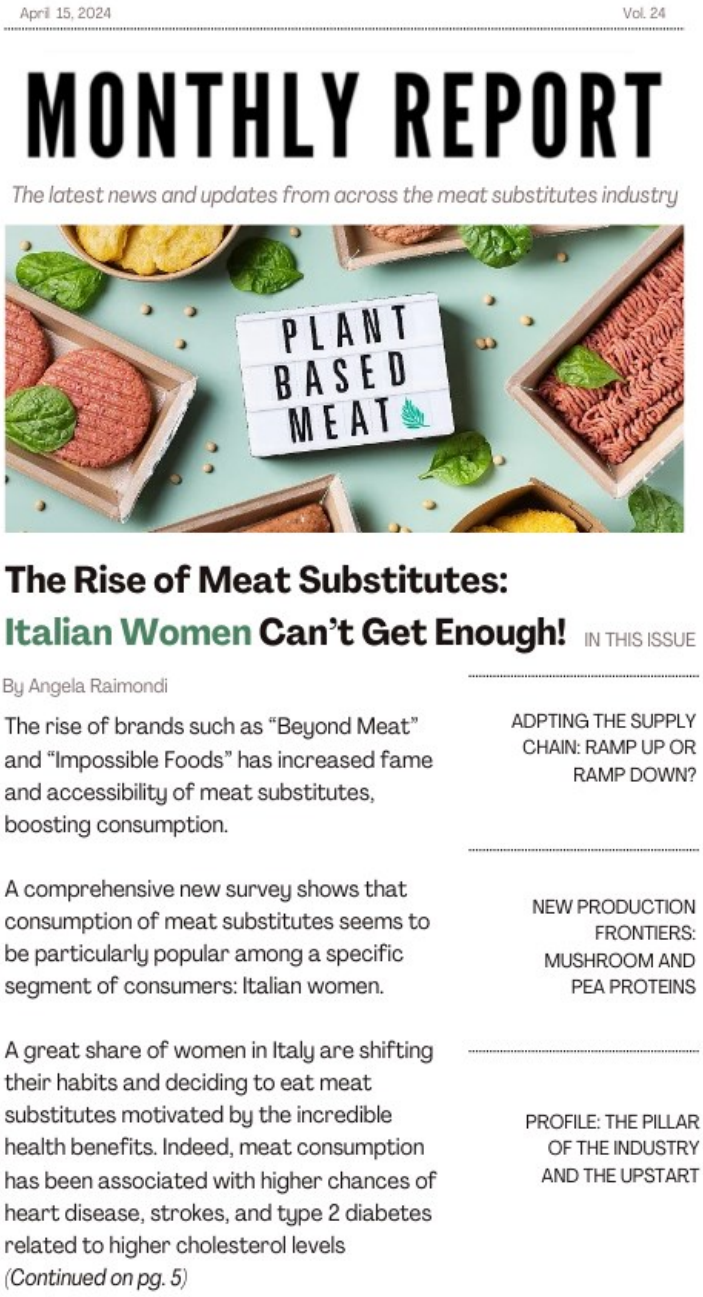
3.2.1 Experimental Design

According to the research hypotheses formulated in Chapter II, this dissertation aimed to investigate how gender identity affected meat substitute consumption. Furthermore, this thesis sought to test the effectiveness of different social norms' messages in incentivizing the

consumption of meat substitutes. To this end, a single-factor experimental treatment was administered randomly between subjects, consisting of exposure to a social norms message referring to one out of three types of reference groups: men (Message 1), women (Message 2), and professional male athletes (Message 3).

3.2.2 Stimuli Design

The three messages were elaborated in Italian and inspired by the experimental stimuli employed in a study by Mesler et al. (2022). The stimuli simulated an article on a blog about the rise of meat substitutes among a specific group of consumers. An English version of the message stimuli is provided In Figure 1, while the Italian versions included in the questionnaire can be found in the Appendix I.


April 15, 2024 Vol. 24

MONTHLY REPORT

The latest news and updates from across the meat substitutes industry

PLANT BASED MEAT

The Rise of Meat Substitutes: Italian Women Can't Get Enough! IN THIS ISSUE

By Angela Raimondi

The rise of brands such as "Beyond Meat" and "Impossible Foods" has increased fame and accessibility of meat substitutes, boosting consumption.

A comprehensive new survey shows that consumption of meat substitutes seems to be particularly popular among a specific segment of consumers: Italian women.

A great share of women in Italy are shifting their habits and deciding to eat meat substitutes motivated by the incredible health benefits. Indeed, meat consumption has been associated with higher chances of heart disease, strokes, and type 2 diabetes related to higher cholesterol levels

(Continued on pg. 5)

ADPTING THE SUPPLY CHAIN: RAMP UP OR RAMP DOWN?

NEW PRODUCTION FRONTIERS: MUSHROOM AND PEA PROTEINS

PROFILE: THE PILLAR OF THE INDUSTRY AND THE UPSTART

Figure 1 – Message stimulus presented to participants.

After participants were randomly exposed to one of the three stimuli, they had to complete an attention check asking them whether the article they just saw was about green advertising, the rise of cultured meat among a specific group of consumers, the rise of meat substitutes among a specific group of consumers, or sustainable fashion. Only the answers of respondents who successfully completed the attention check were considered for data analysis.

3.2.3 Measures of Dependent Variables

The first set of hypotheses of this dissertation investigated how gender identity affects meat substitute consumption. Therefore, the related dependent variable that was measured was the frequency of consumption of meat substitutes in the last month. The frequency of meat substitute consumption was measured for each of the most common meat substitutes in Italy (Tofu, Tempeh, Seitan, Pulses, Vegetable Meat, Pulses Products) using a scale from 1 ("Never") to 9 ("Twice or more a day"). This scale was based on the Diet History Questionnaire from the National Cancer Institute (Diet History Questionnaire III (DHQ III) | EGRP/DCCPS/NCI/NIH, 2024).

The second set of hypotheses tests the effectiveness of social norms' messages relative to different reference groups in incentivizing the consumption of meat substitutes. To this end, three dependent variables were measured after exposure to one of the three stimuli. First, the dependent variable "Intention" was measured by asking respondents to what extent they planned on substituting meat with meat substitutes in their meals in the next six months. Respondents could indicate their intention on a 5-point Likert Scale with the following items: 1=Not at all, 2=Slightly, 3=Somewhat, 4=Strongly, 5=Very strongly. This question was modeled after a question utilized in a study by De Backer et al. (2020) to measure the intention to reduce meat consumption. In this context, the question was remodeled to ask the intention to substitute meat with meat substitutes in respondents' meals.

Second, the independent variable "Willingness to pay" was measured. To measure willingness to pay, respondents were told about a new product called "The Farmer's Box," which delivers high-quality, packaged meat substitutes to the home. A description of the "Farmer's Box" was included: "One Farmer's Box contains 190g of Falafel made of chickpeas and peas. 2 Beyond Meat Burgers made of plant-based ingredients such as pea proteins and coconut oil. 200g of Seitan strips". To facilitate respondents' understanding, a picture advertising the new Farmer's Box promotion was added. An English version of the ad is provided in Figure 2, while the Italian version used in the questionnaire can be found in the Appendix II.

Figure 2 – Farmer's Box Promotion Offer presented to participants.

Following the description of this product, respondents were asked how much they would be willing to pay for the product, on a scale from €0 to €100. The creation of the "Farmer's Box" to assess respondents' willingness to pay was inspired by a study by Mesler et al., (2022) on masculinity stress and reference group information on willingness to pay for a red meat product. The last dependent variable measured was "Participation". Respondents were asked about their willingness to participate in a subsequent study to evaluate meat substitutes, with a yes or no question. This question was added to measure non-hypothetical consumption, since respondents who would choose to participate in the future experiment, would have to consume and evaluate meat substitutes as the experiment is taking place.

3.4 Eligibility check and exclusions

Eligibility for the study was determined at the outset using the aforementioned targeted screening questions. Sixteen respondents who did not meet the criteria (eight not meeting the age criteria and eight not meeting the nationality criteria) were redirected to the end of the survey, thanked, and dismissed; no data was collected from them. Additionally, three responses from individuals identifying as non-binary were not considered. Their exclusion was neither intentional nor planned; the study's convenience sampling resulted in an insufficient number of non-binary participants to yield statistically significant results. The importance of including non-binary perspectives in research is recognized, and, it is regrettable the sample size did not allow for their inclusion in the main analysis. Further exclusions were made for incomplete questionnaires, which resulted in the removal of 178 responses. Additionally, the survey included an attention check post-stimuli exposure, leading to the exclusion of 29 responses that

failed this check. Table 1 provides a summary of exclusions and reasons thereof. Ultimately, the final sample size consisted of $N = 271$ valid responses

Table 1 – Participant exclusions, reasons and final sample size.

	Total
Initial Responses	497
Participants who did not complete the survey	178
Participants excluded based on age	8
Participants excluded based on nationality	8
Participants excluded based on gender	3
Participants who failed the attention control question	29
Final Sample Size (N)	**271**

It is important to note that random assignment of treatments was kept even after excluding people since the kind of stimulus seen and gender identification are not associated (Pearson's chi-square = 0.030 , $p = 0.985$). Moreover, the exclusion of respondents due to failing the attention check did not cause important imbalances in the final allocation of treatment messages, as detailed in Table 2.

Table 2 – Distribution of valid responses ($N = 271$) per message condition, total, and by gender.

Variable	**Class**	**Stimulus Seen *n***			
		Men Stimulus	**Women Stimulus**	**Male Athletes Stimulus**	**Totals**
Gender *n*	**Males**	33	36	33	102
	Females	56	58	55	169
	Totals	89	94	88	271

Furthermore, Table 3 provides a detailed breakdown of the demographics, socioeconomic, and dietary characteristics of the final sample, split by gender.

Table 3 – Characterization of the study sample, by gender ($N = 271$).

Variable	**Class**	**Frequencies**	**Percentage**
Gender	Male	102	37.6%
	Female	169	62.4%

		Total % (n)	Male % (n)	Female % (n)
Age	Young (18 – 34)	52.14% (144)	53.92% (55)	52.66% (89)
	Middle-Aged (35 – 51)	23.25% (63)	15.69% (16)	27.81% (47)
	Older (52 – 67)	23.62% (64)	30.39% (31)	19.53% (33)
Education	High School or Lower	28.8% (78)	28.4% (29)	29.0% (49)
	University or Higher	71.2% (193)	71.6% (73)	71.0% (120)
Individual Income	<25,000€	44.6% (121)	36.6% (37)	49.7% (84)
	25,000€ - 35,000€	18.1% (49)	19.6% (20)	17.2% (29)
	>35,000€	20.3% (55)	30.4% (31)	14.2% (24)
	Prefer not to say	17% (46)	13.7% (14)	18.9% (32)
Diet	Omnivorous	53.1% (144)	75.5% (77)	39.6% (67)
	Vegetarian	21.4% (58)	7.8% (8)	29.6% (50)
	Vegan	2.6% (7)	1.0% (1)	3.6% (6)
	Pescetarian	3.7% 810)	1.0% (1)	5.3% (9)
	Flexitarian	19.2% (52)	15.7% (15)	21.0% (37)

3.4 Analysis

Data analysis was performed using the SPSS version 29.0.2.0. Initially, the reliability (Cronbach's *alpha*) of the psychometric scales for meat attachment (α= 0.906) and gender identity (Masculinity α= 0.965, Femininity α= 0.965) was assessed. Subsequently, the analysis focused on testing the first set of hypotheses (H1.a, H1.b, H1.c) by examining the interaction between gender, masculinity and femininity levels, and current meat substitute consumption. Following this, the study investigated participants' responses to message stimuli, testing the second set of hypotheses (H2.a, H2.b, H2.c, H2.d, H2.e), and measuring the three main dependent variables, namely intention, willingness to pay, and participation. Finally, the interaction between dependent and independent variables was analyzed to guide segmentation and targeting strategies for meat substitute consumers.

It is important to note that a correlation analysis was conducted primarily to perform analyses on dependent variables, revealing a strong correlation between masculinity and femininity levels and gender. To generate this finding, two new variables were created, namely overall masculinity and overall femininity, which summarized the two scales of the TMF, and a correlation analysis was performed between these two variables and the variable Gender, taken

from the demographic question asking respondents what gender they identify with. The correlation analysis reported significant Spearman's *rho* correlation coefficients balues of 0.784 between overall femininity and gender ($p < 0.001$) and -0.792 between overall masculinity and gender ($p < 0.001$). This finding implies that, in this experiment, using the categorical binary variable "gender" to assess relationships between dependent and independent variables, will yield virtually the same result as using masculinity and femininity levels for the same analysis. It also implies that the collected sample does not encompass a big variety in masculinity and femininity levels within males and females, meaning that male participants tend to have very high masculinity levels and very low femininity levels and vice versa for females.

CHAPTER IV - RESULTS AND DISCUSSION

4.1 Consumption of Meat Substitutes and Associations with Gender and Gender Identity

The following paragraphs report the first part of the analysis, investigating the relationships between the consumption of meat substitutes and gender. This section will explore how gender identity is associated with meat-substitute eating behaviors, hypothesizing that males have lower levels of meat-substitute consumption compared to females and that males high in traditional masculinity have a lower meat substitutes consumption than males low in traditional masculinity. Results shed light onto the significance of gender differences for the adoption of meat substitutes.

4.1.1 Analysis of the Impact of Gender Identity on Meat Substitute Consumption Frequencies

The consumption of meat substitutes was generally low among respondents. A distinct difference was observed between "uncommon" meat substitutes (including tofu, tempeh, seitan, and vegetable-based meat), and pulses and pulses-based meat substitutes. A significant portion of the sample reported never consuming the former, whereas a more substantial share indicated that they more often replaced meat in their meals with pulses pulses-based meat substitutes. To quantify these differences, Table 6 contains data on the respondents who never consumed each meat substitute in the time frame considered, by gender. The last two columns of Table 4 present the results of Pearson's Chi-Square test of significance between individuals who have never consumed meat substitutes and those who have, categorized by gender, significant values are in bold.

Table 4 - Percentage of the total sample that never consumed meat substitutes in the past month per meat substitute type and gender (N = 271) and Pearson's Chi-Square test of significance results.

	% (n)				
Meat substitute	**Total**	**Males**	**Females**	**Pearson's Chi Square value**	***p* of Pearson's Chi Square**
Tofu	62.0% (168)	76.5% (78)	53.5% (90)	**14.551**	**< 0.001**
Tempeh	84.50% (229)	89.2% (91)	81.7% (138)	2.775	0.096
Seitan	74.54% (202)	83.3% (85)	69.2% (117)	**6.666**	**0.010**
Pulses	14.8% (40)	23.5% (24)	9.5% (16)	**9.997**	**0.002**

Vegetable Meat	61.6% (167)	76.5% (78)	52.7% (89)	**15.246**	**< 0.001**
Pulses Products	33.9% (92)	52.9% (54)	22.5% (38)	**26.312**	**< 0.001**

Table 4 indicates notable gender differences in meat substitute consumption, with a significantly higher percentage of males reporting they never consume meat substitutes compared to females, for all meat substitutes except tempeh. These findings reveal a lower consumption of meat substitutes for males compared to females, which is confirmed by running a non-parametric Independent Samples Median Test. The nonparametric test was chosen due to the nonnormality of the distribution of consumption frequencies. Results indicated that differences in median consumption frequencies between males and females are significant for tofu, seitan, pulses, vegetable meat, and pulses products. Table 5 reports the Independent Samples Median Test results.

Table 5 – Output of Independent Samples Median Test to assess gender differences in meat substitute consumption frequencies

				Yates's Continuity Correction		
Meat substitute	**Test Statistic**	**df**	**Asymptotic Sig. (2-sided test)**	**Chi-square**	**df**	**Asymptotic Sig. (2-sided test)**
Tofu	14.551	1	< 0.001	13.582	1	**< 0.001**
Seitan	6.666	1	0.010	5.943	1	**0.015**
Pulses	15.681	1	< 0.001	14.645	1	**< 0.001**
Vegetable Meat	15.246	1	< 0.001	14.256	1	**< 0.001**
Pulses Products	17.185	1	< 0.001	16.120	1	**< 0.001**

4.1.2 Analysis of the Impact of Masculinity and Femininity on Meat Substitute Consumption Frequencies

This paragraph aims to assess the relation between frequencies of meat substitutes and masculinity and femininity levels, to investigate the existence of the previously discussed meat masculinity link in meat substitute consumption. The previous paragraph showed that a very high percentage of the sample does not consume tempeh (84.50%) and seitan (74.54%). Hence, the following analysis will focus on the frequencies of consumption of tofu, pulses, vegetable meat, and pulses products.

First, the consumption frequency of Tofu is considered. Tofu shows a very high percentage of respondents never consuming it (62.0%). Hence, a new variable was created to distinguish respondents into two groups: those who never consumed tofu and those who consumed it at least once. Furthermore, a new variable was created called “Mean Attitude”, this variable summarizes respondents’ attitudes towards animal welfare, healthy diet, and environmental impact on their food choices. Subsequently, Binary Logistic Regression models were built. Table 6 reports the outcome of the regression models.

Table 6 – Results of Binary Logistic Regression models to assess the effect of predictors on frequency of consumption of tofu.

Model 1							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**
Femininity	0.170	0.075	5.194	1	**0.023**	1.185	1.08
Mean Attitude	0.799	0.119	44.926	1	**< 0.001**	2.222	1.09
Age	-0.025	0.011	4.567	1	**0.033**	0.976	1.00
Constant	-4.646	0.667	48.504	1	**< 0.001**	0.010	-
Model 2							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**
Masculinity	-0.111	0.072	2.378	1	0.123	0.895	1.05
Mean Attitude	0.823	0.119	38.045	1	**< 0.001**	2.277	1.06
Age	-0.024	0.011	4.568	1	**0.033**	0.976	1.00
Constant	-3.613	0.652	30.697	1	**< 0.001**	0.027	-
Model 3							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	
Mean Attitude	0.797	0.111	51.29	1	**< 0.001**	2.219	
Model 4							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	
Masculinity	-0.192	0.062	9.53	1	**0.002**	0.852	

The first logistic regression model is significant ($p < 0.001$; Chi-Square value = 79.191), explains around 34.5% of the variance in tofu consumption (Nagelkerke $R^2 = 0.345$), does not present multicollinearity problems, and indicates that predictors "Mean Attitude," "Femininity," and "Age" significantly influence the frequency of consumption of tofu. Overall, the model

demonstrates that caring about animal welfare, a healthy diet, the environmental impact of food choices, and higher femininity significantly increase the likelihood of consuming tofu, while increasing age slightly decreases this likelihood. On the other hand, the second logistic regression model also results significant ($p < 0.001$; Chi-Square value = 76.282), explains around 33.4% of the variance in tofu consumption (Nagelkerke $R^2 = 0.334$), does not present multicollinearity problems, and indicated that predictors "Mean Attitude" and "Age" significantly affect the frequency of consumption of tofu while "Masculinity" doesn't. Model 3 and Model 4 were run to investigate why Masculinity is not significant in Model 2. Both Model 3 (Chi-Square = 10.01, $p = 0.002$) and Model 4 (Chi-Square = 68.619, $p < 0.001$) are significant, Model 3 captures 30.4% (Nagelkerke $R^2 = 0.304$) of the variance in frequency of consumption while Model 4 captures 4.9% ((Nagelkerke $R^2 = 0.049$) of such frequency. Hence, both Masculinity and Mean Attitudes predict the frequency of consumption of tofu on their own but not when combined while the same does not occur for Femininity. This likely indicates that attitudes towards animal welfare, healthy diet, and the environmental impact of food choices mediate the impact of masculinity on tofu.

Second, the frequency of consumption of pulses was considered. Unlike tofu, pulses are consumed by the vast majority of the sample (85.2%). Hence, a new variable was created to distinguish non-consumption and occasional consumption (including individuals who never consumed them or consumed them up to 3 times in a month) from habitual consumption (individuals who consumed them once a week or more). Then, Binary Logistic Regression models were built and the output is reported in Table 7.

Table 7 - Results of Binary Logistic Regression models to assess the effect of predictors on frequency of consumption of pulses.

Model 1							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**
Masculinity	-0.198	0.072	7.558	1	**0.006**	0.820	1.06
Mean Attitude	0.813	0.122	44.225	1	**< 0.001**	2.254	1.06
Spontaneous Groceries	-0.235	0.092	6.497	1	**0.011**	0.790	1.01
Constant	-1.126	0.708	2.527	1	0.112	0.324	-
Model 2							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**
Femininity	0.151	0.072	4.394	1	**0.036**	1.163	1.08

Mean Attitude	0.807	0.122	43.624	1	**< 0.001**	2.241	1.09
Spontaneous Groceries	-0.213	0.091	5.516	1	**0.019**	0.808	1.00
Constant	-2.548	0.657	15.053	1	**< 0.001**	0.078	-

Both models are significant (Model 1 Chi-Square = 85.780, $p < 0.001$; Model 2 Chi-Square = 82.517, $p < 0.001$) and do not present multicollinearity problems. However, the first model explains around 37.9% (Nagelkerke $R^2 = 0.379$) of variance in pulses consumption while the second one explains 36.6% (Nagelkerke $R^2 = 0.36$) of variance. Overall, both models demonstrate that "Mean Attitude" towards animal welfare, a healthy diet, and the environmental impact of food choices is a strong and significant predictor of pulse consumption. "Masculinity" and "Femininity" show opposite effects in their respective models, with masculinity decreasing and femininity increasing the likelihood of pulse consumption. Additionally, more spontaneous grocery shopping behavior is associated with lower odds of consuming pulses in both models. Therefore, for the frequency of consumption of pulses both masculinity and femininity play a key role.

Third, a regression model was built to investigate the predictors of the frequency of consumption of vegetable meat. Similarly to tofu, vegetable meat is not consumed by a high percentage of the total sample (61.6%), hence, a new variable was created to distinguish individuals into two groups: those who never consumed vegetable meat and those who consumed it at least once. Subsequently, Binary Logistic regression models were built, as summarized by Table 8.

Table 8 - Results of Binary Logistic Regression models to assess the effect of predictors on frequency of consumption of vegetable meat.

Model 1							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**
Masculinity	-0.086	0.069	1.523	1	0.217	0.918	1.05
Mean Attitude	0.697	0.110	40.455	1	**< 0.001**	2.008	1.06
Age	-0.022	0.011	4.229	1	**0.040**	0.978	1.01
Constant	-3.087	0.616	25.083	1	**< 0.001**	0.046	-
Model 2							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**

Femininity	0.146	0.071	4.150	1	**0.042**	.157	1.08
Mean Attitude	0.673	0.110	37.299	1	**< 0.001**	1.959	1.09
Age	- 0.022	0.011	4.222	1	**0.040**	1.157	1.00
Constant	-3.921	0.612	41.116	1	**< 0.001**	0.020	-
Model 3							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	
Mean Attitude	0.679	0.104	42.946	1	**< 0.001**	1.971	
Model 4							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	
Masculinity	-0.166	0.061	7.335	1	**0.007**	0.847	

Both models are significant (Model 1 Chi-Square = 60.003, $p < 0.001$; Model 2 Chi-Square = 62.689, $p < 0.001$), do not have multicollinearity problems, and the second one explains 28.1% (Nagelkerke $R^2 = 0.281$) of total variance while the first one explains 27% (Nagelkerke $R^2 = 0.270$). Overall, both models indicate that "Mean Attitude" toward animal welfare, a healthy diet, and the environmental impact of food choices is a strong predictor of its consumption. Age has a small but significant negative effect on the likelihood of consuming vegetable meat in both models. In Model 2, femininity shows a modest positive effect on consumption of vegetable meat while in Model 1, the non-significant p-value for masculinity implies that it does not have a substantial impact on the likelihood of consumption in this model. To investigate the non-significance of Masculinity in the model, Models 3 and 4 were run. Model 3 is significant (Chi-Square = 53.692, $p < 0.001$) and explains 24.4% (Nagelkerke $R^2 = 0.244$) of the total variance in frequency of consumption. Model 4 is also significant (Chi-Square = 7.62, $p = 0.006$) and accounts for 3.8% (Nagelkerke $R^2 = 0.038$) of total variance. Similar to tofu, both Masculinity and Mean Attitudes predict the frequency of consumption of vegetable meat separately but not combined, while the same does not occur for Femininity. This likely indicates that attitudes towards animal welfare, a healthy diet, and the environmental impact of food choices mediate the impact of masculinity on the frequency of consumption of vegetable meat.

Lastly, the frequency of consumption of pulse products was considered. A new variable was created to distinguish between non-consumption and trying them once (including individuals who never consumed them or consumed them once) from a more habitual consumption (including individuals who consumed it at least 2-3 times). Binary Logistic Regression models

were built to assess the impact of predictors on frequency of consumption of pulses products, results are summarized in Table 9.

Table 9 – Results of Binary Logistic Regression models to assess the effect of predictors on frequency of consumption of pulses products.

Model 1							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**
Masculinity	-0.161	0.067	5.748	1	**0.017**	0.852	1.05
Mean Attitude	0.697	0.106	43.126	1	**< 0.001**	2.007	1.07
Age Groups	-0.747	0.288	6.712	1	**0.010**	0.474	1.02
Constant	-1.488	0.636	5.470	1	**0.019**	0.226	-
Model 2							
Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**	**VIF**
Femininity	0.146	0.068	4.629	1	**0.031**	1.157	1.08
Mean Attitude	0.684	0.106	41.354	1	**< 0.001**	1.981	1.10
Age Groups	-0.750	0.287	6.814	1	**0.009**	0.472	1.02
Constant	-2.618	0.622	17.708	1	**< 0.001**	0.073	-

Model 1 (Chi-Square = 70.097, $p < 0.001$) and Model 2 (Chi-Square = 68.935, $p < 0.001$) significantly predict the frequency of consumption of pulses products and account for around 30% of the variance in frequency (Model 1 Nagelkerke $R^2 = 0.304$; Model 2 Nagelkerke $R^2 = 0.300$). Both models do not have multicollinearity problems and both models demonstrate that "Mean Attitude" toward animal welfare, a healthy diet, and the environmental impact of food choices is a strong and significant predictor of pulse product consumption. Simultaneously, "Masculinity" and "Femininity" show opposite effects in their respective models, with masculinity decreasing and femininity increasing the likelihood of pulse product consumption. Additionally, belonging to the older age group lowers the chances of consuming pulse products in both models. Hence, both masculinity and femininity predict the current frequency of consumption of pulse products.

4.1.3. Concluding Summary on the Interplay between Meat Substitute Consumption and Gender Identity

The analysis revealed significant associations between gender identity and the consumption of meat substitutes. Specifically, males were found to consume meat substitutes less frequently than females across most categories. Additionally, traditional masculinity was associated with lower consumption of meat substitutes, whereas femininity was linked to higher consumption. Lastly, attitudes towards animal welfare, a healthy diet, and environmental impact mediated the relationship between masculinity and the consumption of tofu and vegetable meat. Table 10 summarizes the findings.

Table 10 – Summary of the interplay between meat substitute consumption and gender identity

Meat Substitute Type	Gender Differences (Pearson's Chi-Square)	Gender Differences (Independent Samples Median Test)	Impact of Masculinity	Impact of Femininity	Role of Mean Attitudes
Tofu	Females consume significantly more	Females consume significantly more	Decreases consumption	Increases consumption	Mediates the impact of masculinity
Tempeh	No significant gender difference	Females consume significantly more	Not Analyzed		
Seitan	Females consume significantly more	Females consume significantly more	Not Analyzed		
Pulses	Females consume significantly more	Females consume significantly more	Decreases consumption	Increases consumption	Strongly predicts consumption
Vegetable Meat	Females consume significantly more	Females consume significantly more	Decreases consumption	Increases consumption	Mediates the impact of masculinity
Pulses Products	Females consume significantly more	Females consume significantly more	Decreases consumption	Increases consumption	Strongly predicts consumption

4.2 Experimental Results: Evaluating the Effectiveness of Messaging in Promoting Meat Substitute Consumption

The following paragraphs report the second part of the analysis of participants' responses to message stimuli. This analysis aims to examine how individuals react differently to message

stimuli featuring various reference groups, based on their gender. It aims at verifying hypotheses H2.a to H2.e, assuming that messages tailored to include the participant's gender-specific reference group will influence dependent variables, namely intention to increase meat substitutes consumption, willingness to pay, and willingness to participate in an experiment, encouraging the consumption of meat substitutes. Specifically, it is anticipated that participants exposed to messages where the reference group mirrors their gender will show increased receptiveness towards adopting meat substitutes compared to those exposed to messages with non-matching reference groups.

4.2.1 Analysis Of The Impact Of Message Stimuli On Dependent Variables

First, analyses were conducted to evaluate the effect of message stimuli on respondents' willingness to participate in an experiment assessing meat substitutes and how these effects would vary between genders. The dependent variable in this study is the respondents' willingness to participate, a nominal binary categorical variable differentiating between those willing and unwilling to engage in the experiment. A generalized linear model was created to assess the impact of message stimuli and gender on respondents' willingness to participate in an experiment to evaluate meat substitutes. The generalized linear model reported no significant effect of either message stimuli, gender, or their interaction, on respondents' willingness to participate in the experiment, suggesting that neither message stimuli nor gender significantly influence respondents' willingness to participate in the experiment.. Generalized linear model results are summarized in Table 11.

Table 11 – Generalized Linear Model Results Assessing The Effects Of Stimulus Seen And Gender On Willingness To Participate.

	Tests of Model Effects		
Source	**Wald Chi-Square**	**df**	***p***
Stimulus Seen	1.804	2	0.406
Gender	3.381	1	0.066
Stimulus Seen * Gender	0.573	2	0.751
Goodness of Fit Statistics			
Log Likelihood	-12.53		
AIC	37.06		
AICC	37.37		

BIC	58.67
CAIC	64.67

Subsequent analyses were performed to assess the effect of message stimuli on respondents' willingness to pay for a bundle of meat substitutes, namely the Farmer's Box, and examine how these effects might differ based on gender. Looking at the distribution of willingness to pay, it is evident that the dependent variable is not normally distributed, which is confirmed by running the Shapiro-Wilk Test of normality ($p < 0.001$) and the Kolmogorov-Smirnov Test of normality ($p < 0.001$). Hence, nonparametric tests were employed. Several Independent-Samples Kruskal-Wallis Tests were conducted. First, a test was conducted to assess the overall impact of message stimuli on willingness to pay which did not yield any significant result. Second, the Independent-Samples Kruskal-Wallis Test was run separately for males and females, also resulting in non-significant outcomes. Post-hoc analysis conducted through the pairwise comparison method confirmed the lack of significant results when comparing two stimuli simultaneously. Test results are summarized in Table 12 and Table 13.

Table 12 – Results of Independent-Samples Kruskal-Wallis Tests and Post-hoc Analysis to assess the impact of message stimuli on willingness to pay, total sample ($N = 271$)

Independent-Samples Kruskal-Wallis Test Results, Total Sample $N = 271$						
Dependent variable	**Independent variable**	**Number of groups of independent variable**	**df**	**N**	**χ^2**	***p***
Willingness to pay	**Stimulus seen**	3	2	271	3.963	0.138
Post-Hoc Analysis Results, Total Sample $N = 271$						
Post-hoc method	**Sample 1 – Sample 2**		**χ^2**		***p***	
Pairwise comparison	MaleAthletesStimulus-WomenStimulus		5.418		0.640	
	MaleAthletesStimulus-MenStimulus		22.340		0.057	
	WomenStimulus-MenStimulus		16.921		0.143	

Table 13 - Results of Independent-Samples Kruskal-Wallis Tests and Post-hoc Analysis to assess the impact of message stimuli on willingness to pay, by gender

Independent-Samples Kruskal-Wallis Test Results, By Gender							
Dependent variable	**Independent variable**	**Number of groups of independent variable**		**df**	**N**	**χ^2**	***p***
Willingness to pay	**Stimulus seen**	3	Males	2	102	1.331	0.514
			Females	2	169	2.798	0.247
Post-Hoc Analysis Results, By Gender							
Post-hoc method	**Gender**	**Sample 1 – Sample 2**				**χ^2**	***p***
Pairwise comparison	Males	MaleAthletesStimulus-WomenStimulus				4.225	0.552
		MaleAthletesStimulus-MenStimulus				8.364	0.249
		WomenStimulus-MenStimulus				4.139	0.583
	Females	MaleAthletesStimulus-WomenStimulus				0.686	0.075
		MaleAthletesStimulus-MenStimulus				13.665	1.477
		WomenStimulus-MenStimulus				12.979	1.421

Lastly, the intention to increase meat substitute consumption was analyzed to assess the impact of message stimuli and gender. Similarly to willingness to pay, intention is not normally distributed (Shapiro-Wilk Test of normality $p < 0.001$; Kolmogorov-Smirnov Test of normality $p < 0.001$), and, therefore, nonparametric Independent-Samples Kruskal-Wallis Tests were applied. The first test investigated the overall impact of message stimuli on future intention to consume meat substitutes for the entire sample, while the second test aimed at assessing the impact of message stimuli on future intention to consume meat substitutes separately for males and females. The former and the latter did not yield significant results. Post-hoc pairwise comparison analysis confirmed the lack of significant results when comparing two stimuli simultaneously. Test results are summarized in Table 14 and Table 15.

Table 14 - Results of Independent-Samples Kruskal-Wallis Tests and Post-hoc Analysis to assess the impact of message stimuli on intention to consume meat substitutes, total sample ($N = 271$).

Independent-Samples Kruskal-Wallis Test Results, Total Sample $N = 271$						
Dependent variable	**Independent variable**	**Number of groups of independent variable**	**df**	**N**	χ^2	***p***
Intention to consume meat substitutes	**Stimulus seen**	3	2	271	1.1013	0.603

Post-Hoc Analysis Results, Total Sample $N = 271$			
Post-hoc method	**Sample 1 – Sample 2**	χ^2	***p***
Pairwise comparison	MaleAthletesStimulus-MenStimulus	0.163	0.989
	MaleAthletesStimulus-WomenStimulus	9.904	0.383
	WomenStimulus-MenStimulus	-9.741	0.389

Table 15 - Results of Independent-Samples Kruskal-Wallis Tests and Post-hoc Analysis to assess the impact of message stimuli on intention to consume meat substitutes, by gender.

Independent-Samples Kruskal-Wallis Test Results, By Gender							
Dependent variable	**Independent variable**	**Number of groups of independent variable**		**df**	**N**	χ^2	***p***
Intention to consume meat substitutes	**Stimulus seen**	3	Males	2	102	0.714	0.700
			Females	2	169	2.777	0.249

Post-Hoc Analysis Results, By Gender				
Post-hoc method	**Gender**	**Sample 1 – Sample 2**	χ^2	***p***
Pairwise comparison	Males	WomenStimulus-MenStimulus	-1.331	0.847
		MaleAthletesStimulus-MenStimulus	-5.667	0.420

		WomenStimulus-MaleAthletesStimulus	-4.336	0.529
	Females	WomenStimulus-MenStimulus	-9.795	0.271
		MaleAthletesStimulus-MenStimulus	4.760	0.597
		WomenStimulus-MaleAthletesStimulus	14.555	0.103

Overall, this section of the analysis proved the ineffectiveness of message stimuli in influencing respondents' evaluation of the dependent variables.

4.2.2 Concluding Summary on the Ineffectiveness of Message Stimuli

The analysis explored the effectiveness of messaging stimuli in promoting meat substitute consumption, specifically evaluating how different messages influenced participants' willingness to participate in an experiment, willingness to pay for a meat substitute bundle, and intention to increase meat substitute consumption. Contrary to the hypotheses, the study found no significant effects. The analyses consistently showed that the type of stimulus seen had no significant impact on any of the dependent variables. Therefore, the message stimuli did not effectively influence participants' attitudes or behaviors toward meat substitutes. Table 16 summarizes the results of the several tests employed.

Table 16 – Summary of Key Findings on the Impact of Message Stimuli on Dependent Variables

Dependent Variable	**Method of Analysis**	**Key results**
Willingness to Participate in an Experiment to Evaluate Meat Substitutes	Generalized Linear Model	No significant effect of message stimuli, gender, or their interaction on willingness to participate.
Willingness to Pay for the Farmer's Box	Independent-Samples Kruskal-Wallis Test	No significant difference in willingness to pay based on message stimuli, both overall and by gender.
Intention to Increase Meat Substitutes Consumption	Independent-Samples Kruskal-Wallis Test	No significant impact of message stimuli on future intention to consume meat substitutes, overall and by gender.

4.3 Segmentation and Targeting Analysis

Considering the demonstrated ineffectiveness of message stimuli in promoting meat substitute consumption, the following paragraphs report an analysis of the total sample of participants without considering their division into treatment groups, aimed at offering businesses relevant managerial insights regarding segmentation and targeting strategies. Hence, statistical analysis was carried out on willingness to pay for the Farmer's Box, and intention to consume meat substitutes.

4.3.1. Segmentation and Targeting Analysis: Willingness to Pay and Intention to Consume Meat Substitutes

First, willingness to pay was considered. Given the nonnormality of respondents' willingness to pay (Shapiro-Wilk Test of normality $p < 0.001$; Kolmogorov-Smirnov Test of normality $p < 0.001$), a new variable was created which distinguished respondents from individuals with low and high willingness to pay, whereby the median (11) was taken to differentiate between the two groups. Then, a binary logistic regression model was built. The binary logistic regression analysis examined the effect of masculinity, age, and willingness to try new foods (out of home) on the likelihood of having a high willingness to pay. The model was statistically significant $\chi^2(3) = 23.216$, $p < .001$, indicating that the predictors reliably distinguished between those with low and high willingness to pay. The model explained 10.9% (Nagelkerke R^2) of the variance in willingness to pay and correctly classified 62% of cases. The classification table showed that the model correctly classified 59% of individuals with a low willingness to pay and 65.2% of individuals with a high willingness to pay. Table 17 summarizes the logistic regression coefficients, Wald statistics, and Exp(β).

Table 17. The output of Binary logistic regression to examine the effects of masculinity, age, and willingness to try new foods (out of home) on respondents' willingness to pay

Predictor Variable	**β**	**SE**	**Wald**	**df**	***p***	**Exp(β)**
Masculinity	-0.130	0.061	4.592	1	**0.032**	0.878
Willingness to Try New Foods	0.219	0.082	7.070	1	**0.008**	1.244
Age	-0.027	0.009	8.319	1	**0.004**	0.973
Constant	-0.247	0.553	0.199	1	**0.655**	0.781

The logistic regression model demonstrated that masculinity level, willingness to try new foods, and age were significant predictors of willingness to pay. These results suggest that individuals with lower masculinity levels, higher willingness to try new foods, and younger age groups are more likely to have a high willingness to pay.

Subsequently, a simple linear regression model was constructed to investigate the effects of masculinity, age, and care about animal welfare and the environmental impact of food choices on the intention to consume meat substitutes. For this analysis, a new variable was created called age groups which distinguished younger (up until 32 years old) and older (33 years old onwards) individuals. The model explained approximately 40.4% of the variance in the intention to consume meat substitutes ($R^2 = 0.404$, Adjusted $R^2 = 0.395$), which was statistically significant ($F(4, 266) = 45.029$, $p < .001$). Table 18 summarizes the key numerical results from the regression analysis.

Table 18 – Linear regression model assessing the effect of masculinity, age, care for animal welfare and environmental impact on intention to consume meat substitutes.

Predictor	**Unstandardized Coefficients (B)**	**Standardized Coefficients (Beta)**	**Std. Error**	**t-value**	***p***	**Tolerance**	**VIF**
(Constant)	2.196	-	0.288	7.636	**<0.001**	-	-
Masculinity	-0.080	-0.119	0.033	-2.443	**0.015**	0.952	1.051
Animal Welfare	0.227	0.370	0.041	5.548	**<0.001**	0.505	1.981
Environmental Impact	0.206	0.288	0.046	4.429	**<0.001**	0.530	1.887
Age Groups	-0.398	-0.139	0.139	-2.862	**0.005**	0.950	1.053

These results suggest that higher levels of concern for animal welfare and environmental impact are associated with stronger intentions to consume meat substitutes. In contrast, higher levels of masculinity and being in the older age group are associated with weaker intentions to consume meat substitutes.

4.3.2. Concluding Summary of Segmentation and Targeting Analysis

Table 19 condenses the main findings from the segmentation and targeting analysis, highlighting the significant predictors and their directional impact on willingness to pay and intention to consume meat substitutes.

Table 19 – Summary of Segmentation and Targeting Analysis

Dependent Variable	**Model**	**Predictor Variable**	**Direction of Effect**
Willingness to Pay	Binary Logistic Regression	Masculinity	Lower masculinity increases willingness to pay
		Willingness to Try New Foods	Higher willingness to try new foods increases willingness to pay
		Age	Younger age increases willingness to pay
Intention to Consume Meat Substitutes	Linear Regression	Masculinity	Lower masculinity increases intention to consume
		Care for Animal Welfare	Higher concern increases intention to consume
		Care for Environmental Impact	Higher concern increases intention to consume
		Age Groups	Belonging to younger age group increases intention to consume

5. Discussion

5.1 Meat Substitutes' Consumption Frequency and Gender

Findings from the analysis of meat substitute consumption frequencies support hypothesis H1a. Results highlight a lower consumption of meat substitutes among males compared to females as indicated by Tables 4 and 5. The assessment on Hypothesis H1b. results more complex. This

dissertation hypothesized that the frequency of consumption of meat substitutes depended on masculinity, assuming that higher masculinity would result in a lower frequency of consumption of meat substitutes. On one hand, analyses of the frequency of consumption of pulses and pulse products confirmed that masculinity decreases the likelihood of a high frequency of consumption of both kinds of meat substitutes. On the other hand, analyses investigating the predictors of the frequency of consumption of tofu and vegetable meat revealed that both Masculinity and Attitudes towards animal welfare, healthy diet, and environmental impact when making food choices are significant predictors of the frequency of consumption of tofu and vegetable meat. However, when analyzing Masculinity and Attitudes simultaneously, only attitudes hold a statistically significant predictive association. Hence, there exists a process of mediation whereby masculinity influences the frequency of consumption indirectly by shaping attitudes. Essentially, attitudes toward animal welfare, healthy diet, and environmental impact, are the actual factors influencing tofu and vegetable meat consumption. Masculinity affects these attitudes, and in turn, these attitudes influence tofu and vegetable meat consumption. To summarize, masculinity plays a key role in influencing the consumption frequencies of pulses and pulse products directly but affects the frequencies of consumption of tofu and vegetable meat only indirectly, through the mediation of attitudes toward animal welfare, healthy diet, and environmental impact in food choices. This finding is aligned with previous research on masculinity, meat consumption, and openness to vegetarianism. Rothgerber (2013) found that traditional masculinity negatively correlates with vegetarian meal consumption. De Backer et al. (2020) observed that men who do not identify with traditional masculinity have more positive attitudes toward vegetarians and are more likely to reduce their meat intake, and Stanley et al. (2023) reported that men who consider themselves more masculine are less likely to embrace vegetarianism. Furthermore, analyses on the frequency of consumption of all meat substitutes revealed the relevance of femininity, alongside masculinity. In all the regression models reported in Tables 6, 7, 8, and 9, femininity was a significant predictor of the frequency of consumption of all meat substitutes and there was no mediation effect of attitudes toward animal welfare, healthy diet, and environmental impact, signaling that femininity directly increases individuals' frequency of consumption of meat substitutes. This finding diverges somewhat from the current research, which predominantly emphasizes the role of masculinity (Rothgerber, 2013; De Backer et al., 2020; Stanley et al., 2023). It is noteworthy that existing studies have concentrated on meat consumption and vegetarian diets without specifically addressing meat substitutes. The results of this dissertation indicate that the influence of femininity in the context of meat substitutes is worthy of further investigation.

5.2 Ineffectiveness of Social Norm Messaging in Promoting Meat Substitute Consumption

Data analyses revealed that message stimuli had no relevant effect on participants. Therefore, H2.a, H2.b, H2.c, and H2.d, which hypothesized significant effects of social norm messages on males and respondents high in masculinity, must be rejected. On the contrary, H2.e assumed that females and high-femininity individuals would not have reported significant differences in dependent variables after exposure to message stimuli, which proved to be true. However, the hypothesized mechanism behind the phenomenon is likely not true. H2.e was formulated based on Vandello & Bossom (2013)' theories on precarious manhood, stating that males, more than females, are under greater societal pressures to adhere to traditional gender roles to keep their "hardily won and lost" manhood. Aligned with these theories, it was assumed that males would have been more sensitive than females to reference group information and, consequently, significant differences in dependent variables would have resulted for males but not for females. However, the inability of message stimuli to cause significant effects in both males and females points out different justifications, highlighting that the phenomena described by Vandello & Bossom (2013) might not be strong enough to cause different reactions in males and females. Hence, possible reasons for the ineffectiveness of message stimuli are here discussed.

Food preferences are the result of a complex interplay of biological (i.e. chemosensory perception and sensory experiences related to tastes and flavors, hereditary factors, need-states, and hedonically driven eating…), psychological (i.e. conscious and unconscious learned behavior such as mere exposure, the medicine effect, and flavor-flavor learning, habitual consumption, personality characteristics, consumption situations…), and social-cultural factors (values and belief systems, geography, climate, availability, family habits, demographic factors..) (Vabø & Hansen, 2014). The decision to employ social norm messaging strategies relied on the relevance of social factors in shaping food preferences, more specifically meat substitute preferences. Eating behavior is indeed strongly influenced by the behavior of others, shared cultural expectations, and environmental cues and, when the social norm is relevant, eating behavior might align with it (Higgs & Thomas, 2016). However, several factors affect whether the social norm will be observed, and mere exposure to the norm might not be sufficient to stimulate a matching behavior. According to the model developed by Higgs & Thomas (2016) adherence to a social norm depends on the strength of identification with the norm referent and other contextual factors such as attention paid to the norm, message credibility, concerns with

behaving in a social desirable way, competing personal norms (i.e. habits, beliefs) and stereotypes. Hence, in the context of this experiment, these factors might have hindered the messages' effectiveness. It is possible that the choice to distinguish reference groups based on gender did not allow participants to establish a strong identification with the norm referent. Indeed, individuals adhere to the norms of a specific social identity (i.e. "men", "women, "male professional athlete") to the extent that they consider the social identity to be personally important to them (Goldstein et al., 2008) and it is possible that participants did not consider their gender to be a constitutive part of their identity. Alternatively, message ineffectiveness might be due to a lack of attention. Despite the attempt to avoid this issue through the employment of an attention check, respondents might have not paid a lot of attention to the content of the article proposed, partially due to the way the message stimuli were designed (a lot of text, few images, relatively long text to read while completing a questionnaire). Furthermore, stimuli might have been ineffective because of a lack of credibility. Both the data collected through the survey (Table 4) and nationwide data (Statista, 2023), testify to a scenario in which meat substitutes in Italy are still niche products consumed by a small portion of the population, around 15% of consumers (Statista, 2023). Hence, an article stating that meat substitutes are on the rise and are being consumed by a "substantial" portion of a specific population might be incongruent with participants' experiences and knowledge, thus not being credible and not causing any effect. Alternatively, personal factors such as established eating habits might have hindered the message's ability to influence respondents since people with established eating habits tend to be unwilling to change them (Corrin et al., 2017, Pohjolainen et al., 2015).

Furthermore, meat substitute-specific obstacles might have prevented message stimuli from shifting respondents' preferences. It was hoped that social norms messages could overcome the unfamiliarity barrier but the substantial portion of respondents who stated that they do not plan on increasing their meat substitute consumption, together with the low willingness to pay, suggests that either the family barrier was not taken down or, more likely, other existing barriers played a fundamental role. It is likely meat substitute consumption is the result of a complex interaction between previously discussed person-related and product-related factors and several of these factors need to be addressed and stimulated simultaneously to obtain significant behavior change.

5.3 Segmentation and Targeting

The segmentation and targeting analysis indicates that marketing strategies should prioritize individuals with lower masculinity levels, encompassing both females and males who do not identify with traditional masculinity, as well as younger consumers and those who enjoy trying new foods. These groups are more likely to exhibit a higher willingness to pay. Additionally, the analysis of intentions to consume meat substitutes reinforces the focus on young, low-masculinity individuals and highlights the importance of respondents' concerns for animal welfare and environmental impact given that higher concern for these issues is linked to stronger intentions to consume meat substitutes. Furthermore, segmentation and targeting marketing strategy should consider the analysis of current frequencies of consumption of meat substitutes because of the key role played by familiarity in meat substitute consumption (Giacalone et al., 2022; Onwezen et al., 2021). Current users of plant-based meat substitutes hold significantly better attitudes toward these products than non-users (Jaeger et al., 2021) and familiarity with plant-based products is consistently associated with higher acceptance (Hoek et al., 2011; Hoek et al., 2013; Bryant et al., 2019; Davitt et al., 2021). Examining the consumption patterns of the four considered meat substitutes (tofu, pulses, vegetable meat, and pulse products) revealed a greater likelihood of frequent consumption for individuals concerned with animal welfare, a healthy diet, and the environmental impact of food choices, confirming that segmentation and targeting strategies should address individuals with high concerns for these causes. Additionally, the analysis of tofu, pulse products, and vegetable meat consumption emphasized the relevance of age, further confirming the need to target young consumers. Interestingly, the analysis of pulses consumption frequency, the most commonly consumed meat substitute among the ones considered, revealed that more spontaneous grocery shopping behavior is associated with lower odds of consuming pulses, indicating that shoppers who tend to plan their grocery shopping should be targeted. Lastly, data on the frequencies of consumption of meat substitutes confirms that companies should target low-masculinity and high-femininity individuals. These findings are aligned with data consistently showing females are more likely to consume meat substitutes, with 61% of meat substitute consumers in Italy being females (Target Audience Meat Substitutes Consumers in Italy, 2024), and with the share of vegetarian individuals in Italy being 2.6% among men and 5.9% among female respondents (EURISPES, 2023). Findings on the role played by masculinity are also consistent with studies linking meat consumption and adherence to traditional masculinity roles (Rothgerber, 2013; Rosenfeld & Tomiyama, 2021; de Becker et al., 2020, Stanley et al., 2023). Results on age are

also coherent with several studies (Onwezen et al., 2021, Hoek et al., 2013; Bryant et al., 2019) showing that younger age is consistently associated with higher acceptance of meat substitutes. Additionally, data showing that individuals who are willing and enjoy trying new foods tend to have a higher willingness to pay for meat substitutes is aligned with previous findings on the role played by food neophobia which was identified as one of the key barriers to the acceptance of meat substitutes (Bryant et al., 2019; Hoeak et al., 2011; Onwezen et al., 2021). Lastly, the relevance of eating healthy and considering the environmental impact of food choices is aligned with data on meat substitute consumers in Italy showing that they tend to eat healthier and are more concerned with climate change than the rest of the population (Target Audience Meat Substitutes Consumers in Italy, 2024), and is further aligned with studies indicating consciousness and environmental concern among the key drivers that contribute to the acceptance and consumption of meat substitutes (Ahmad et al., 2022; De Boer et al., 2013; Lea et al., 2005; Circus & Robinson, 2019).

CHAPTER V: CONCLUSIONS AND LIMITATIONS

6.1 Conclusions And Managerial Implications

Extant literature highlights the existence of a link between meat consumption and masculinity. This link is expressed in the use of language (Rozin et al., 2012), higher meat consumption of men compared to women (FAO, 2023), higher meat attachment of men compared to women (Graça et al., 2015), unwillingness in men to reduce meat and adopt plant-based diets (Graça et al., 2015), different meat consumption justification strategies between men and women (Rothgerber, 2013), the attribution of masculinity to meat eaters and the recognition of decreased masculinity to non-meat eaters (Thomas, 2016; Ruby & Heine, 2011; Timeo & Suitner, 2018), studies linking meat consumption and adherence to traditional masculinity roles (Rothgerber, 2013; Rosenfeld & Tomiyama, 2021; de Becker et al., 2020, Stanley et al., 2023). This dissertation wanted to test whether the meat masculinity link also translates into the realm of consumption of meat substitutes, namely measuring their frequency of consumption. On one hand, findings confirmed that females consume more meat substitutes than males. On the other hand, both masculinity and femininity predict a higher consumption of meat substitutes. Masculinity directly negatively impacts the frequency of consumption of pulses and pulses products and indirectly negatively affects the frequency of consumption of vegetable meat and tofu through the mediation effect of attitudes towards animal welfare, healthy diet, and environmental impact in making food choices. Conversely, femininity positively impacts the frequency of consumption of all meat substitutes directly, without mediation effects. Therefore, it can be concluded that the meat-masculinity link partially persists in the context of meat substitutes. However, it would be more appropriate to characterize this relationship as meat substitutes-femininity link.

The second part of this dissertation aimed at verifying the effectiveness of communication strategies based on social norms. Studies by White & Dahl (2006) and Mesler et al., (2022) showed that men are sensitive to reference group information when evaluating meat. For instance, the study by Mesler et al., (2022) found that men had a lower willingness to pay for meat when meat consumption was associated with women. This dissertation wanted to verify whether social norms messaging strategies with different reference groups would have been able to affect respondents' intention to consume meat substitutes as well as their willingness to pay for them and a non-hypothetical choice of consuming them. To this end, three messages were developed with three reference groups: men (in-group for men), women (dissociative

reference group for men), and professional male athletes (aspirational reference group for men). All messaging strategies proved to be ineffective in shifting respondents' preferences for both males and females and several justifications for such ineffectiveness have been advanced in paragraph 5.2. The lack of effect on both men and women points toward the necessity of changing strategies when trying to affect consumers' behavior. Future messages might follow two paths. First, they might continue to leverage social norms and gendered reference group information by changing the message design, making them more engaging and impactful. Second, messages might shift away from social norms and trigger different drivers of meat substitute consumption considering product-related and person-related factors.

Considering these findings, some recommendations for management and marketing in the meat substitutes sector can be developed. First, this dissertation confirmed that masculinity affects, both directly and indirectly, the consumption of meat substitutes. Hence, attempts to deconstruct the link between traditional masculinity and the non-consumption of meat susbtitutes would be beneficial to increase meat substitute consumption, resulting in a revenue increase. These attempts cannot be limited to a single messaging or communication strategy and would require long-term investments in consistent marketing campaigns that continuously deconstruct the long-standing cultural norms that associate meat consumption with masculinity in Western societies. A long-term investment could consist of the implementation of educational programs from an early age that, on one hand, communicate the benefits of substituting meat with meat substitutes and of having a healthy diet, and, on the other hand, communicate the importance of causes such as animal welfare and environmental impact of our foods choices. Alternatively, if companies wish to make a medium-term investment, a favorable environment for the conduction of these campaigns could be social media which gives meat substitute companies the possibility to continuously communicate with their target, attract new audiences, and spread educational messages that deconstruct the meat masculinity link. Lastly, from a short-term perspective, meat substitute companies can ensure revenues with segmentation and targeting strategies. Companies should target young females and males high in femininity, who are concerned about animal welfare and the environmental impact of their food choices, who value a healthy diet, who enjoy trying new foods and, specifically for pulses, who tend to plan their groceries. A strategy integrating short and long-term investments would be ideal to sustain the current business while ensuring future increased profits. This strategy can include, but should not be limited to, the employment of social norm messages to shift consumers' preferences.

6.2 Limitations and Future Research

This dissertation investigated the link between gender identity and meat substitute consumption, confirming the relevance of masculinity and revealing the importance of femininity, with the ultimate goal of providing insights into the creation of effective messaging strategies that would encourage individuals to consume meat substitutes. Despite a deep analysis of the current literature, a careful and throughout preparation and execution of the study, and detailed data analysis, it still has several limitations that need to be recognized. First, the sample used was a convenience sample not representative of the entire Italian population, specifically concerning age (predominantly younger target), gender (predominantly female), and educational level (predominantly highly educated). Conducting a similar experiment with a more demographically representative sample might yield more significant results. Second, the study encapsulates all the limitations of the studies' reliance on self-reporting data. An attempt to simulate a real non-hypothetical choice was made by including measurements on the participation variable. However, the quality of findings of future studies would be improved by incorporating more objective measures such as actual purchase data or experimental designs where participants' consumption is directly observed. Third, the design of messaging strategies could be improved, making them more engaging and enhancing respondents' attention for instance by integrating videos and interactive content. Additionally, more attention checks could be added to optimize attention. Fourth, the messaging strategies focused exclusively on social norms while future research could integrate social norms with elements that trigger different drivers of meat substitute consumption relative to person-related and product-related factors. Fifth, the high correlation between masculinity and femininity levels and a binary gender distinction between males and females leaves out the experiences of non-binary individuals. It could be interesting to investigate how the meat-masculinity link plays out for non-binary people and with a sample with a greater variety in terms of males having low levels of masculinity and females having higher levels of masculinity than the data collected, providing a more inclusive understanding of gender identity and meat substitute consumption. Sixth, an analysis of the frequency of consumption of meat substitutes revealed the importance of femininity. Future research on meat substitutes should encompass femininity, alongside masculinity, when investigating the relationship between meat substitutes consumption and gender identity. In conclusion, addressing these limitations in future research can lead to a more comprehensive and inclusive understanding of the factors influencing meat substitute

consumption and enhance the effectiveness of messaging strategies designed to promote such behaviors.

APPENDIX

Appendix I - Message Stimuli

15 Aprile 2024 Vol. 24

REPORT MENSILE

Le notizie più recenti e gli aggiornamenti dall'industria dei sostituti della carne

L'Ascesa Dei Sostituti della Carne: Gli Uomini Italiani Ne Sono Entusiasti

Di Angela Raimondi

L' ascesa di marche come "Beyond Meat" e "Impossible Foods" ha aumentato la fama e l'accessibilità dei sostituti della carne, stimolandone il consumo.

Una nuova indagine esaustiva mostra che il consumo di sostituti della carne sembra essere particolarmente popolare tra un particolare segmento di consumatori: gli uomini italiani.

Una grande quota di uomini in Italia sta infatti cambiando le proprie abitudini e optando per i sostituti della carne, motivati dagli incredibili benefici per la salute. Il consumo di carne, infatti, è stato associato a un maggior rischio di malattie cardiache, ictus e diabete di tipo 2, correlato a livelli più alti di colesterolo *(Continua a pag. 5)*

IN QUESTO NUMERO

15 Aprile 2024 Vol. 24

REPORT MENSILE

Le notizie più recenti e gli aggiornamenti dall'industria dei sostituti della carne

L'Ascesa Dei Sostituti della Carne: Le Donne Italiane Ne Sono Entusiaste

Di Angela Raimondi

L' ascesa di marche come "Beyond Meat" e "Impossible Foods" ha aumentato la fama e l'accessibilità dei sostituti della carne, stimolandone il consumo.

Una nuova indagine esaustiva mostra che il consumo di sostituti della carne sembra essere particolarmente popolare tra un particolare segmento di consumatori: le donne italiane.

Una grande quota di donne in Italia sta infatti cambiando le proprie abitudini e optando per i sostituti della carne, motivate dagli incredibili benefici per la salute. Il consumo di carne, infatti, è stato associato a un maggior rischio di malattie cardiache, ictus e diabete di tipo 2, correlato a livelli più alti di colesterolo *(Continua a pag. 5)*

IN QUESTO NUMERO

15 Aprile 2024 Vol. 24

REPORT MENSILE

Le notizie più recenti e gli aggiornamenti dall'industria dei sostituti della carne

L'Ascesa Dei Sostituti della Carne: In Italia, Gli Atleti Professionisti Di Genere Maschile Ne Sono Entusiasti

Di Angela Raimondi

L' ascesa di marche come "Beyond Meat" e "Impossible Foods" ha aumentato la fama e l'accessibilità dei sostituti della carne, stimolandone il consumo.

Una nuova indagine esaustiva mostra che il consumo di sostituti della carne sembra essere particolarmente popolare tra un particolare segmento di consumatori: gli atleti professionisti di genere maschile in Italia.

Una grande quota di uomini che praticano sport a livello professionistico in Italia sta infatti cambiando le proprie abitudini e optando per i sostituti della carne, motivati dagli incredibili benefici per la salute. Il consumo di carne, infatti, è stato associato a un maggior rischio di malattie cardiache, ictus e diabete di tipo 2, correlato a livelli più alti di colesterolo *(Continua a pag. 5)*

IN QUESTO NUMERO

Appendix II – Farmer's Box Promotion

Appendix III – English Survey

Start of Block: Default Question Block

Q1 This survey is part of my Master's dissertation thesis at Bocconi University and Católica Lisbon School of Business and Economics on Food Behaviour.

Data will be collected and treated confidentially and anonymously. Information is confidential and will exclusively be used for this dissertation.

By clicking on the on the "next" arrow at the bottom of the page you agree to participate in the questionnaire and share your data

End of Block: Default Question Block

Start of Block: Block 1

Q2_screeningITA Are you an Italian citizen or have you lived in Italy for more than 10 years?

- Yes (1)
- No (2)

Skip To: End of Survey If Q2_screeningITA = No

Q3_ScreeningAge Are you between 18 and 67 years old?

- Yes (1)
- No (2)

Skip To: End of Survey If Q3_ScreeningAge = No

End of Block: Block 1

Start of Block: Block 2

Page Break

Q5_SubstitutesFrequ Over the past month, how often did you replace meat in your meals with the following meat substitutes?

	Never (1)	1 time a month (2)	2-3 times a month (3)	1 time per week (4)	2 times per week (5)	3-4 times per week (6)	5-6 times per week (7)	1 time per day (8)	2 or more times per day (11)
Tofu (9)	○	○	○	○	○	○	○	○	○
Tempeh (10)	○	○	○	○	○	○	○	○	○
Seitan (11)	○	○	○	○	○	○	○	○	○
Pulses (beans, lentils, peas, chickpeas, lupins) (12)	○	○	○	○	○	○	○	○	○
Plant-based meat (13)	○	○	○	○	○	○	○	○	○
Pulses-based products (such as falafel and bean burgers) (16)	○	○	○	○	○	○	○	○	○

Page Break

End of Block: Block 2

Start of Block: Block 4

Q6 You will now see an article on the insurgence of meat substitutes, please read it carefully and then answer the following questions

End of Block: Block 4

Start of Block: Block 13

Q7_1_men

End of Block: Block 13

Start of Block: Block 14

Q7_2_women

End of Block: Block 14

Start of Block: Block 15

Q7_3_athletes

End of Block: Block 15

Start of Block: Block 5

Q8_AttentionCheck Please indicate what was the topic of the article you just read

- ○ Sustainable fashion (1)
- ○ Insurgence of meat substitutes for a specific group of consumers (2)
- ○ Insurgence of cultured meat for a specific group of consumers (3)
- ○ Green Advertising (4)

Page Break

Q9_Intention At this point of the study, please indicate to what extent you plan to replace meat with meat substitutes in the next six months

- ○ Not at all (9)
- ○ Slightly (10)
- ○ Somewhat (11)
- ○ Strongly (12)
- ○ Very strongly (13)

End of Block: Block 5

Start of Block: Block 13

Q10_Meat attachment On a scale from 1 (strongly disagree) to 5 (strongly agree), how much do you agree with the following sentences on meat?

	Strongly Disagree					Strongly Agree
	1	2	3	4	5	6	7

To eat meat is one of the good pleasures in life ()	
I love meals with meat ()	
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 disrespectul towards life and the environment ()	
I feel bad when I think of eating meat ()	
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 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 irreplacable in my diet ()	

End of Block: Block 13

Start of Block: Block 7

Q11 The Farmer’s Box is a new product avaiable on the market that delivers high-quality packaged meat substitutes to the home.

Q12

Q12 One Farmer's Box contains: 190g of **Falafel** made of chickpeas and peas 2 **Beyond Meat Burgers** made of plant-based ingredients such as pea proteins and coconut oil 200g of **Seitan** strips

Q13_wtp How much would you be willing to pay for the Farmer's Box? Indicate the number in euros

	0 5 10 15 20 25 30 35 40 45 50
How much would you pay? ()	

End of Block: Block 7

Start of Block: Block 8

Q14 We are planning to recruit people to participate in a consumer study to evaluate meat substitutes products. In case you want to participate, you will be given more information at the end of this survey.

Q15_Participation Would you like to participate in the consumer study?

- ○ Yes (1)
- ○ No (2)

End of Block: Block 8

Start of Block: Block 11

Q16 The following section is about gender identity. You will be asked to indicate both how masculine and feminine you feel.

Q17_Masculinity On a scale from 1 (not at all masculine) to 7 (totally masculine) how would you rate these sentences?

	Not at all masculine 1	2	3	4	5	6	Totally masculine 7
I consider myself as ()							
Ideally, I would like to be ()							
Traditionally, my interests would be considered as ()							
Traditionally, my attitudes and beliefs would be considered as ()							
Traditionally, my behavior would be considered as ()							
Traditionally, my outer appearance would be considered as ()							

Q18_Femininity On a scale from 1 (not at all feminine) to 7 (totally feminine) how would you rate these sentences?

	Not at all feminine 1	2	3	4	5	6	Totally feminine 7
I consider myself as ()							
Ideally, I would like to be ()							
Traditionally, my interests would be considered as ()							
Traditionally, my attitudes and beliefs would be considered as ()							
Traditionally, my behavior would be considered as ()							
Traditionally, my outer appearance would be considered as ()							

End of Block: Block 11

Start of Block: Block 12

Q19_diet Which of the following best describes your current diet?

- ○ Omnivore (no special dietary restrictions) (1)
- ○ Vegetarian (no consumption of meat, but consumption of other animal products) (2)
- ○ Vegan (no consumption of meat, no consumption of other animal products) (3)
- ○ Pescetarian (no consumption of meat, but consumption of fish) (4)
- ○ Flexitarian (predominantly vegetarian diet, occasional consumption of meat and fish) (5)

Page Break

Q20_exercisefreq Over the last month, how many times have you exercised? Insert an integer number

_____

Q21_drivers On a scale from 1 (strongly disagree) to 7 (strongly agree), how much do you agree with the following sentences?

	Strongly disagree 1 2 3 4 5 6 7 Strongly agree
When I decide what to eat, I consider the underlying animal suffering in producing certain foods ()	
Having an healthy diet is important for me ()	
When I decide what to eat, I consider the environmental impact of food ()	

Q22_habits On a scale from 1 (strongly disagree) to 7 (strongly agree), how much do you agree with the following sentences?

	Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Usually, I eat my meals with other people ()	
Usually, I cook my own meals ()	
Usually, I do my own grocery shopping ()	
I plan my grocery shopping list in advance and I respect it ()	
When I do grocery shopping, I prefer to spontaneously decide what to buy on the spot ()	
Usually, I buy groceries online ()	
When I eat out, I like to try new foods ()	
When I eat at home, I like to try new foods ()	

Q23_Gender Which gender do you identify with?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / Nonconforming (3)
- ○ Prefer not to say (4)

Q24_age How old are you?

▼ 18 (1) ... 67 (50)

X→

Q25_income Please indicate your annual gross income

- Less than 27,000€ (1)
- 27,001€-32,000€ (2)
- More than 32,000€ (3)
- I prefer not to answer (4)

Q26_Education level What's your highest educational level completed?

- Middle/elementary school (1)
- University (Bachelor's degree, Master's degree, Phd, Master) (2)

End of Block: Block 12

Start of Block: Block 10

Q27 You've reached the end of the survey, thank you for completing it.

We tested, among other variables, people's willingness to participate in a second consumer study. We were measuring the willignness in itself and, therefore, a second consumer study will not be taking place at this point. We thank you for your participation and your time.

End of Block: Block 10

References

Ahmad, M., Qureshi, S., Akbar, M. H., Siddiqui, S. A., Gani, A., Mushtaq, M., Hassan, I., & Dhull, S. B. (2022). Plant-based meat alternatives: Compositional analysis, current development and challenges. In *Applied Food Research* (Vol. 2, Issue 2). Elsevier B.V. https://doi.org/10.1016/j.afres.2022.100154

Adams, C. J. (2015). The sexual politics of meat: A feminist-vegetarian critical theory (Anniversary ed.). Bloomsbury Academic.

Anselmi, D. L., & Law, A. L. (1998). *Questions of gender: Perspectives and paradoxes*. Boston: McGraw-Hill.

Bakhsh, A., Lee, S.-J., Lee, E.-Y., Hwang, Y.-H., & Joo, S.-T. (2021). Traditional Plant-based Meat Alternatives, Current, and Future Perspective: A Review. *Journal of Agriculture & Life Science*, *55*(1), 1–11. https://doi.org/10.14397/jals.2021.55.1.1

Batra, R., & Homer, P. M. (2004). The situational impact of brand image beliefs. *Journal of Consumer Psychology*, *14*(3), 318–330. https://doi.org/10.1207/s15327663jcp1403_12

Beardsworth, A., Bryman, A., Keil, T., Goode, J., Haslam, C., & Lancashire, E. (2002). Women, men and food: The significance of gender for nutritional attitudes and choices. *British Food Journal*, *104*(7), 470–491. https://doi.org/10.1108/00070700210418767

Begho, T., & Liu, S. (2023). Does social proof and herd behaviour drive food choices of consumers? *British Food Journal*. https://doi.org/10.1108/BFJ-08-2023-0676

Berger, S., & Wyss, A. M. (2020). Consumers' Willingness to Consume Insect-Based Protein Depends on Descriptive Social Norms. *Frontiers in Sustainable Food Systems*, *4*. https://doi.org/10.3389/fsufs.2020.00144

Bio, P. A. (2024, August 30). *Alternative alla carne: un elenco di 15 sostituti per tutti i gusti*. Almaverde Bio. https://post.almaverdebio.it/lifestyle/alternative-alla-carne/

Bollinger, Bryan and Gillingham, Kenneth, Peer Effects in the Diffusion of Solar Photovoltaic Panels (2012). Marketing Science, Vol. 31, No. 6, pp. 900-912, 2012, DOI: 10.1287/mksc.1120.0727, Available at SSRN: https://ssrn.com/abstract=2196275

Bonnet, C., Bouamra-Mechemache, Z., Réquillart, V., & Treich, N. (2020). Viewpoint: Regulating meat consumption to improve health, the environment and animal welfare. *Food Policy*, *97*. https://doi.org/10.1016/j.foodpol.2020.101847

Bryant, C., Szejda, K., Parekh, N., Desphande, 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

Bruno, M., Thomsen, M., Pulselli, F. M., Patrizi, N., Marini, M., & Caro, D. (2019). The carbon footprint of Danish diets. Climatic Change, 156(4), 489–507. https://doi.org/10.1007/s10584-019-02508-4.

Caine-Bish, N. L., & Scheule, B. (2009). Gender differences in food preferences of school-aged children and adolescents. *The Journal of school health*, *79*(11), 532–540. https://doi.org/10.1111/j.1746-1561.2009.00445.x

Carrefour. (2024). *Carrefour Italia sito ufficiale - carrefour.it*. https://www.carrefour.it/?gclsrc=aw.ds&gad_source=1&gclid=Cj0KCQjwwO20BhCJARIsAAnTIVQs15vLU96fRwQgIc4-BoRNn08jkuSoDvvElcXNU3DroXiDKCQ01GMaAhzjEALw_wcB&gclsrc=aw.ds

Chiles, R. M., & Fitzgerald, A. J. (2018). Why is meat so important in Western history and culture? A genealogical critique of biophysical and political-economic explanations. *Agriculture and Human Values*, *35*(1), 1–17. https://doi.org/10.1007/s10460-017-9787-7

Childers, T.L. and Rao, A.R. (1992) The Influence of Familial and Peer-Based Reference Groups on Consumer Decisions. Journal of Consumer Research, 19, 198-211. https://doi.org/10.1086/209296

Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., & Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence*, *1*(1), 3–15. https://doi.org/10.1080/15534510500181459

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*(6), 1015–1026. https://doi.org/10.1037/0022-3514.58.6.1015

Çınar, Ç. (2024). *Adapting Food Preferences: The Social, Emotional, And Genetic Roots Of Preferences For Meats versus Plants*. https://doi.org/10.5463/thesis.510

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

Conad. (2024.). *Conad.it: il sito ufficiale dedicato ai nostri clienti*. https://www.conad.it/

Corrin, T.; Papadopoulos, A. Understanding the attitudes and perceptions of vegetarian and plant-based diets to shape future health promotion programs. Appetite 2017, 109, 40–47.

Davitt, E. D., Winham, D. M., Heer, M. M., Shelley, M. C., & Knoblauch, S. T. (2021). Predictors of Plant-Based Alternatives to Meat Consumption in Midwest University Students. *Journal of Nutrition Education and Behavior*, *53*(7), 564–572. https://doi.org/10.1016/j.jneb.2021.04.459

De Backer, C., Erreygers, S., De Cort, C., Vandermoere, F., Dhoest, A., Vrinten, J., & Van Bauwel, S. (2020). Meat and masculinities. Can differences in masculinity predict meat consumption, intentions to reduce meat and attitudes towards vegetarians? *Appetite*, *147*. https://doi.org/10.1016/j.appet.2019.104559

De Boer, J., & Aiking, H. (2011). On the merits of plant-based proteins for global food security: Marrying macro and micro perspectives. In *Ecological Economics* (Vol. 70, Issue 7, pp. 1259–1265). https://doi.org/10.1016/j.ecolecon.2011.03.001

De Boer, J., Schösler, H., & Aiking, H. (2014). "Meatless days" or "less but better"? Exploring strategies to adapt Western meat consumption to health and sustainability challenges. *Appetite*, *76*, 120–128. https://doi.org/10.1016/j.appet.2014.02.002

Delgado, C., Rosegrant, M., Steinfeld, H., Ehui, S., & Courbois, C. (2001). Livestock to 2020: The Next Food Revolution. *Outlook on Agriculture*, *30*(1), 27–29. https://doi.org/10.5367/000000001101293427

Djekic, I., & Tomasevic, I. (2016). Environmental impacts of the meat chain - Current status and future perspectives. In *Trends in Food Science and Technology* (Vol. 54, pp. 94–102). Elsevier Ltd. https://doi.org/10.1016/j.tifs.2016.06.001

Dowd, K., & Burke, K. J. (2013). The influence of ethical values and food choice motivations on intentions to purchase sustainably sourced foods. *Appetite*, *69*, 137–144. https://doi.org/10.1016/j.appet.2013.05.024

Elzerman, J. E., van Boekel, M. A. J. S., & Luning, P. A. (2013). Exploring meat substitutes: Consumer experiences and contextual factors. *British Food Journal*, *115*(5), 700–710. https://doi.org/10.1108/00070701311331490

Erdogan, B. Z., Baker, M. J., & Tagg, S. (2001). Selecting celebrity endorsers: The practitioner's perspective. *Journal of Advertising Research, 41*(3), 39–48. https://doi.org/10.2501/JAR-41-3-39-48

Esselunga S.p.A. (2024). *Supermercati, promozioni e servizi | Esselunga*. https://www.esselunga.it/it-it/homepage.html

EURISPES. (May 22, 2023). Are you vegetarian? [Graph]. In *Statista*. Retrieved March 08, 2024, from https://www.statista.com/statistics/1051826/share-of-vegetarians-and-vegans-by-gender-in-italy/

EURISPES. (May 22, 2023). Share of vegetarian and vegan individuals in Italy between 2014 and 2023 [Graph]. In *Statista*. Retrieved March 06, 2024, from https://www.statista.com/statistics/609983/vegetarians-and-vegans-in-italy/

European Court of Auditors, 2018. Animal welfare in the EU: closing the gap between ambitious goals and practical implementation.

Eurospin. (2024, July 12). *Eurospin : La spesa intelligente*. https://www.eurospin.it/

FAO, (2023). Food Outlook – Biannual Report on Global Food Markets. https://doi.org/10.4060/cc3020en

Fantechi, T., Contini, C., & Casini, L. (2024). The Meaty gender Gap: Understanding Gender-Based differences in intention to reduce red meat consumption. *Food Quality and Preference*, *113*. https://doi.org/10.1016/j.foodqual.2023.105078

Fessler D. M. (2002). Reproductive immunosupression and diet. An evolutionary perspective on pregnancy sickness and meat consumption. *Current anthropology*, *43*(1), 19–61. https://doi.org/10.1086/324128

FBDG, (2024). Summary of FBDG recommendations for meat for the EU. Food-Based Dietary Guidelines in Europe. https://knowledge4policy.ec.europa.eu/health-promotion-knowledge-gateway/topic/food-based-dietary-guidelines-europe_en

Ferronato, G., Corrado, S., De Laurentiis, V., & Sala, S. (2021). The Italian meat production and consumption system assessed combining material flow analysis and life cycle

assessment. *Journal of Cleaner Production*, *321*. https://doi.org/10.1016/j.jclepro.2021.128705

Fiorentini, M., Kinchla, A. J., & Nolden, A. A. (2020). Role of sensory evaluation in consumer acceptance of plant-based meat analogs and meat extenders: a scoping review. In *Foods* (Vol. 9, Issue 9). MDPI AG. https://doi.org/10.3390/foods9091334

Gerber, P. J., & Food and Agriculture Organization of the United Nations. (2013). *Tackling climate change through livestock : a global assessment of emissions and mitigation opportunities*.

Giacalone, D., Clausen, M. P., & Jaeger, S. R. (2022). Understanding barriers to consumption of plant-based foods and beverages: insights from sensory and consumer science. In *Current Opinion in Food Science* (Vol. 48). Elsevier Ltd. https://doi.org/10.1016/j.cofs.2022.100919

Godfray, H. C. J., Aveyard, P., Garnett, T., Hall, J. W., Key, T. J., Lorimer, J., Pierrehumbert, R. T., Scarborough, P., Springmann, M., & Jebb, S. A. (2018). Meat consumption, health, and the environment. In *Science (New York, N.Y.)* (Vol. 361, Issue 6399). https://doi.org/10.1126/science.aam5324

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. In *Journal of Consumer Research* (Vol. 35, Issue 3, pp. 472–482). https://doi.org/10.1086/586910

Gomez-Luciano, C. A., Vriesekoop, F., & Urbano, B. (2019). Towards food security of alternative dietary proteins: A comparison between Spain and the Dominican Republic. Amfiteatru Economic, 21(51), 393–407.

González, N., Marquès, M., Nadal, M., & Domingo, J. L. (2020). Meat consumption: Which are the current global risks? A review of recent (2010–2020) evidences. In *Food Research International* (Vol. 137). Elsevier Ltd. https://doi.org/10.1016/j.foodres.2020.109341

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

Graça, J., Oliveira, A., & Calheiros, M. M. (2015). Meat, beyond the plate. Data-driven hypotheses for understanding consumer willingness to adopt a more plant-based diet. *Appetite*, *90*, 80–90. https://doi.org/10.1016/j.appet.2015.02.037

Harland, P., Staats, H., & Wilke, H. A. M. (1999). Explaining proenvironmental intention and behavior by personal norms and the theory of planned behavior. *Journal of Applied Social Psychology, 29*(12), 2505–2528. https://doi.org/10.1111/j.1559-1816.1999.tb00123.x

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

Heard, B. R., Bandekar, M., Vassar, B., & Miller, S. A. (2019). Comparison of life cycle environmental impacts from meal kits and grocery store meals. Resources, Conservation and Recycling, 147(November 2018), 189–200. https://doi.org/10.1016/j.resconrec.2019.04.008.

Higgs, S., & Thomas, J. (2016). Social influences on eating. In *Current Opinion in Behavioral Sciences* (Vol. 9, pp. 1–6). Elsevier Ltd. https://doi.org/10.1016/j.cobeha.2015.10.005

Hilverda, F., Kuttschreuter, M., & Giebels, E. (2018). The Effect of Online Social Proof Regarding Organic Food: Comments and Likes on Facebook. *Frontiers in Communication*, *3*. https://doi.org/10.3389/fcomm.2018.00030

Hoek, A. C., Luning, P. A., Weijzen, P., Engels, W., Kok, F. J., & de Graaf, C. (2011). Replacement of meat by meat substitutes. A survey on person- and product-related factors in consumer acceptance. *Appetite*, *56*(3), 662–673. https://doi.org/10.1016/j.appet.2011.02.001

Hopper, J. R., & Nielsen, J. M. (1991). Recycling as Altruistic Behavior: Normative and Behavioral Strategies to Expand Participation in a Community Recycling Program. *Environment and Behavior*, *23*(2), 195-220. https://doi.org/10.1177/0013916591232004 ITAVI, 2017. Situation du Marché des Œufs et Ovoproduits.

Hub, F. (2023, January 21). *Meat Analogues, i prodotti sostitutivi della carne - Food Hub Media*. Food Hub Media. https://www.food-hub.it/media/2020/04/17/prodotti-sostitutivi-della-carne-meat-analogues/

Jaeger, S. R., & Giacalone, D. (2021). Barriers to consumption of plant-based beverages: A comparison of product users and non-users on emotional, conceptual, situational, conative and psychographic variables. *Food Research International*, *144*, 110363. https://doi.org/10.1016/j.foodres.2021.110363

Joy, M. (2011). Why we love dogs, eat pigs, and wear cows: An introduction to carnism. San Franscisco, CA: Conari press.

Kachel, S., Steffens, M. C., & Niedlich, C. (2016). Traditional masculinity and femininity: Validation of a new scale assessing gender roles. *Frontiers in Psychology*, *7*(JUL). https://doi.org/10.3389/fpsyg.2016.00956

Kalof, L., Dietz, T., Stern, P. C., & Guagnano, G. A. (1999). Social psychological and structural influences on vegetarian beliefs. *Rural Sociology*, *64*(3), 500–511. https://doi.org/10.1111/j.1549-0831.1999.tb00364.x

Korlat, S., Foerst, N. M., Schultes, M. T., Schober, B., Spiel, C., & Kollmayer, M. (2022). Gender role identity and gender intensification: Agency and communion in adolescents' spontaneous self-descriptions. *European Journal of Developmental Psychology*, *19*(1), 64–88. https://doi.org/10.1080/17405629.2020.1865143

Kubberød, E., Ueland, Ø., Tronstad, Å., & Risvik, E. (2002). Attitudes towards meat and meat-eating among adolescents in Norway: A qualitative study. *Appetite*, *38*(1), 53–62. https://doi.org/10.1006/appe.2002.0458

Kwasny, T., Dobernig, K., & Riefler, P. (2022). Towards reduced meat consumption: A systematic literature review of intervention effectiveness, 2001–2019. *Appetite*, *168*. https://doi.org/10.1016/j.appet.2021.105739

Lea, E., Worsley, A., & Crawford, D. (2005). Australian Adult Consumers' beliefs about plant foods: A Qualitative study. *Health Education & Behavior*, *32*(6), 795–808. https://doi.org/10.1177/1090198105277323

Lemken, D., Knigge, M., Meyerding, S., & Spiller, A. (2017). The value of environmental and health claims on new legume products: A non-hypothetical online auction. *Sustainability (Switzerland)*, *9*(8). https://doi.org/10.3390/su9081340

Lentz, G., Connelly, S., Mirosa, M., & Jowett, T. (2018). Gauging attitudes and behaviours: Meat consumption and potential reduction. *Appetite*, *127*, 230–241. https://doi.org/10.1016/j.appet.2018.04.015

LGBT Foundation. (2023). LGBT Foundation.- *What it means to be non-binary* - https://lgbt.foundation/help/what-it-means-to-be-non-binary/#:~:text=Non%2Dbinary%20people%20may%20identify,identify%20with%20one%20particular%20gender.

Love, H. J., & Sulikowski, D. (2018). Of meat and men: Sex differences in implicit and explicit attitudes toward meat. *Frontiers in Psychology*, *9*(APR). https://doi.org/10.3389/fpsyg.2018.00559

Madrigal, R. (2000) The Role of Corporate Associations in New Product Evaluation. In: Hoch, S.J. and Meyer, R.J., Eds., Advances in Consumer Research, Vol. 27, Association for Consumer Research, Provo, 80-86.

Martins, Y., & Pliner, P. (2005). Human food choices: An examination of the factors underlying acceptance/rejection of novel and familiar animal and nonanimal foods. *Appetite*, *45*(3), 214–224. https://doi.org/10.1016/j.appet.2005.08.002

Mathur, M. B., Peacock, J., Reichling, D. B., Nadler, J., Bain, P. A., Gardner, C. D., & Robinson, T. N. (2021). Interventions to reduce meat consumption by appealing to animal welfare: Meta-analysis and evidence-based recommendations. In *Appetite* (Vol. 164). Academic Press. https://doi.org/10.1016/j.appet.2021.105277

Matsuno, E., & Budge, S. L. (2017). Non-binary/Genderqueer Identities: a Critical Review of the Literature. In *Current Sexual Health Reports* (Vol. 9, Issue 3, pp. 116–120). Springer. https://doi.org/10.1007/s11930-017-0111-8

Meat trends in Europe | *Statista*. (2024). Statista. https://www.statista.com/study/70192/meat-trends-in-europe/#:~:text=Meat%20consumption%20is%20forecast%20to,other%20meat%20types%20are%20shrinking.

Melendrez-Ruiz, J., Buatois, Q., Chambaron, S., Monnery-Patris, S., & Arvisenet, G. (2019). French consumers know the benefits of pulses, but do not choose them: An exploratory study combining indirect and direct approaches. Appetite, 141, 104311.

Mesler, R. M. D., Leary, R. B., & Montford, W. J. (2022). The impact of masculinity stress on preferences and willingness-to-pay for red meat. *Appetite*, *171*. https://doi.org/10.1016/j.appet.2021.105729

Milford, A. B., Le Mouël, C., Bodirsky, B. L., & Rolinski, S. (2019). Drivers of meat consumption. *Appetite*, *141*. https://doi.org/10.1016/j.appet.2019.06.005

Modlinska, K., Adamczyk, D., Maison, D., & Pisula, W. (2020). Gender differences in attitudes to vegans/vegetarians and their food preferences, and their implications for promoting sustainable dietary patterns-A systematic review. In *Sustainability (Switzerland)* (Vol. 12, Issue 16). MDPI. https://doi.org/10.3390/SU12166292

Moschis, G. P. (1976). Social Comparison and Informal Group Influence. *Journal of Marketing Research*, *13*(3), 237-244. https://doi.org/10.1177/002224377601300304

Mycek, M. K. (2018). Meatless meals and masculinity: How veg* men explain their plant-based diets. *Food and Foodways*, *26*(3), 223–245. https://doi.org/10.1080/07409710.2017.1420355

Nakagawa, S., & Hart, C. (2019). Where's the Beef? How Masculinity Exacerbates Gender Disparities in Health Behaviors. *Socius*, *5*. https://doi.org/10.1177/2378023119831801

NutriDocIt, R. (2021). *Come sostituire la carne e le proteine animali? Alternative vegane e vegetariane | NutriDoc*. https://www.nutridoc.it/articoli/come-sostituire-carne

OECD, (2022). OECD-FAO Agricultural Outlook 2022-2031. https://doi.org/10.1787/f1b0b29c-en

Onwezen, M. C., Bouwman, E. P., Reinders, M. J., & Dagevos, H. (2021). 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

Oskamp, S., Harrington, M. J., Edwards, T. C., Sherwood, D. L., Okuda, S. M., & Swanson, D. C. (1991). Factors Influencing Household Recycling Behavior. *Environment and Behavior*, *23*(4), 494-519.

Pellerano, J. A., Price, M. K., Puller, S. L., & Sánchez, G. E. (2017). Do Extrinsic Incentives Undermine Social Norms? Evidence from a Field Experiment in Energy Conservation. *Environmental and Resource Economics*, *67*(3), 413–428. https://doi.org/10.1007/s10640-016-0094-3

Peñaloza, L. (2000). The Commodification of the American West: Marketers' Production of Cultural Meanings at the Trade Show. In *Journal of Marketing* (Vol. 82).

Pleck, J.H. (1995) The Gender Role Strain Paradigm: An Update. In: Levant, R.F. and Pollack, S., Eds., A New Psychology of Men, Basic Books, New York, 11-32.

Pohjolainen, P., Vinnari, M., & Jokinen, P. (2015). Consumers' perceived barriers to following a plant-based diet. *British Food Journal*, *117*(3), 1150–1167. https://doi.org/10.1108/bfj-09-2013-0252

Rabinovich, A., Morton, T. A., Postmes, T., & Verplanken, B. (2012). Collective self and individual choice: the effects of inter-group comparative context on environmental values and behaviour. *The British journal of social psychology*, *51*(4), 551–569. https://doi.org/10.1111/j.2044-8309.2011.02022.x

Reynolds, K. D., Baranowski, T., Bishop, D. B., Farris, R. P., Binkley, D., Nicklas, T. A., & Elmer, P. J. (1999). Patterns in child and adolescent consumption of fruit and vegetables: effects of gender and ethnicity across four sites. *Journal of the American College of Nutrition*, *18*(3), 248–254. https://doi.org/10.1080/07315724.1999.10718859

Ritzel, C., & Mann, S. (2021). The Old Man and the Meat: On Gender Differences in Meat Consumption across Stages of Human Life. *Foods (Basel, Switzerland)*, *10*(11), 2809. https://doi.org/10.3390/foods10112809

Rosenfeld, D. L., & Tomiyama, A. J. (2021). Gender differences in meat consumption and openness to vegetarianism. *Appetite*, *166*. https://doi.org/10.1016/j.appet.2021.105475

Rothgerber, H. (2013). Real men don't eat (vegetable) quiche: Masculinity and the justification of meat consumption. *Psychology of Men and Masculinity*, *14*(4), 363–375. https://doi.org/10.1037/a0030379

Rozin, P., Hormes, J. M., Faith, M. S., & Wansink, B. (2012). Is meat male? A quantitative multimethod framework to establish metaphoric relationships. *Journal of Consumer Research*, *39*(3), 629–643. https://doi.org/10.1086/664970

Ruby, M. B., & Heine, S. J. (2011). Meat, morals, and masculinity. *Appetite*, *56*(2), 447–450. https://doi.org/10.1016/j.appet.2011.01.018

Salmen, A., & Dhont, K. (2023). Animalizing women and feminizing (vegan) men: The psychological intersections of sexism, speciesism, meat, and masculinity. In *Social and Personality Psychology Compass* (Vol. 17, Issue 2). John Wiley and Sons Inc. https://doi.org/10.1111/spc3.12717

Salmon, S. J., De Vet, E., Adriaanse, M. A., Fennis, B. M., Veltkamp, M., & De Ridder, D. T. D. (2015). Social proof in the supermarket: Promoting healthy choices under low self-control conditions. *Food Quality and Preference*, *45*, 113–120. https://doi.org/10.1016/j.foodqual.2015.06.004

Scherer, L., Behrens, P., & Tukker, A. (2019). Opportunity for a Dietary Win-Win-Win in Nutrition, Environment, and Animal Welfare. *One Earth*, *1*(3), 349–360. https://doi.org/10.1016/j.oneear.2019.10.020

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological science*, *18*(5), 429–434. https://doi.org/10.1111/j.1467-9280.2007.01917.x

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

Sobal, J. (2005). MEN, MEAT, AND MARRIAGE: MODELS OF MASCULINITY. *Food and Foodways, 13*, 135 - 158.

Sparkman, G., Weitz, E., Robinson, T. N., Malhotra, N., & Walton, G. M. (2020). Developing a scalable dynamic norm menu-based intervention to reduce meat consumption. *Sustainability (Switzerland)*, *12*(6). https://doi.org/10.3390/su12062453

Stanley, S. K., Day, C., & Brown, P. M. (2023). Masculinity Matters for Meat Consumption: An Examination of Self-Rated Gender Typicality, Meat Consumption, and Veg*nism in Australian Men and Women. *Sex Roles*, *88*(3–4), 187–198. https://doi.org/10.1007/s11199-023-01346-0

Statista. (August 1, 2023). Per capita meat consumption forecast in European countries from 2018 to 2024 (in kilograms) [Graph]. In *Statista*. Retrieved March 06, 2024, from https://www.statista.com/forecasts/679528/per-capita-meat-consumption-european-union-eu

Statista. (2023). *Target audience: Meat substitute consumers in Italy*. Statista Research Department. https://www-statista-com.eu1.proxy.openathens.net/study/118997/target-audience-meat-substitute-consumers-in-italy/

Stoll-Kleemann, S., & Schmidt, U. J. (2017). Reducing meat consumption in developed and transition countries to counter climate change and biodiversity loss: a review of influence factors. *Regional Environmental Change*, *17*(5), 1261–1277. https://doi.org/10.1007/s10113-016-1057-5

Stubbs, J. J., Scott, S. E., & Duarte, C. (2018). Responding to food, environment and health challenges by changing meat consumption behaviours in consumers. *Nutrition Bulletin*, *43*(2), 125–134. https://doi.org/10.1111/nbu.12318

Sumpter, K. C. (2015). Masculinity and meat consumption: An analysis through the theoretical lens of hegemonic masculinity and alternative masculinity theories. *Sociology Compass*, *9*(2), 104–114. https://doi.org/10.1111/soc4.12241

Tajfel, H., & Turner, J. C. (2004). The Social Identity Theory of Intergroup Behavior. In J. T. Jost & J. Sidanius (Eds.), *Political psychology: Key readings* (pp. 276–293). Psychology Press. https://doi.org/10.4324/9780203505984-16

Teng, Y.-M., Wu, K.-S., & Liu, H.-H. (2015). Integrating Altruism and the Theory of Planned Behavior to Predict Patronage Intention of a Green Hotel. *Journal of Hospitality & Tourism Research*, *39*(3), 299-315. https://doi.org/10.1177/1096348012471383

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude–behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin, 22*(8), 776–793. https://doi.org/10.1177/0146167296228002

Thomas, M. A. (2016). Are vegans the same as vegetarians? The effect of diet on perceptions of masculinity. *Appetite*, *97*, 79–86. https://doi.org/10.1016/j.appet.2015.11.021

Timeo, S., & Suitner, C. (2018). Eating meat makes you sexy: Conformity to dietary gender norms and attractiveness. *Psychology of Men and Masculinity*, *19*(3), 418–429. https://doi.org/10.1037/men0000119

Tobler, C., Visschers, V. H. M., & Siegrist, M. (2011). Eating green. Consumers' willingness to adopt ecological food consumption behaviors. *Appetite*, *57*(3), 674–682. https://doi.org/10.1016/j.appet.2011.08.010

Torti, J.M. (2017). The Social and Psychological Well-Being of Vegetarians: A Focused Ethnography.

Turner, J.C. (1991) Social Influence. Open University Press, Milton Keynes.

United Nations, Department of Economic and Social Affairs, Population Division. (2022). *World population prospects 2022: Summary of results*. https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf

Vabø, M., & Hansen, H. (2014). The Relationship between Food Preferences and Food Choice: A Theoretical Discussion. In *International Journal of Business and Social Science* (Vol. 5, Issue 7). www.ijbssnet.com

Vainio, A., Niva, M., Jallinoja, P., & Latvala, T. (2016). From beef to beans: Eating motives and the replacement of animal proteins with plant proteins among Finnish consumers. *Appetite*, *106*, 92–100. https://doi.org/10.1016/j.appet.2016.03.002

Vandello, J. A., & Bosson, J. K. (2013a). Hard won and easily lost: A review and synthesis of theory and research on precarious manhood. *Psychology of Men and Masculinity*, *14*(2), 101–113. https://doi.org/10.1037/a0029826

Veeramani, A., Dias, G. M., & Kirkpatrick, S. I. (2017). Carbon footprint of dietary patterns in Ontario, Canada: A case study based on actual food consumption. Journal of Cleaner Production, 162, 1398–1406. https://doi.org/10.1016/j.jclepro.2017.06.025

Vegolosi.It. (2021b, March 4). *Cosa mangiare al posto della carne? Ecco tutte le alternative vegetali*. Vegolosi. https://www.vegolosi.it/come-cucinare-guide-pratiche/cosa-mangiare-al-posto-della-carne/

Warne, T., Ahmed, S., Byker Shanks, C. and Miller, P. (2019) Sustainability Dimensions of a North American Lentil System in a Changing World. Frontiers in Sustainable Food Systems, 3, Article No. 88. https://doi.org/10.3389/fsufs.2019.00088

Weinrich, R. (2018). Cross-Cultural Comparison between German, French and Dutch Consumer Preferences for Meat Substitutes. *Sustainability 10*, 1819. https://doi.org/10.3390/su10061819

White, K., & Dahl, D. W. (2006). To be or not be? the influence of dissociative reference groups on consumer preferences. *Journal of Consumer Psychology*, *16*(4), 404–414. https://doi.org/10.1207/s15327663jcp1604_11

White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing*, *83*(3), 22–49. https://doi.org/10.1177/0022242919825649

White, M. P., Alcock, I., Wheeler, B. W., & Depledge, M. H. (2013). Would you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychological science*, *24*(6), 920–928. https://doi.org/10.1177/0956797612464659

Whittler, T. E., & Spira, J. S. (2002). Model's race: A peripheral cue in advertising messages? *Journal of Consumer Psychology, 12*(4), 291–301. https://doi.org/10.1207/15327660260382333

Wood, W., & Eagly, A. H. (2010). Gender. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (5th ed., pp. 629–667). John Wiley & Sons, Inc.. https://doi.org/10.1002/9780470561119.socpsy001017

Ye, L., & Robertson, T. M. A. (n.d.). *Gender Identity: Does It Matter for Consumers' Perceptions?*