CBS
COPENHAGEN
BUSINESS SCHOOL
HANDELSHØJSKOLEN

Master's Thesis
Business Administration and Economics - Brand and Communications Management

Halo or Devil Effect? The Impact of Framing on Vegetarian Food Products

Date of submission: 15th of May 2020

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Number of characters: 204.548
Number of normal pages: 97

Abstract

In the light of the climate challenge, a shift toward more vegetarian lifestyles has been identified as an effective way for consumers to reduce their environmental impact. In this regard, the concept of framing is relevant due to its proven impact on consumers' perceptions, attitudes, and choices. Even though vegetarian labels are widely implemented on food products, it is to date unclear if framing vegetarian food products as climate friendly could be more beneficial in terms of promoting sustainable consumption. Thus, the present thesis investigated how vegetarian food products labeled as vegetarian and/or climate friendly gave rise to halo or devil effects on consumers' perceptions, attitudes, and purchase intentions. An online experiment was conducted to test the effect of the labels on three food products of which two were meat substitutes and one was not. A total of 328 Danish consumers participated in the study.

The findings indicated that the food labels in particular influenced consumers' attitudes and purchase intentions. The vegetarian label had a positive effect on consumers' attitudes and purchase intentions for the product that was not a direct substitute to meat. A similar effect was found for the climate friendly label on consumers' attitudes. Conversely, when meat substitutes were framed as climate friendly a backlash effect was identified, as the consumers had more negative attitudes toward the food products. Additionally, the moderating effects of environmental consciousness, gender, age, health consciousness, and attitudes toward vegetarian food and meat reduction were investigated. The findings indicated partial support for a moderating effect of gender and attitudes toward vegetarian food and meat reduction. Based on the findings, a uniform conclusion in terms of determining the most optimal label for promoting sustainable food consumption cannot be drawn. The results highlight the importance of taking both product type and target group into consideration when marketing vegetarian food products, but also calls for future research to be conducted within this field.

Keywords: Perceptions, attitudes, vegetarian, climate friendly, framing, halo effect, devil effect, and food labels.

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1. INTRODUCTION

Climate change represents one of the most urgent public issues, as it has severe consequences for our planet in the form of weather extremes, limited access to water and threats crop yields (Stern, 2007). This emphasizes the need for more sustainable behaviors. In this regard, the United Nations have developed 17 Sustainable Development Goals, which, among others, aim to achieve more sustainable consumption and production patterns (United Nations, 2020a). The United Nations emphasize the importance of educating consumers and providing them with information through labels and standards (United Nations, 2020b). However, a willingness from consumers to engage in "greener" consumption behaviors is needed in order to develop sustainable consumption (Peattie, 2010).

The food sector accounts for around 22% of the total Greenhouse Gas emissions (United Nations, 2020b), which highlights the practical implications of sustainable food-related behaviors. Accordingly, researchers have increasingly analyzed consumers' food choices and behaviors (Peattie, 2010), and it has been suggested that the most effective way to reduce the environmental impact of consumers' diets is to reduce meat and dairy consumption, and consume more vegetarian foods (Reisch, Eberle & Lorek, 2013; Krpan & Houtsma, 2020). However, little research has focused on changing dietary habits in order to combat climate change in comparison to other "green" behaviors (Krpan & Houtsma, 2020).

In order to be able to influence behavior, it is crucial to study consumers' perceptions and attitudes first. Food labels have shown to influence consumers' perceptions of food products, which can create either halo or devil effects (Schuldt & Schwarz, 2010; Rousseau; 2015; Schuldt & Hannahan, 2013). As consumers use heuristics when buying food and thus rely on packaging information to make quick decisions (Hoyer, 1984; Silayoi & Speece, 2004), it is highly relevant to analyze the impact of labels. Extensive research has been conducted on food labels, however, limited research exits on the influence of vegetarian food labels on consumers' perceptions of vegetarian food products. As there is a need for more sustainable food consumption, it is relevant to address this research gap. In this regard, framing is a concept that has been found to promote vegetarian food consumption (e.g. Turnwald et al., 2019; Turnwald, Boles, & Crum, 2017; Peschel, Kazemi, Liebichová, Sarraf & Aschemann-Witzel, 2019; Krpan

& Houtsma, 2020). However, to our knowledge, it remains unknown whether framing vegetarian food products as climate friendly compared to vegetarian would be beneficial.

We address this research gap, by testing the impact of framing effects by implementing vegetarian and climate friendly labels on vegetarian food products in an online experiment with Danish consumers. Furthermore, we identify the impact of framing in relation to halo and devil effects. With the findings from our study, we aim to make vegetarian foods more accepted among flexitarians and meat eaters by answering the following research question: *How do consumers perceive "meat free" food products labeled as vegetarian and/or climate friendly, and do the labels affect their attitudes and purchase intentions?*

In the next sections, we describe the scope of the research and the overall structure of the thesis.

1.1 Delimitations

The focus of the present thesis is to investigate the isolated effect of the vegetarian label and the climate friendly label on consumers' perceptions, attitudes and purchase intentions of vegetarian food products. Thus, other factors of the packaging design such as form, color, and images are excluded. Therein, it is also clear that factors such as motivation and learning are not covered even though we acknowledged that they affect consumers' choices of food products (Armstrong, Kotler & Opresnik, 2020). These psychological processes were excluded in order to develop an appropriate in-depth research of the attitudes, perceptions, and purchase intentions. Furthermore, the study was delimited to three food products: frozen pizza Margherita, minced meat substitute, and vegetarian cold cuts. Meat constitutes 23% of the total household consumption of food in Denmark, which represents the largest share compared to other food categories (Landbrug & Fødevarer, 2019). Furthermore, as meat emits higher levels of CO^2 compared to vegetables (Reisch et al., 2013), it was deemed relevant to investigate the effect of labels in relation to minced meat and cold cuts. Additionally, the ready meal category was growing by 6% in retail volume in 2019 in Denmark and is forecasted to continue to grow (Euromonitor, 2019). In this category, frozen pizza is one of three subcategories with the highest market shares. Thus, frozen pizza was also deemed relevant to include in the present study. Moreover, a total of three products were also evaluated to be suitable with respect to the scope of the thesis. Lastly, the study is delimited to Danish consumers in terms of the primary data collection, as we are based in Denmark and have our primary network here. For a

discussion on our limitations, we refer to the discussion chapter (*see section 7.3 Limitations & Future Research*).

1.2 Structure of the Thesis

The present thesis is structured in eight chapters. As presented, the first chapter introduces the overall thesis and the relevance of framing effects in relation to sustainable consumer behavior. The second chapter provides an overview of the Danish market in terms of vegetarianism and meat consumption to introduce the reader to the market. The third chapter summarizes and discusses the pertinent body of research related to consumers' perceptions and attitudes toward (vegetarian) food products. In the fourth chapter, we present the identified research gap and outline the research question and its corresponding hypotheses, which address this research gap. Furthermore, a conceptual framework is presented. Thereafter, the fifth chapter is presented, which contains the methodological argumentation and choices that our research design builds on. Chapter six presents the findings based on the conducted quantitative models, wherein each hypothesis is either accepted or rejected. Chapter seven discusses the key findings of our research, presents managerial implications for marketers, and discusses limitations and new perspectives for future research. Lastly, chapter eight concludes on the research question and the thesis overall.

2. MARKET DATA

This chapter describes the characteristics of a vegetarian lifestyle and provides an overview of the Danish market in relation to vegetarian and sustainable labels. Furthermore, it presents data on the consumption of meat and vegetarian food products among Danish consumers.

2.1 Vegetarianism and Vegetarian Labels in Denmark

A vegetarian lifestyle is characterized by following a diet without red meat, poultry, fish, cold cuts, and byproducts from animals (Dansk Vegetarisk Forening, 2019), and the number of Danish consumers who follow such a lifestyle has increased over the last decade. Today, 2.5% of the Danish population can be categorized as vegetarians, which corresponds to 140,000 people. Among the younger segment (people aged between 18 and 34 years), a total of 5.2% can be categorized as vegetarians. The number of vegetarians was immeasurable in 2010, while it increased to 1.8% in 2017 (Dansk Vegetarisk Forening, 2019). This shows a significant increase in vegetarians in just a few years. The majority of Danish vegetarians are women, and they represent a total of 70% (Dansk Vegetarisk Forening, 2019), which is not surprising considering that 35% of Danish men believe that meat free dishes are less tasty compared to dishes with meat (Coop Analyse, 2019b). Despite this rather negative perception among men, more Danish consumers are still shifting toward more vegetarian diets (Coop Analyse, 2019c).

Overall, the Danish market is characterized by a polarized meat consumption as the majority of Danish consumers eat meat on a daily basis. However, the number of consumers who avoid meat for whole days is increasing, which is characterized as a flexitarian lifestyle. The number of consumers who excluded meat from their diets for whole days for at least half of the week increased from 3.9% in 2010 to 8.2% in 2017 and 10% in 2019 (Coop Analyse, 2019c). Furthermore, the number of consumers who never had meat free days increased from 23.8% in 2010 to 26.8% in 2017 and further to 29% in 2019 (Coop Analyse, 2019c). This means that the consumption of both vegetarian and meat-based dishes increased.

As more consumers are becoming vegetarians and have adopted more vegetarian diets, the market for vegetarian products has also increased. From 2012 to 2019 the consumption of

vegetarian products[1] more than tripled (Coop Analyse, 2019a). Therefore, a wide variety of vegetarian products can be found in most stores including discount stores (European Vegetarian Union, 2018). This is in line with data, which indicates that 58% of Danish consumers express a wish to eat less meat. Among young people (aged between 18 and 34) a total of 72% wished to eat less meat (Dansk Vegetarisk Forening, 2019). From a marketing perspective, this development provides further incentives to both produce and market vegetarian food products to consumers.

Manufacturers of food products communicate the contents of their vegetarian food products to consumers by using vegetarian labels and claims. Vegetarian labels are developed to help consumers make instant and informed decisions (European Vegetarian Union, 2020). However, as they are met with a variety of different food labels, it can cause uncertainty during the buying-decision. Today, a legally binding definition of vegetarian foods does not exist, neither at a European nor a national level in Denmark (European Vegetarian Union, 2018). Therefore, manufacturers have developed their own criteria and labels in order to inform consumers about the vegetarian contents of their products (European Vegetarian Union, 2018). A result of this has been that the criteria vary from manufacturer to manufacturer, as the self-produced labels are not subject to control from independent organizations, thus leading to inconsistencies. Thereby, labels can ultimately mislead consumers in a market where consumers are increasingly seeking transparency (European Vegetarian Union, 2019b).

According to the European Vegetarian Union (2019b), vegetarian foods do not contain animals or parts of animals and every step of the production and processing is taken into consideration. Foods that are produced with help from animals such as milk and eggs can however also be categorized as vegetarian. In order for food products to be able to carry the European Vegetarian Union label, which is the Union's independent label for vegetarian products, the products cannot contain genetically modified organisms (GMOs) or cage eggs (European Vegetarian Union, 2019b). Other independent organizations that also have their own vegetarian labels have as mentioned other criteria. Dansk Vegetarisk Forening (Danish Vegetarian Union) for example supports the European Vegetarian Union's definition of vegetarian foods (Dansk Vegetarisk Forening, 2017a), but additionally demands that the animal products (milk products and eggs) used in the vegetarian foods are organic (Dansk Vegetarisk Forening, 2017b).

[1] In the survey, the term ”vegetarian products” refered to processed vegetarian food products (Coop Analyse, 2019a).

By assessing the Danish market, it is evident that it consists of two third-party labels and several self-produced labels by manufacturers. *Figure 1* shows an overview of the frequently used labels on the Danish market, which communicate the vegetarian contents of food products. The labels are categorized based on Gerke & Janssens' (2017) categorization of vegan labels.

Simple lettering	Highlighted lettering	Product name	Brand name	Third party labels
				

Figure 1: Vegetarian food labels (selected examples) [own depiction].

2.2 Sustainable Labels in Denmark

There are a few labels in Denmark that communicate the sustainability of food products. For instance, the Fairtrade label is used on products that meet a set of economic, environmental and social criteria (Fairtrade, 2020), whereas the Marine Stewardship Council rewards sustainable fishing practices and can thus be placed on seafood products that meet these requirements (Marine Stewardship Council, 2020). However, there is currently no official generic food label, which can be used for all types of food products and can indicate products' overall impact on the environment. In 2018, the Danish Government announced a proposal to work with supermarkets in order to develop a climate labeling system. The proposal suggests that a label should be developed and placed on all food products and clearly state each individual product's carbon footprint. Thus, the label is expected to include factors such as transportation, water and land usage and greenhouse gas emissions. The proposal has been approved by the Director of the Danish Agriculture & Food Council, but no formal launch date has been announced yet (Food Tank, 2019). The Danish government believes that it is important to provide consumers with a tool, which allows them to evaluate the environmental impact of the food products that they buy and consume (The Local, 2018). This is especially important considering that the environmental impact of the same types of products has been found to differ extensively between manufacturers (Footprint, 2018). However, it has also been acknowledged that the environmental impact of a product might have to be weighed against

the nutritional value of that product, as some products such as sodas are not nutritious enough to live off even though the environmental impact is low (The Local, 2018).

Although there is no official label on the Danish market that indicates the overall environmental impact of food products, companies such as Naturli' and Oatly have developed their own climate labels that are implemented on their packaging today. Both companies have developed labels that indicate the exact amount of CO^2 the product emits *(see figure 2).* This calculation takes factors such as land use, transportation, and packaging into consideration and has been conducted by CarbonCloud (Naturli Foods, 2020a; Oatly, 2020). Furthermore, Naturli compares its products with meat-based equivalents in terms of CO^2 emissions on its website (Naturli Foods, 2020a). Related to this initiative, the company has developed a label with the words "*low in* CO^2" – a statement that is based on a comparison with the products' animal-based equivalents (*see figure 2)* (Naturli Foods 2020b; Naturli Foods, 2020a). Thus, it indicates that companies have started to inform consumers about their products' environmental impact through packaging.

Generic Climate Label	Specific Climate Label
	

Figure 2: Climate food labels (selected examples) [own depiction].

3. LITERATURE REVIEW

This literature review summarizes and discusses the pertinent body of research related to consumers' perceptions and attitudes toward (vegetarian) food products. First, it introduces consumer behavior in the food industry, and the impact of packaging, labeling, and product attributes, as they have shown to greatly influence in-store choices (Gelici-Zeko, Lutters, ten Klooster & Weijzen, 2013; Neuhouser, Kristal & Patterson, 1999; Roberto, Larse, Agnew, Baik & Brownell, 2010; Maehle, Iversen, Hem & Otnes, 2015). Second, it presents how vegetarians and vegetarian diets are perceived and the attitudes different consumer groups have toward them, in order to establish a base for the present research. Third, it discusses the halo effect and framing, which are two concepts that provide a profound basis to analyze the consumers' perceptions of vegetarian food products. Additionally, it discusses the impact of green consumerism and its relation to foods. The shift in consumers' behaviors toward more green choices is especially relevant, as there is a need for more sustainable food-related behaviors (Reisch et al., 2013). The literature review will allow us to elaborate on an identified research gap and derive relevant hypotheses.

3.1 Consumer Behavior in the Food Industry

3.1.1 Food Choices

Food purchases are typically characterized as low involvement, routine purchases, and approximately 70% of all purchase decisions are made in grocery stores (Spanjaard, Young & Freeman, 2014). Furthermore, these types of purchase decisions involve low risk and are made by consumers very frequently, usually multiple times during a single shopping trip (Hoyer, 1984). As a result, consumers generally use low levels of cognitive efforts and spend limited time on searching for information and evaluating alternatives before making decisions (Beharrell & Denison, 1995; Hoyer, 1984). A total of 85% of consumers choose food products in supermarkets without evaluating any alternative products, and 90% of consumers only look at the front of a product before making a purchase decision (Urbany, Dickson & Kalapurakal, 1996). Instead of trying to make the most optimal decisions, consumers rely on various choice *heuristics*, which are shortcuts that are learned over time and help make quick decisions while minimizing the cognitive effort (Hoyer, 1984). Consumers intend to minimize their cognitive

effort because they are exposed to a vast amount of information, but only have limited cognitive capacity and are thus unable to process every piece of information they are presented to (Clement, Kristensen & Grønhaug, 2013; Hoyer, 1984). Thereby, packaging and the information displayed on it are of great importance for marketers, as the literature suggests it can influence perceptions and attitudes and ultimately consumers' choice.

3.1.2 Packaging

Packaging has shown to generate expectations of food products and their attributes, which makes it a unique tool for marketers (Gelici-Zeko et al., 2013). It consists of various elements such as graphics, color, shape, size, and product information, and has increasingly become important in consumers' food choices (Silayoi & Speece, 2004). Although the main function of food packaging is to protect the product, packaging has for a long time also served as an important communication tool for companies. Already in 1957, Pilditch (cited in Wells, Farley & Armstrong, 2007, p. 679) defined packaging as the "silent salesman", whereas Lewis (1991) characterized it as a symbol of recognition and values. Both definitions emphasize the importance of packaging in a consumer context.

Generally, food purchases are characterized as low involvement purchases, but Silayoi and Speece (2004) found that some food products are subject to higher involvement and consumers thus evaluate them more thoroughly than others in order to ensure value and quality. In these scenarios, consumers rely less on visual information and more on the information displayed through written texts and labels. Furthermore, the researchers found that consumers who were concerned about eating healthy generally were more involved in their food purchases and thereby also relied heavily on food labels in their decision-making (Silayoi & Speece, 2004). In addition, Pieters & Warlop (1999) found that when consumers are under time pressure, they shift their attention from visual elements towards more rational packaging information such as labels. This indicates the importance of labels in consumers' decision making.

3.1.3 Food Labels

The number of food labels on the market has increased over time, thus, consumers are exposed to a multitude of products with differentiated labels when shopping for food today. According to Sirieix, Delanchy, Remaud, Zepeda, & Gurviez (2013), consumers are increasingly experiencing quality signs (e.g. of the product's origin), organic labels, fair trade claims and other sustainable claims on food packaging, which increases consumers' potential information-

base when making decisions in-store. Food labels represent a channel of communication between the consumer and the food manufacturer (Kolodinsky, 2012), and are thus a means to reduce the information asymmetry between the two (Verbeke, 2005). However, some scholars argue that food labels function as more than an information-base, as they can harness consumers' purchasing power and thereby encourage manufacturers to incorporate sustainable production practices (Sønderskov & Daugbjerg, 2011). Labels can also facilitate healthy food choices (Grunert & Wills, 2007) and be used to differentiate and position products (Einsiedel, 2002). Additionally, labels can be used to symbolize shared values, norms, and expectations (Bildtgard, 2008). As there are many different functions of labels, it is argued that the ultimate aims of labels are fundamentally conflicting since it is unclear if they should ensure safety, inform consumers, or increase corporate profitability (Kolodinsky, 2012).

Studies have shown that labels can impact consumer choice by affecting their perception. Neuhouser et al. (1999) found a significantly lower fat intake among participants when the nutritional label was implemented on the product. Similarly, Roberto et al. (2010) found that calorie information on restaurant menus influenced the participants to order fewer calories compared to the no-calorie condition. Furthermore, a study focusing on sustainability-related labels concluded that the self-reported use of the labels was higher when the levels of understanding of the label were higher and when concern about sustainability was high (Grunert, Hieke, Wills, 2014). Thus, these findings indicate that consumers tend to use labels when the labels support the values of the consumers.

3.1.4 Product Attributes

Consumers make food-related purchase decisions based on various product attributes of which some are considered more important than others (Maehle et al., 2015). This illustrates the importance of identifying these attributes in order to understand consumers' food choices. Lusk & Briggeman (2009) found that safety, nutrition, taste, and price are the most important values to consumers when buying food. However, it has been suggested that the importance of product attributes differs between consumers. Likewise, the number of attributes consumers consider before making a food purchase also differs (Mai & Hoffmann, 2012).

In a study by Maehle et al. (2015) it was investigated how product attributes differed in terms of importance across utilitarian and hedonic product categories. Utilitarian products contribute with functional benefits such as low price, high nutritional value, and low-calorie counts whereas the benefits of hedonic products are related to the pleasure gained from consuming

tasty food. In the experiment, milk and ice-cream were used to represent utilitarian and hedonic products, respectively. They concluded that the most important attributes for both types of product categories were price and taste. Price was shown to be more important for utilitarian products than for hedonic products, and taste was found more important for hedonic products than for utilitarian products. Moreover, the study found that participants rated healthfulness as less important for utilitarian products than for hedonic products (Maehle, et al., 2015). However, opposite findings were presented in the study by Raghunathan, Naylor and Hoyer (2006), as it was found that consumers preferred unhealthy products when their consumption goal was hedonic. Additionally, it was found that the unhealthier a product was, the better the perceived taste was.

Furthermore, it has been concluded that consumers who are health- and environmentally conscious, naturally evaluate health and environmental related product attributes as more important. Mai and Hoffmann (2012) characterized health conscious consumers as consumers who show concern for their health. These consumers eat healthy food and engage in other healthy behaviors in order to improve or maintain their well-being. Based on the study, it was concluded that consumers who were more health conscious highly cared about health-related attributes (e.g. fat and sugar contents) and the nutritional labeling on the packaging. On the contrary, consumers who were characterized as "taste lovers" and less health conscious evaluated attributes such as taste and price as more important. Maehle, et al. (2015) supported these findings by concluding that calorie content for health-conscious consumers was considered more important than for consumers with low levels of health consciousness. Furthermore, it was found that environmentally conscious consumers, evaluated eco-labels as more important than for other consumers. The study also concluded that these health and environmental related attributes were, in some cases, perceived to be more important than price for the health and environmentally conscious consumers, respectively. Likewise, Steptoe, Pollard and Wardle (1995) found that women who show concerns about their diets such as eating low amounts of calories are less likely to be influenced by price than other consumers. Similar findings were presented by Lusk and Briggeman (2009), as their study concluded that participants who believed that price was important showed a lower willingness to pay for organic food. Furthermore, participants who highly valued naturalness, fairness, and the environment expressed a higher willingness to pay for organic food.

From the reviewed literature it can be concluded that the importance of product attributes highly depends on the product category and consumers' personal values. However, generally,

price and taste are considered the most important attributes of food products and thus, influence consumers' purchase decisions. Hence, the literature review affirms the importance of investigating consumers' perceptions of products in terms of these attributes.

3.2 Perceptions and Attitudes toward Vegetarianism

This thesis aims to make vegetarian foods more accepted among flexitarians and meat eaters, thus, it is relevant to investigate the existing perceptions and attitudes toward vegetarianism first, as scholars argue that these psychological factors influence consumers' choices and behaviors (Ajzen & Fishbein, 1980; Armstrong et al, 2020). Perception is defined as "*the process by which individuals select, organize and interpret stimuli into a meaningful and coherent picture of the world*" (Schiffman & Wisenblit, 2015, p. 114). Hence, it is not an objective construct but rather consumers' subjective understanding of the world (Schiffman & Wisenblit, 2015). Perception forms consumers' attitudes, which are defined as "*a person's relatively consistent evaluations, feelings and tendencies toward an object or idea*" (Armstrong et al., 2020, p. 173).

It is well-established in the psychological literature that the consumption of food influences how individuals are perceived by others (Thomas, 2016), and this has also been found to be the case for vegetarian and meat-based diets. The perception of vegetarians has been subject to a radical shift throughout time, whereas the perception of meat eaters has developed more steadily (Ruby, 2012; Ruby, Alvarenga, Rozin, Kirby, Richer & Rutsztein, 2016). During the Inquisition in the 12th century, vegetarians were declared heretics by the Roman Catholic Church and were therefore also persecuted. Furthermore, in the early 20th century, vegetarians were still perceived negatively, as the decision to exclude meat from one's diet was considered a deviant act and worthy of suspicion (Ruby, 2012).

Today, different perceptions, attitudes, and beliefs about vegetarians have been identified. Ruby (2012) argues that vegetarians and omnivores hold different "*attitudes toward meat, dietary practices, political and social attitudes, and worldviews*" (p. 146) and are thus viewing themselves and one another in different terms. This argument is supported by Povey, Wellens and Conner (2001), as their study concluded that attitudes and beliefs among different dietary groups (meat eaters, meat avoiders, vegetarians, and vegans, respectively) varied. The most salient beliefs among meat eaters toward a vegetarian diet were found to be that a vegetarian diet is healthy, expensive, nutritionally unbalanced, boring, and low in fat. Among the meat

avoiders, the most salient beliefs about a vegetarian diet were that it is healthy, humane, nutritional and balanced, unfattening, and restrictive. Furthermore, among vegetarians, the beliefs were mostly positive: healthy, humane, ethical, tasty, and cheap. Hence, the most negative beliefs toward a vegetarian diet among the identified dietary groups were found among meat eaters. In line with the authors' expectations, the study also concluded that the participants had the most negative attitudes toward the type of diet that differed the most from their own (vegan vs. meat-based diet and vice versa). However, meat eaters were still found to have positive attitudes toward a vegetarian diet (Povey et al., 2001). In contrast with these findings, Rosenfeld and Tomiyama (2020) found that meat eaters were more resistant toward following a vegetarian diet, as they perceived such a diet to be too expensive, less healthful, less familiar, less convenient, less tasty and socially stigmatizing. Similarly, in a study conducted in Belgium, Mullee et al. (2017) found that a lack of interest, awareness, taste, and cooking skills were the most salient reasons for avoiding a vegetarian diet. These findings imply that there, in general, is a negative perception of the tastiness of vegetarian diets among non-vegetarians.

Implicit attitudes toward plant- and animal-based dishes have also been studied. Cliceri, Spinelli, Dinnella, Prescott and Monteleone (2018) found that flexitarians and vegetarians implicitly associated more positive emotions toward meat free dishes compared to omnivores, which is consistent with the findings of Povey et al. (2001). Furthermore, Barnes-Holmes, Murtagh, Barnes-Holmes and Stewart (2010) concluded from a study that vegetarians preferred vegetables approximately twice as much as meat eaters. The meat eaters showed a small pro-meat effect whereas vegetarians showed the opposite. Thereby, the literature suggests an ambivalence toward meat consumption, as meat is perceived as an important source of protein to humans, and some almost synonymously use it with “real food” (Font-i-Furnols & Guerrero, 2014; Fiddes, 1991). In contrast, others perceive it as bad for the health, unethical, harming for the environment, boring and less tasty (Ruby et al., 2016; Povey et al., 2001; Rosenfeld & Tomiyama, 2020).

Vegetarian diets are widely acknowledged to be healthy (Povey et al., 2001; Lea & Worsley, 2003a; Lea, & Worsley, 2003b; Dansk Vegetarisk Forening, 2017c). However, since meat is associated with power, wealth, and strength, vegetarians are prone to stereotyping. A study by Ruby and Heine (2011) found that participants who followed a vegetarian diet were perceived as more moral, but less masculine compared to omnivores, after the control of perceived healthiness. Similar findings have been concluded by other scholars (e.g. Mullee et al., 2017;

Rothgerber, 2013). The perception of vegetarians as less masculine is mainly argued to be because meat is associated with being a man's food whereas fruit and vegetables are seen as lower status and a woman's food. Especially red meat, which is argued to be at the top of the food's hierarchy, symbolizes humans' dominance over nature, as it is associated with hunting, which is typically a male-dominated activity, and contains visible blood content (Twigg, 1979; Fiddes, 1991; Adams, 1991). Therefore, it is not surprising that women, in general, perceive vegetarian diets more positively compared to men, and thus outnumber vegetarian men in Western societies. Even among Western female non-vegetarians, the consumption of meat is less than for men (Mullee et al., 2017; Ruby, 2012), and this is also the case among Danish consumers (Dansk Vegetarisk Forening, 2019). Furthermore, males have shown to have higher attitudinal support toward red meat compared to females (Kubberød, Ueland, Rødbotten, Westad & Risvik, 2002; Ruby et al., 2016), which suggest that men generally have a more positive attitude toward meat.

The aforementioned findings indicate that the perceptions and attitudes toward vegetarianism are rather diverse and differ greatly between consumer groups. Additionally, some of the studies report somewhat contradictory findings, which makes it an interesting area to further research, as it will provide an understanding of how vegetarian food is perceived.

3.3 Framing

3.3.1 The Concept of Framing

The concept of *framing* is commonly traced back to the fields of psychology and sociology. In contrast to the expected utility theory (Von Neumann & Morgenstern, 1944), which assumes that consumers are rational decision-makers, the prospect theory (Tversky & Kahneman, 1979) states that humans do not always act rationally in situations that involve uncertainty. In line with this, the framing theory that developed within the field of psychology suggests that humans' responses to messages are influenced by how the messages are framed, and even though some messages convey the same factual information, humans respond differently depending on e.g. whether the messages are framed as gains or losses. According to Tversky & Kahneman (1979), framing a message as a gain influences people to be more risk averse (i.e. avoid taking risks) while framing a message as a loss influence them to be more risk seeking (i.e. willing to take risks). Druckman (2001b) labeled this type of framing as *equivalency framing* since it relied on different but logically equivalent words or phrases (e.g. 20% failure

or 80% success). The positive vs. negative framing, which is also referred to as valence, has been studied by several scholars who have manipulated messages in order to measure consumers' evaluations and purchase intentions (e.g. Levin & Gaeth, 1988; Gifford & Bernard, 2006; Putrevu, 2010). Thereby, the framing that is rooted in the psychological field of study emphasizes perception as reference dependent and refers to *how* information is presented.

In contrast, the sociology-rooted framing refers to *what* information is being communicated and can be traced back to Goffman (1974) who described it as interpretive schemas that individuals apply. In this field, communication can be characterized as framed, when one argument is selected or emphasized over another. Therefore, this type of framing has been labeled *emphasis framing* (Druckman, 2001a), and it has been used to develop persuasive communication that can influence beliefs, attitudes, intention, motivations and/or behaviors, particularly towards controversial issues (De Vries, Terwel & Ellemers, 2016).

3.3.2 Framing and Food Choice

The effects of framing have been researched in relation to food choice and liking by several scholars. Gifford and Bernard (2006) investigated how consumers' self-reported purchase likelihood of organic food differed depending on if the message was framed as positive or negative (i.e. communicating the potential benefits from organic methods vs. the consequences of conventional agriculture). In line with the researchers' assumptions, the study concluded that positive framing had a significant increase in consumers' self-reported likelihood to buy organic foods. In contrast, other scholars have focused on the reframing of names or descriptions of foods in order to test how consumers respond to them. Turnwald, Jurafsky, Conner and Crum (2017) identified that the names of healthy dishes among 100-top selling chain restaurants in the US in 2015 were described by significantly less appealing themes (e.g. less exciting, tasty, crispy) compared to less healthy, standard options. The study concluded that the descriptions of foods could influence the beliefs of healthy foods to be less indulgent and tasty. Following this line of thought, Turnwald et al. (2019) tested whether labels focusing on taste would increase the vegetable intake among 137,842 dinner decisions compared to health-focused labels. The study found that the vegetable selection increased by 29% compared to the health-focused labels and 14% compared to the basic label, while the overall vegetable consumption also increased by a total of 39%. Moreover, in a study by Wansink, Van Ittersum and Painter (2005), dish names, which included words associated with taste and emotion, positively influenced consumers' attitudes toward the dish (see also Wansink, Painter & Van

Ittersum, 2001). Similarly, Turnwald, Boles & Crum (2017) found that indulgent descriptions of vegetables in a university cafeteria significantly increased the number of people choosing vegetables and the total mass of consumed vegetables compared to the vegetables that were labeled with basic or healthy descriptors. This was despite the fact that the vegetables were prepared in the same way. Thereby, the literature shows that by emphasizing attributes that are more enjoyable and tastier, the vegetable intake is likely to increase compared to less healthy options. Here, it is particularly of interest that simple actions such as framing messages can influence consumers' food choices.

3.3.3 Reframing of Vegetarian Food

The increasing focus on diets and its environmental impact has made the framing of vegetarian food an interesting topic for scholars, as there is a demand for more sustainable food products among consumers (Peschel, et al., 2019). Similar to the findings of previously mentioned studies (Turnwald et al., 2019; Turnwald, Boles & Crum, 2017), Krpan and Houtsma (2020) found that by reframing the name of a vegetarian food category on a restaurant menu, consumers' likelihood of choice was influenced. When the vegetarian category was framed as pro-environmental, social, or even neutral, the likelihood of choosing the vegetarian dishes increased compared to when the category was labeled as vegetarian. This was despite the fact that neither names nor descriptions of the dishes were changed. Thus, even the absence of framing the category as vegetarian increased the likelihood of choice. These findings are interesting since several vegetarian food products are introduced to the Danish market and manufacturers create vegetarian labels and directly promote products as "vegetarian" (Coop Analyse, 2019a; European Vegetarian Union, 2019a). The previously mentioned research suggests that it might be more profitable and generate more sustainable choices by framing products as environmental compared to vegetarian.

Moreover, Peschel et al. (2019) found that consumers activate different associations when presented to framed messages based on the different properties of the product. In their study, a total of 90 consumers were presented to plant-based food products that were either framed as sustainable, healthy, or with a substitute to an animal-based ingredient. The sustainable communication resulted in higher complexity and fewer associations to the product properties (e.g. price and taste). Instead, the associations were concerned with the environmental impact and the authenticity of the product. The health-related framing evoked positive associations and more complex networks among the consumers that focused on other food product

properties (e.g. processing degree and nutrition). The substitution-related frame resulted in a smaller network and fewer associations and connections compared to the health and sustainability aspects, which implies that consumers lack associations related to the substitute ingredient. Additionally, consumers who were exposed to the substitution-related frame, associated the products with "expensive", which ultimately will affect how vegetarian food products are marketed and communicated to consumers. The literature clearly suggests that consumers' product evaluations and choices depend on the framing of the product and in combination with the fact that limited attention is dedicated to each product in the aisles of the supermarkets (Gidlöf, Anikin, Lingonblad, & Wallin, 2017), it is crucial for marketers to identify the most important message or benefit that the consumer group and product have (Peschel et al., 2019).

3.4 Cognitive Biases: The Halo and Devil Effect

Cognitive biases have been thoroughly researched since the late 1960s and early 1970s. This stem of research challenged the traditional view of human rationality in which humans are seen as rational decision-makers who carefully assess each alternative based on its probability and utility and choose the option that offers the optimal combination of these (Gilovich & Griffin, 2002). In Kahneman and Tversky's (1982) research on cognitive biases and heuristics, it was proposed that instead of rationally weighing alternatives, humans rely on various heuristics to reduce the complexity of problems. The use of these heuristics results in cognitive biases e.g. halo effects and devil effects. Kahneman and Tversky (1982) found that cognitive biases were not caused by motivational effects such as distorted judgments due to payoffs and penalties. In fact, cognitive biases arose in situations where participants attempted to make a rational decision as well.

3.4.1 Definitions of The Halo and Devil Effect

The *halo effect* is a well-known cognitive bias within the field of psychology. It occurs when the evaluation of a person's unknown characteristics is positively influenced by known, positive characteristics of that person. The opposite effect is often called the *devil effect* (or horn effect) and occurs when the evaluation of a person's unknown characteristics is negatively influenced by known negative characteristics of that person (Forgas & Lahm, 2016). These two phenomena were first discovered by Thorndike (1920) who conducted an experiment in which superiors in the army were asked to rate their officers based on several different characteristics

including physical qualities, intelligence, leadership, and personal qualities. Although the superiors were asked to rate these characteristics independently of each other, Thorndike (1920) observed that each officer's ratings were highly and evenly correlated. Based on this, it was evident that the superiors were unable to think of each officer in terms of several different isolated characteristics. Instead, they let their positive or negative impression of one characteristic influence the rating of other characteristics.

Previous research has drawn upon several different theoretical frameworks in order to explain the occurrence of halo effects. For instance, halo effects have been explained based on Gestalt theories of perception, which suggest that "*human perceivers are universally motivated to construct coherent, consistent impressions that show good shape and form*" (Forgas & Lahm, 2016, p. 287). Furthermore, associative network theories have also been used to explain the occurrence of halo effects. These theories state that based on humans' overall experience of the world, some attributes become more closely associated in memory than others (Forgas & Lahm, 2016). Unlike the earlier mentioned findings regarding cognitive biases by Kahneman & Tversky (1982), it has also been found that the halo effect tends to disappear when a more systematic and analytical processing is used (Forgas, 2011). Hence, this indicates that the halo effect is particularly likely to arise in food choices as such purchases are considered low involvement for which consumers use lower cognitive efforts (Spanjaard et al., 2014; Hoyer, 1984).

3.4.2 The Halo and Devil Effect in Food Choices

Numerous studies have found evidence for the halo effect in relation to food products. It has been used to explain consumers' perceptions and attitudes towards food and beverages based on packaging labels and claims (Schuldt & Schwarz, 2010; Sörqvist et al., 2015; Besson, Bouxom & Jaubert, 2020; Schuldt & Hannahan, 2013; Rousseau, 2015). Several scholars have found that organic food labels give rise to a halo effect by positively influencing the perception of other product attributes. Schuldt and Schwarz (2010) found that cookies labeled as organic were perceived to be lower in calories than conventional cookies by participants, and especially among pro-environmental consumer groups. These findings were confirmed in the study by Schuldt and Hannahan (2013) in which it was concluded that organically labeled food products were perceived as healthier compared to conventional food products. Although there is extensive evidence for the halo effect in relation to food labels, the study by Schuldt and Hannahan (2013) is one of the few studies that also reported the negative halo effect i.e. the

devil effect, in relation to food labels. In their research, it was found that the taste quality of organically labeled food products was rated lower compared to conventional products among consumers with low environmental concern. These consumers also rated the taste quality of food products labeled as organic lower than consumers with high environmental concerns. One of the suspected reasons for these negative taste inferences was inconsistencies between consumers' personal values and those values conveyed by the label (Schuldt & Hannahan, 2013). Furthermore, organic labels have shown to influence the perception of price. In a study by Ellison, Duff, Wang and White (2016), it was found that participants perceived organically labeled products as more expensive compared to conventional products. These findings have important implications for marketers in terms of positioning their products in consumers' minds.

Evidence for halo effects has also been found in relation to eco-labels. Sörqvist et al. (2015) conducted three different experiments and found that eco-labels positively influenced taste ratings of bananas, raisins, and grapes but not of water. It was also concluded that eco-labeled raisins were perceived to have lower calorie counts than conventional raisins and that eco-labeled raisins and grapes were perceived to contain higher levels of vitamins and minerals. Additionally, it was found that participants were more willing to pay for eco-labeled raisins, grapes, and water and found that the same eco-labeled products were perceived to be healthier than conventional products and improve participants' mental performance. Furthermore, the researchers also investigated the impact of consumers' environmental consciousness. They found that pro-environmental consumers were more likely to respond preferably toward eco-labeled products in terms of; health benefits; vitamin and mineral content; mental performance; and willingness to pay (Sörqvist et al., 2015). These findings are consistent with the previously presented findings by Schuldt and Schwarz (2010) and Schuldt and Hannahan (2013).

Furthermore, scholars have found evidence for the halo effect in relation to Fair Trade labels. Rousseau (2015) investigated consumers' preferences for organically labeled chocolate, Fair Trade labeled chocolate and conventional chocolate. It was found that the Fair Trade label had a stronger positive influence on consumers' preferences and attitudes compared to the organic label. Similarly, Schuldt, Muller and Schwarz (2012) found evidence for the halo effect when a product was presented as Fairtrade and when a company was presented as socially ethical. In their experiment, they asked participants to evaluate the calorie count of chocolate bars. The chocolate bar that was presented as Fairtrade was perceived to consist of lower calories.

Similarly, participants evaluated a chocolate bar that was produced by a company that treats its workers ethically opposed to unethically as less caloric.

Although evidence for the halo effect in relation to various food labels has been found, there is very limited existing research on the halo effect in relation to vegetarian labels. A recent study by Besson et al. (2020) is one of the few studies that has investigated this relationship. In the study, they investigated the influence of vegetarian food labels on participants' calorie perception of vegetarian burgers. They found that participants perceived burgers that were labeled as vegetarian to consist of fewer calories than burgers that were not labeled as vegetarian. The limited existing research in this area makes it a relevant area to further explore.

3.5 Green Consumerism

During the last couple of decades, the public has gradually become more environmentally conscious and as a response to this, companies are increasingly developing environmentally friendly products (Kim & Choi, 2005). According to Johnstone and Tan (2015), environmentally conscious consumers are "*consumers who are concerned about the environment and participate in some pro-environmental behaviour*" (p. 805). These behaviors can e.g. be to avoid using plastic bags, saving energy, recycling, buying environmentally friendly products, or choosing more environmentally friendly transportation solutions (Johnstone & Tan, 2015). Chan (1996) reported findings that are aligned with this definition and concluded that consumers who are concerned about the environment are more likely to participate in green buying behavior. However, it has also been found that concerns about the environment are not always strong predictors green buying behavior (Akehurst, Alfonso & Goncalves, 2012). This is often denoted as the attitude-behavior gap (Vermeir & Verbeke, 2006; Peattie, 2010).

Akehurst et al. (2012) argued that green buying behavior can be explained by perceived consumer effectiveness (i.e. consumers' belief that each of their individual actions is important in terms of preserving the environment) and altruism. Kim and Choi (2005) reported similar findings, as they found that collectivism directly and positively influenced perceived consumer effectiveness and that perceived consumer effectiveness influenced green buying behavior. This indirect relationship between collectivism and green buying behavior can be explained by the fact that green buying behavior differs from other types of purchase decisions not characterized as green buying. Green buying behavior can be characterized as more future and

group oriented compared to regular buying behavior, which is more aligned with a collectivistic than an individualistic mindset (Kim & Choi, 2005). Hence, the findings indicate that green consumers tend to be less concerned about themselves and more concerned about their community. Additionally, Kim and Choi (2005) found that environmental concern influenced green buying behavior, which differed from the reported findings by Akerhurt et al. (2012).

In a study by Stern and Dietz (1994) it was concluded that three different value orientations including egoistic, social-altruistic, and biospheric value orientations are relevant for understanding consumers' pro environmental beliefs and intentions. Consumers with egoistic value orientations tend to be concerned about the aspects of the environment that can impact them personally but are, on the other hand, less prone to take action to protect the environment when personal costs are high. Consumers with social-altruistic value orientations base their decision to engage in pro-environmental behavior on the cost or benefits for other people e.g. the community or an ethnic group, whereas consumers with a biospheric value orientation instead make these decisions by weighing the cost and benefits for the ecosystem or biosphere. Stern and Dietz (1994) found a link between social-altruistic value orientations and pro environmental intentions. They also found a link between biospheric value orientations and pro environmental intentions whereas an inverse link was found between an egoistic value orientation and pro environmental intentions. Thus, consumers with social-altruistic and biospheric value orientations are more likely to have higher intentions to engage in green buying behavior. These findings, along with the findings presented by Akehurst et al. (2012) and Kim and Choi (2005), highlight the importance of consumers' personal values as predictors for engagement in green buying behavior.

Furthermore, although many consumers are adopting green consumption behaviors, many consumers are also still resistant to changing their consumption habits. A study on ecological food consumption by Tobler, Visschers and Siegrist (2011) investigated consumers' willingness to adopt ecological food consumption behaviors and found that the majority of the participants either already adopted this behavior or were unwilling to engage in it. For example, when participants were asked about their perception of the environmental benefit of six ecological food consumption patterns, decreased meat consumption was listed as the least environmentally friendly consumption pattern. It was found that this was partly because they dismissed the environmental impact of meat consumption due to their unwillingness to reduce meat consumption. Hence, this indicates that some consumers' eating habits are difficult to change. However, these findings were suspected to be mainly true for middle aged consumers,

as it was found that younger consumers were more willing to change their diets for environmental reasons (Tobler et al., 2011). However, it should be acknowledged that the findings reported by Tobler et al. (2011) also indicated another reason why participants listed *"decreased meat consumption*" as the least beneficial consumption pattern for the environment. It was because of a lack of knowledge among the participants. Although packaging is not one of the aspects related to food production with the largest environmental impact, participants still listed "*avoiding food products with excessive packaging*" as the most beneficial consumption pattern for the environment. Thus, this further emphasizes the lack of knowledge among consumers (Tobler, et al., 2011). Another study reported similar findings and suggested that by providing consumers with information about how they can reduce their environmental impact through their consumption habits, sustainable consumption can be promoted (Hanss & Böhm, 2013).

Furthermore, in a study by Casaló and Excario (2018) it was found that women had more pro-environmental behaviors than men (Casaló & Escario, 2018). Similarly, Vicente-Molina, Fernández-Sainz and Izagirre-Olaizola (2018) found that gender plays an important role in predicting pro-environmental behavior. Thus, these findings together with the findings by Tobler et al., (2011) suggets that chacteristics such as age and gender are strong influential factors in determining pro-environmental behavior.

4. RESEARCH GAP & HYPOTHESES

4.1 Research Gap

The influence of organic and fair trade labels on consumers' perceptions has been widely researched among scholars, and such labels have particularly shown to positively influence consumers' perceptions of food products (Schuldt and Schwarz, 2010; Rousseau; 2015; Schuldt & Hannahan, 2013). However, limited research exists on the influence that vegetarian labels may have, despite their strong implementation on food products (European Vegetarian Union, 2018; Besson et al., 2020). Similarly, the existing literature on the negative effects of labels is very limited (Schuldt & Hannahan, 2013). Furthermore, the current literature on vegetarianism has mainly focused on consumers' perceptions and attitudes of vegetarians and vegetarian diets, but not specifically on vegetarian food products. Here, the findings have shown that different consumer groups hold diverse perceptions and attitudes toward vegetarians and their diets (Povey et al., 2001; Ruby et al., 2016; Rosenfeld & Tomiyama, 2020). In a recent study, meat eaters were found to hold negative perceptions toward vegetarian diets and were therefore also more resistant toward following a vegetarian diet (Rosenfeld & Tomiyama, 2020). Thus, further research on the influence of vegetarian labels on perceptions and attitudes of food products is needed in order to determine their effects.

Additionally, researchers have shown that consumers' food choices can be shifted toward vegetarian options, which fundamentally are more climate friendly compared to their meat-based equivalents (Reisch et al., 2013), by utilizing framing (Turnwald et al., 2019; Turnwald, Boles, & Crum, 2017; Peschel et al., 2019; Krpan & Houtsma, 2020). Krpan and Houtsma (2020) specifically found that even the absence of framing vegetarian food as vegetarian increased consumers' likelihood of choice. Furthermore, as consumers are becoming more environmentally conscious (Kim & Choi, 2005) and previous research has shown that it could be beneficial to strengthen the focus on communicating the environmental friendliness (Peschel et al., 2019), it is of interest to test if climate friendly framed "meat free"[2] food products are more positively perceived compared to vegetarian framed "meat free" food products. Such research has not been conducted to our knowledge in any renowned scientific journal to this

[2] The term "meat free" will be applied instead of the term "vegetarian" in order to clearly distinguish between vegetarian food products (referring to the contents of the product) and the food products labeled as vegetarian.

date. Therefore, the present thesis will scientifically contribute with an empirical study of how Danish consumers' perceptions and attitudes of "meat free" food products are influenced by vegetarian and climate friendly labeling. Thus, the thesis aims to answer the following research question:

> *How do consumers perceive "meat free" food products labeled as vegetarian and/or climate friendly, and do the labels affect their attitudes and purchase intentions?*

4.2 Hypotheses

According to Lusk and Briggeman (2009), nutrition, taste, and price are among the most important product attributes that consumers consider when purchasing food. Hence, when investigating consumers' perception of food products labeled as vegetarian, it is especially relevant to look at the perception of the products in relation to these three attributes. Numerous studies have already indicated that vegetarian diets are perceived to be healthy both among people who eat meat and those who follow a vegetarian diet (Povey et al., 2001; Lea, & Worsley, 2003a; Lea, & Worsley, 2003b; Ruby et al., 2016). However, contradicting findings prevail in the literature, as Rosenfeld and Tomiyama (2020) could conclude that meat eaters were resistant to following a vegetarian diet partially because they perceive it to be less healthy. Additionally, food labels have shown to influence the perceived healthiness of products due to the halo effect. Sörqvist et al. (2015) found that eco-labeled products were perceived as healthier compared to conventional equivalents. Moreover, eco-labeled, organically labeled, and vegetarian labeled products have been found to be perceived as containing fewer calories compared to conventional products (Sörqvist et al., 2015; Schuldt and Schwarz, 2010; Besson, et al., 2020). Therefore, food products labeled as vegetarian are expected to be perceived as healthier compared to food products not labeled as vegetarian.

Previous research has found that consumers avoid following a vegetarian diet because such a diet is perceived to be less tasty (Rosenfeld & Tomiyama, 2020; Mullee et al., 2017). Furthermore, labels have shown to influence taste perceptions. In a study by Sörqvist et al. (2015) found that eco-labels positively influenced taste ratings of bananas and grapes. Schuldt and Hannahan (2013) found that organic labels negatively influenced taste quality ratings of food products among consumers with low environmental concern. Therefore, it is expected that food products labeled as vegetarian are perceived as less tasty compared to products not labeled as vegetarian.

According to Povey et al. (2001), meat eaters have the most salient belief that vegetarian diets are expensive. This finding was supported by Rosenfeld and Tomiyama (2020), who found that meat eaters were more resistant toward following a vegetarian diet, as such a diet was perceived to be too expensive. Additionally, it has been found that food labels can influence consumers' price perceptions. Ellison et al. (2016) concluded that consumers perceived organically labeled food products as more expensive compared to conventional products. Therefore, it is expected that food products labeled as vegetarian are perceived as more expensive compared to products not labeled as vegetarian.

As consumers' perceptions form their attitudes, it is plausible to assume, based on the above mentioned arguments, that consumers have less positive attitudes toward food products labeled as vegetarian compared to food products not labeled as vegetarian and therefore have lower purchase intentions for these products (Ajzen & Fishbein, 1980; Armstrong et al., 2020). Thus, the following hypotheses were derived:

> ***H1:*** *Consumers perceive food products labeled as vegetarian to be (1a) healthier, (1b) less tasty, and (1c) more expensive compared to equivalent food products not labeled as vegetarian.*
>
> ***H2:*** *Consumers have less positive attitudes toward food products labeled as vegetarian compared to equivalent food products not labeled as vegetarian.*
>
> ***H3:*** *Consumers have lower purchase intentions for food products labeled as vegetarian compared to equivalent food products not labeled as vegetarian.*

Furthermore, vegetarian diets are acknowledged to be more climate friendly compared to a meat-based diet, as the production of meat emits high levels of CO^2 compared to plants (Reisch et al., 2013). As consumers are presented with clear information about the vegetarian contents of the products through the vegetarian label, it was further of interest to investigate whether consumers perceive vegetarian products as climate friendly and how the perception compares to the products not labeled as vegetarian. Additionally, we found it interesting to investigate how food products labeled as climate friendly compare to equivalent food products labeled as vegetarian and food products without labels in terms of their healthiness, tastiness, expected price, and climate friendliness. Moreover, it was of interest to investigate consumers' attitudes toward and purchase intentions for food products labeled as climate friendly. We also found it interesting to investigate consumers' perceptions, attitudes, and purchase intentions for food

products labeled with both the vegetarian and climate friendly labels. The Danish officials are currently investigating the opportunities of creating a climate label in order to influence consumers' behaviors (Food Tank, 2019), thus making the climate label relevant to investigate. In order to be able to influence behavior, it is crucial to study the perceptions and attitudes first, thus making the present research highly relevant.

Scholars have found that by framing vegetarian dishes in various ways, consumers can be influenced to choose vegetarian dishes (Krpan & Houtsma, 2020) and eat more vegetables (Turnwald, Boles, & Crum, 2017; Turnwald, Jurafsky, Conner & Crum, 2017; Turnwald et al., 2019). The study by Krpan and Houtsma (2020) found that the likelihood of choosing vegetarian dishes increased when the category was framed as pro-environmental, social, or neutral compared to when it was framed as vegetarian. Hence, it is plausible to assume that by using a climate friendly label for vegetarian products, consumers will have more positive attitudes and thus higher purchase intentions for these products (Ajzen & Fishbein, 1980; Armstrong et al., 2020). Thereby, the following two hypotheses were derived:

> ***H4:*** *Consumers have more positive attitudes toward food products labeled as climate friendly compared to equivalent food products labeled as vegetarian.*
>
> ***H5:*** *Consumers have higher purchase intentions for food products labeled as climate friendly compared to equivalent food products labeled as vegetarian.*

Previous research has shown that high levels of environmental consciousness among consumers function as a good predictor for positive perceptions and attitudes toward organically and eco-labeled food products (Schuldt & Schwarz, 2010; Sörqvist et al., 2015). Thus, it is plausible to assume that consumers who are more conscious about the environment have more positive attitudes and higher purchase intentions for food products labeled as climate friendly compared to consumers with lower levels of environmental consciousness. Moreover, today, it is acknowledged that vegetarian food products are more environmentally friendly compared their meat-based equivalents (Peschel et al., 2019; Reisch et al., 2013). Thus, consumers who are more conscious about the environment are also expected to have more positive attitudes and higher purchase intentions for food products labeled as vegetarian compared to those with low levels of environmental consciousness. Hence, the following hypotheses were derived:

H6: *Consumers who have higher levels of environmental consciousness, have more positive attitudes toward food products labeled as (6a) vegetarian, and (6b) climate friendly compared to consumers with lower levels of environmental consciousness.*

H7: *Consumers who have higher levels of environmental consciousness have higher purchase intentions for food products labeled as (7a) vegetarian, and (7b) climate friendly compared to consumers with lower levels with environmental consciousness.*

Previous research shows that females generally have more positive perceptions of vegetarian diets compared to men. In Western societies, there are more female vegetarians than male vegetarians, but even among the female non-vegetarians, meat consumption is lower than for male non-vegetarians (Mullee et al., 2017; Ruby, 2012). Thus, it can be expected that females have more positive attitudes and higher purchase intentions for food products labeled as vegetarian. Furthermore, previous research also found that women had more pro-environmental behaviors than men (Casaló & Escario, 2018; Vicente-Molina, Fernández-Sainz and Izagirre-Olaizola (2018), thus it is plausible to assume that females have more positive attitudes and higher purchase intentions for food products labeled as climate friendly compared to males. Hence, the following hypotheses were derived:

H8: *Female consumers have more positive attitudes toward food products labeled as (8a) vegetarian, and (8b) climate friendly compared to male consumers.*

H9: *Female consumers have higher purchase intentions for food products labeled as (9a) vegetarian, and (9b) climate friendly compared to male consumers.*

Furthermore, it has been found that younger consumers are more willing to change their diets for environmental reasons (Tobler, et al., 2011). Thus, it can be expected that younger consumers have more positive attitudes and higher purchase intentions for food products labeled as climate friendly compared to older consumers. Similarly, as vegetarian food is acknowledged to be more climate-friendly compared to meat (Reisch et al., 2013), it is plausible to expect that younger consumers have more positive attitudes and higher purchase intentions for food products labeled as vegetarian compared to older consumers. Therefore, the following hypotheses were derived:

H10: *Younger consumers have more positive attitudes toward food products labeled as (10a) vegetarian, and (10b) climate friendly compared to older consumers.*

H11: *Younger consumers have higher purchase intentions for food products labeled as (11a) vegetarian, and (11b) climate friendly compared to older consumers.*

Furthermore, previous research has found that health conscious consumers evaluate products differently than other consumers (Silayoi & Speece, 2004; Mai & Hoffmann, 2012; Maehle, et al., 2015; Steptoe et al., 1995). Therefore, it was also of interest to investigate whether consumers with higher levels of health consciousness have more or less positive attitudes toward the labeled products and if they have higher or lower purchase intentions. Similarly, it was found that consumers hold rather diverse perceptions and attitudes toward vegetarianism (Povey et al. 2001; Ruby et al., 2016; Rosenfeld and Tomiyama, 2020), which we assume will influence their attitudes and purchase intentions when buying labeled ”meat free” food products. Therefore, it was of interest to test whether this variable influenced the effect of the labels on consumers’ attitudes and purchase intentions.

4.3 Conceptual Framework

Figure 3 illustrates the conceptual framework of the present research, which is intended to provide the reader with an overview of the relationships between the variables of interest.

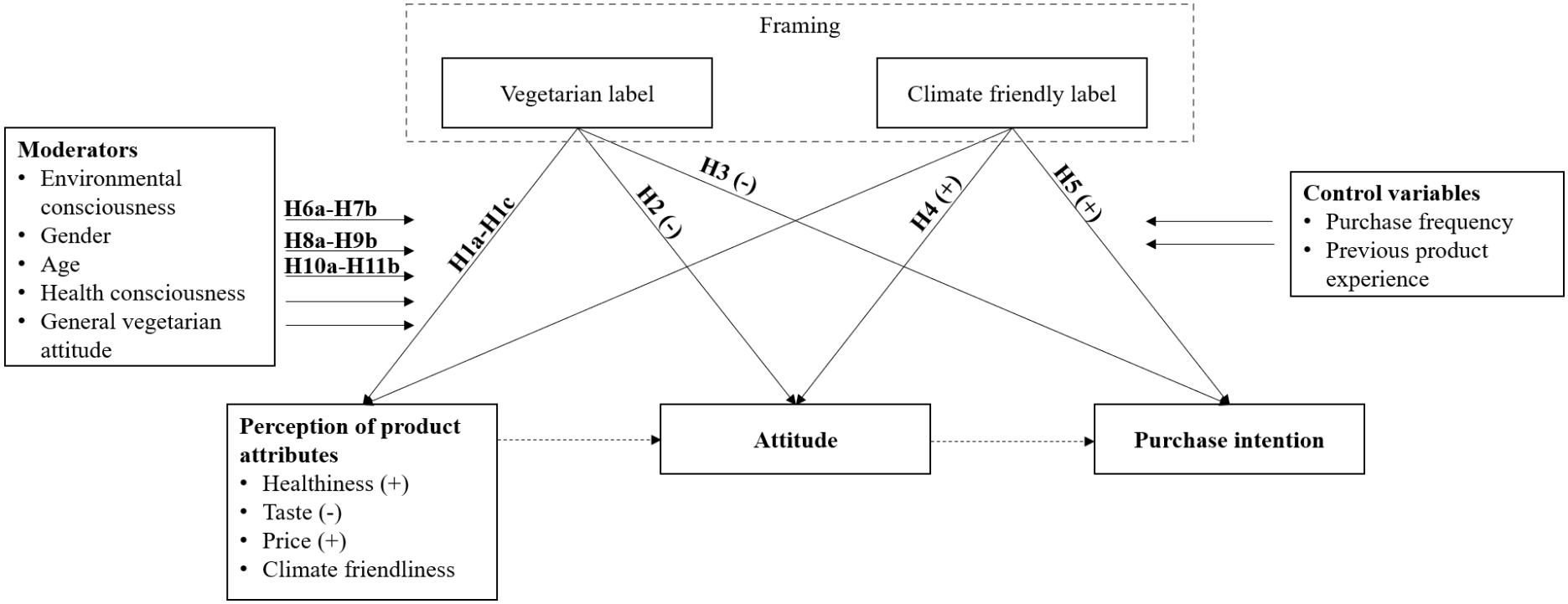

Figure 3: Conceptual Framework [own depiction].

5. METHODOLOGY

The following section introduces the methodological approach, which this thesis applies in order to answer the presented research question and the corresponding hypotheses. The section takes an outset in the *research onion* proposed by Saunders, Lewis and Thornhill (2016), as it enables structure and coherence throughout the choices taken (*see figure 4)*. The section thus explains and argues for the research philosophy, research approach, and research design before explaining and arguing for the data collection and data analysis.

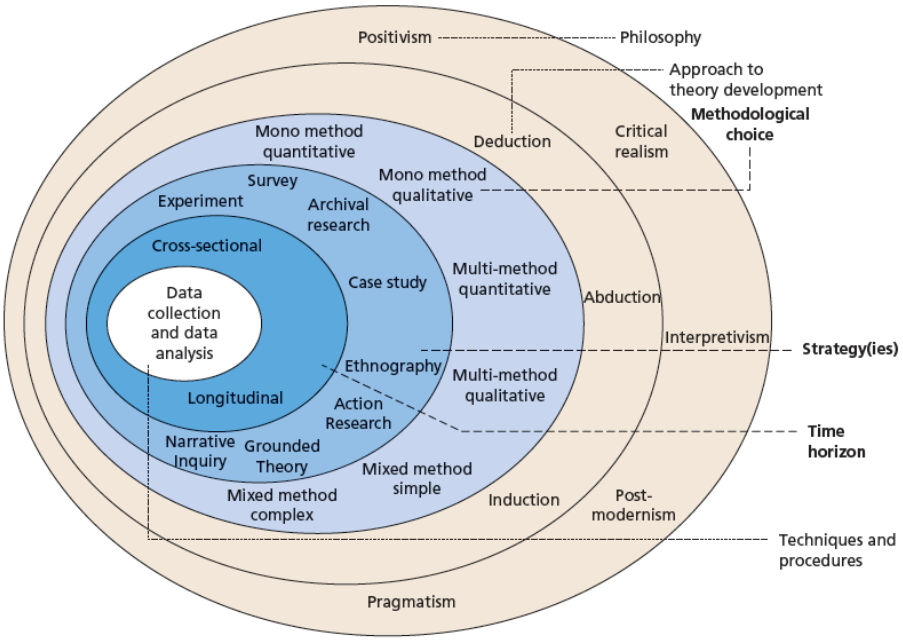

Figure 4: The research "onion" (Saunders, Lewis & Thornhill, 2016).

5.1 Research Philosophy

Research philosophy can be characterized as "*a system of beliefs and assumptions about the development of knowledge*" (Saunders, et al., 2016, p. 124) and forms a basis for researchers' methodological choice, research strategy, data collection, and analysis techniques. Although there are several different research philosophies, positivism and interpretivism are the two most distinguished philosophies. The present thesis is based on a positivist approach, which allows us to test the presented hypotheses objectively (Saunders et al., 2016). Positivism has its origin in the natural sciences, which has implications for how research is conducted (Blumberg,

Cooper & Schindler, 2011). When social and physical phenomena are studied, researchers use the same approach as natural scientists apply when studying nature. More specifically, causal relationships are observed and used to produce law-like generalizations, similar to those produced by scientists. These generalizations are subsequently used to explain and predict behavior (Saunders et al., 2016).

Research philosophies are distinguished from one another based on the assumptions made by researchers. *Ontological assumptions* are assumptions about the realities that are encountered in the research whereas *epistemological assumptions* are assumptions about human knowledge i.e. what is considered valid, legitimate, and acceptable knowledge (Saunders, et al., 2016). Ontologically, positivists view the social world objectively and assume that there is one true reality (Blumberg et. al., 2011; Saunders, et. al., 2016). In the present thesis, the positivist approach was applied in order to gain an objective understanding of consumers' perceptions and attitudes. This approach also allowed us to test the relationship between variables. Epistemologically, acceptable knowledge constitutes observable and measurable facts (Saunders, et al., 2016). Thus, in this thesis knowledge was acquired by testing the previously proposed hypotheses using a research strategy from which measurable data could be derived. The findings that are presented at the end of the research do not aim to explain complexities and individual differences but aim to provide an overview of the perceptions and attitudes toward vegetarian and climate friendly labeled food products among Danish consumers. Furthermore, when research is conducted, *axiological assumptions*, which relate to *how* and to *which* extent a researcher's own values and those of participants influence the research process, are also made. For this thesis, we chose a research strategy, which enabled us to not interfere with the data collection process. This is in line with a positivist research philosophy as positivists aim to achieve a value-free research by staying neutral throughout the research process (Saunders, et al., 2016).

5.2 Research Approach

Two main approaches are used in scientific research: a deductive and an inductive approach. This thesis follows a *deductive approach*, as theories are guiding the research process. On the contrary, an inductive approach is used when theories are the outcome of the research process. For a deductive approach, hypotheses are derived based on what is known about the chosen field of study together with theoretical considerations. The hypotheses are subsequently used to drive the data collection (Bryman & Bell, 2015). The previously presented literature review

served as a basis for the development of the hypotheses in this thesis. Based on the hypotheses, we were able to propose an appropriate data collection method from which findings that were used to confirm or reject the hypotheses were derived (Bryman & Bell, 2015). By applying a deductive approach, this thesis aims to contribute to the existing research related to food labeling practices and sustainable food consumption.

5.3 Research Design

A research design can be defined as "*the plan and structure of investigation so conceived as to obtain answers to research questions*" (cited in Blumberg et al., 2011, p. 147). In order to develop an appropriate research design, it is crucial to decide how data should be collected and analyzed. Based on the research question, the purpose of the research should also be specified. A research can fulfill exploratory, descriptive, explanatory, or evaluative purposes (Saunders, et al, 2016). Based on the previously stated research question, this thesis follows an *explanatory research design*, also called a *causal research design*. However, it can also be argued that it has an exploratory character (Saunders et al., 2016) as vegetarian food labels have not been studied in relation to framing previously. The purpose of an explanatory research is to examine how one variable influences a change in another variable, which is referred to as causation (Blumberg et. al., 2011). Specifically, the purpose of this thesis is to investigate how the presence of food labels leads to changes in Danish consumers' perceptions, attitudes and purchase intentions for food products.

In scientific research, it is argued that correlation is not the same as causation, and in order to determine causation, one must demonstrate that variable A produces variable B or that variable A forces variable B to occur. In empirical research, which the present research is, causality between two variables cannot be determined with certainty since it is not possible to observe and measure all processes that might be responsible for the relationship between the variables. Thus, empirical conclusions, like those produced in this thesis, are probabilistic statements based on what is observed or measured. However, three different types of evidence can be collected in order to increase the probability of causality between two variables. Thus, to establish causality in the present thesis, we collected this evidence. First, a covariance between food labels and changes in consumers' perceptions and attitudes should be demonstrated. Second, the findings should indicate that changes in consumers' perceptions and attitudes occur after exposure to the food labels. Third, it should be ensured that there are no other possible causes for changes in consumers' perceptions and attitudes than the presence of food labels

(Blumberg et. al., 2011). In the following sections, we address how these three types of evidence were collected in this study.

Methodological Choice

The first choice that has to be made when developing a research design is choosing between a qualitative and quantitative research (Saunders et al., 2016). The choice between the two approaches depends on the researcher's epistemological assumptions. As previously mentioned, in a positivist research, knowledge is acquired by deriving hypotheses and testing those by measuring reality (Blumberg et al., 2011). Hence, the data that is collected as a part of a positivist research should be observable and measurable (Saunders et al., 2016). Furthermore, as the present thesis aims to test Danish consumers' perceptions, attitudes, and purchase intentions, a quantitative approach was deemed the most appropriate approach as it allows to test relationships between variables by examining and measuring them numerically using statistical methods. Quantitative data collection is standardized and thus allows us to efficiently collect data from a large sample. In contrast, for qualitative approaches, the data collection is non-standardized, which is more suitable for smaller samples and more relevant when exploring phenomena. Moreover, a mono method approach was selected as a single data collection technique was used (Saunders et. al., 2016).

Research Strategy

When developing a research design, a research strategy has to be selected. It refers to the plan of how to undertake the process of answering the research question (Saunders et. al., 2016). As this thesis investigate the causal relationship between food labels and consumers' perceptions, attitudes, and purchase intentions toward food products, an *experiment* was selected as the most appropriate research strategy. There are several advantages of the experimental research strategy. As previously mentioned, causality between two variables cannot be determined with certainty through empirical research. However, the probability of causality between two variables can be established more convincingly with experiments than with any other primary data collection method. Similarly, external variables can be controlled for more effectively in experiments compared to other research strategies. Additionally, experiments can be replicated in order to find an average effect of the independent variables for different situations, people, and times (Blumberg et. al., 2011).

In an experiment, there is at least one independent variable and one dependent variable (Blumberg et. al., 2011). The independent variable is manipulated in order to measure its influence on the dependent variable (Saunders et. al., 2016). In this thesis, vegetarian and climate friendly food labels serve as the independent variables. The consumers' perceptions of the four chosen product attributes, attitudes, and purchase intentions towards the labeled food products serve as the dependent variables (*for an overview of the variables see table 1*).

Additionally, in some cases, it is relevant to control for variables that can influence the relationship between the independent and dependent variable if not held constant (Saunders, et al., 2016). In this thesis, we controlled for purchase frequency and previous product experience as those were expected to influence consumers' perceptions, attitudes, and purchase intentions in order to ensure that there were no other possible causes for the potential changes in the dependent variables. Furthermore, some experiments also have moderators, which are variables that influence the relationship between the independent variable and the dependent variable (Saunders et. al., 2016). Based on the existing and presented literature, it can be expected that four variables – environmental consciousness, health consciousness, gender, and age – have moderating effects on the relationship between food labels and consumers' perceptions, attitudes, and purchase intentions for labeled food products.

Independent variables	**Dependent variables**
1. Vegetarian label 2. Climate friendly label	1. Perception of healthiness 2. Perception of taste 3. Perception of price 4. Perception of environmental friendliness 5. Attitude 6. Purchase intention

Table 1: Overview of independent and dependent variables [Own depiction].

Time Horizon

Another aspect that should be taken into consideration when formulating a research design is the time horizon. Research can either be cross-sectional or longitudinal. *Cross-sectional research* is one that studies a phenomenon or phenomena at a specific point in time whereas *longitudinal research* is a study over a given period of time (Saunders et. al., 2016). Due to

time constraints, the present thesis was conducted as a cross-sectional study, as it studied consumers' perceptions, attitudes and purchase intentions at the specific time of the data collection.

5.4 Data Collection

The data collection, which is at the center of the research "onion" (*see figure 4)*, concerns the different collection techniques that researchers choose to make use of in order to answer their research question(s) (Bryman & Bell, 2011). Data collection can be divided into primary, secondary, or mixed data collection methods. A primary data collection allows the researchers to collect relevant data that can answer a specific research question, as the research's specific purpose is kept in mind during the data collection. In contrast, secondary data may have been collected for a purpose that does not correspond with the researchers' needs, thus making the findings inappropriate to apply in some cases (Saunders et al., 2016). In this thesis, *primary data* was collected as the research question aimed to empirically test Danish consumers' perceptions, attitudes, and purchase intentions of food products labeled as vegetarian and climate friendly. Thus, it was necessary to conduct a study with this specific purpose in mind, especially since this type of research has not been conducted before. Primary data also has other advantages. It enables researchers to access the raw data, establish their own definitions of the data variables, and control the data, which has been collected. This is not possible for secondary data (Saunders et al., 2016).

As previously mentioned, the present thesis follows an explanatory research design since it aims to examine and explain relationships between variables (Blumberg et. al., 2011). In these types of research, *questionnaires* tend to be used, and by taking the resource constraints in the form of money and time into account, this data collection method was evaluated to be appropriate and sufficient. Questionnaires allow each respondent to answer the same sets of questions in a predetermined order, which is an efficient way to collect responses from a large sample (Saunders et al., 2016). As the present research is the first to be conducted on the Danish market, it is relevant to start with a large sample in order to test the relationships between the variables before exploring them in depth (i.e. qualitative method). Additionally, questionnaires are suitable for closed-ended questions, which are primarily used when testing a relationship.

The type of questionnaire that was developed in order to collect relevant data was a *self-completion questionnaire*, which was distributed on the internet by using a hyperlink, thus it

can be further defined as a *web questionnaire* (Saunders et al., 2016). A self-completion questionnaire is characterized by being cheaper and quicker to administer compared to a structured interview. Furthermore, the chosen method allowed us to automate the data input, as our presence was not necessary in order for the respondents to complete the survey. Thereby, the interviewer effect was also excluded, which suggests that interviewer characteristics such as gender, social background, and ethnicity can bias answers that the respondents provide (Bryman & Bell, 2011). Moreover, the web questionnaire allowed us to easily apply a screening question in order to exclude vegetarian and vegan consumers from the study, as their perceptions, attitudes and purchase intention were not of interest. This type of data collection method has further been argued to minimize the effect of social desirability, as the respondents are not confronted with an interviewer. However, as the interviewer is not present during the completion, the respondents were unable to be guided or helped if they faced issues with understanding the questions. Since a pilot study was conducted prior to distributing the final web questionnaire, this type of error was minimized. This method also excludes interviewer variability in the order of the questions and allows the respondents to complete the survey when it is the most convenient for them (Bryman & Bell, 2011). Generally, electronic surveys such as web questionnaires are appropriate when limited resources are available and the target population suits an electronic survey, which is evaluated to be the case for the present research (Bryman & Bell, 2011). The research was conducted on Danish consumers in which 95% have access to a computer and internet at home (Danmarks Statistik, 2020). Bryman & Bell (2011) argue that internet users are biased as they tend to be better educated, wealthier, younger. However, we argue that when 95% of households have access to a computer and internet at home, it does not represent a threat to the reliability of the survey.

5.4.1 Pilot Study

Conducting a pilot study is always considered desirable before administering a self-completion questionnaire (Bryman & Bell, 2011), as it can ensure that the survey questions operate well, and the research instrument functions well. For self-completion questionnaires, respondents are unable to clarify potential confusion when participating in the study, which makes the pilot study important (Bryman & Bell, 2011). By conducting a pilot study, higher reliability and validity of the main study can be enabled, as data collection errors can be limited (Bryman & Bell, 2011). A pilot study was conducted by distributing the self-completion questionnaire on the internet to respondents (n = 12) who were comparable to the members of the target

population. This allowed us to avoid affecting the representativeness of the sample in the main study (Bryman & Bell, 2011). The respondents were specifically asked if they understood all the presented questions and were asked to measure the completion time in order for us to be able to accurately estimate the required time per respondent for the main study. Additionally, the respondents were asked to guess what the purpose of the study was in order to make sure they were unaware and thus not biased.

The pilot study identified inadequate instructions regarding the scale that measures the level of environmental consciousness (see *question 14 in appendix 1 or 2)*, therefore further instructions were included in the main study. However, no questions were misunderstood and only a few respondents identified the correct purpose of the study toward the end of the study. The identification of the purpose at this stage was not identified as a threat to the validity of the survey since the respondents were unable to go back in the survey and alter their responses.

5.4.2 Sampling Method

The need for sampling is almost invariably necessary in quantitative research and represents a key step in the research process (Bryman & Bell, 2011). In the present thesis, sampling was also applied and the target population (Saunders et al., 2016) consisted of Danish consumers who either eat meat regularly or occasionally. Therefore, the survey was also conducted in Danish, as it only allowed Danish-speaking consumers to participate. The sampling frame was unknown, which means that a list of all Danish consumers who eat meat does not exist. Hence, a *non-probability sampling* was used (Bryman & Bell, 2011). Non-probability sampling is also increasingly being used for testing and experimentation, thus represent a suitable solution for the present thesis (Dillman, Smyth & Christian, 2014).

Originally, we had planned to collect data in Rema 1000, which is a Danish supermarket, however, due to the outbreak of the COVID-19 virus, this was not possible. Thus, a *convenience sampling* was deemed the most appropriate sampling method. A convenience sampling is characterized by sampling respondents who are accessible to the researcher. Additionally, we applied a *snowball method to* achieve a larger sample size. The snowball method is characterized by establishing new contacts outside the initial group of people who were contacted (Bryman & Bell, 2011). When applying these methods, the probability of each respondent being chosen from the target population is unknown, which in turn makes it impossible to generalize the data on statistical grounds (Saunders et al., 2016). However, by

taking into consideration the limited resources we had available, this method is argued to be appropriate and sufficient for the present thesis, as the combination of methods allowed us to reach far more respondents compared to only choosing the convenience sampling method. Furthermore, since we are enrolled as students at a university, a convenience sample would have mainly provided access to other students. However, as the aim of the thesis was to investigate Danish consumers' perceptions, attitudes, and purchase intentions, it was evaluated much more attractive to combine these sampling methods to increase the likelihood of reaching other types of consumers. Thereby, the sample's representativeness of the population could be increased.

Practically, the survey was first shared with people who were available to us such as friends, family, colleagues, and fellow students via social media networks. We followed "netiquette"[3] by publishing a post that informed our networks about the study in which they were also encouraged to participate. It was furthermore emphasized that the participation was anonymous in order to decrease the non-response rate. The participation was voluntarily made by all respondents, which is also one of the characteristics of the snowball sampling method (Saunders et al., 2016). Furthermore, several of the respondents shared it with their networks on the internet and via mail, and some further shared it with their networks, which essentially represents the snowballing effect (Saunders et al., 2016).

5.4.3 Experimental Design

Control and Experimental Groups

For this thesis, a 2x2 in between-subject experimental design was used, which means that it consisted of three different experimental groups and one control group and that the participants were assigned to one of these groups (Saunders et al., 2016). The experimental groups each received a treatment whereas the control group did not receive any treatment (Bryman & Bell, 2015). More specifically, in the first experimental group, which will be denoted the *vegetarian group*, participants were exposed to a visual and a written vegetarian food label. In the second experimental group, which will be denoted the *climate friendly group*, participants were exposed to a visual and a written climate friendly food label and in the third experimental group, which will be denoted the *mixed group*, participants were exposed to both vegetarian

[3] Netiquette refers to the acceptable way of using the internet and encourgaes courtesy (Saunders et al., 2016).

and climate-friendly visual and written food labels. In the control group, participants were not exposed to any food labels (*see table 2 for an overview)*.

To be able to measure the relationship between food labels and participants' perceptions, attitudes, and purchase intentions for the products as accurately and objectively as possible, participants were randomly assigned to one of the groups. This means that each participant had an equal chance of assigned to any of the groups (Blumberg et. al., 2011). Essentially, what researchers attempt to achieve by randomly assigning participants to groups is to establish groups that are similar in every aspect besides the manipulation of the independent variable. As a result, all groups will be subject to the same external influences, which helps to ensure that changes in the dependent variable are attributed to the manipulation of the independent variable and not to any other explanation (Saunders, et. al., 2016).

Treatment groups:	Vegetarian Group	Climate Friendly Group	Mixed Group (Vegetarian & Climate Friendly)	Control Group
Sample size:	n = 81	n = 78	n = 85	n = 84
Treatment (visual and written component)				No labels

Table 2: Overview of control and treatment groups [Own depiction].

Products

In this experiment, participants were asked to evaluate three different "meat free" food products, which can all be found in Danish supermarkets. In line with the procedure of previous research (Sörqvist et al., 2015), we selected clearly distinguished products from different product categories. As discussed in the literature review chapter, previous research found that consumers perceive different product attributes to be important for utilitarian food products compared to hedonic food products (Maehle et al., 2015). Thus, it was deemed relevant to select both hedonic and utilitarian products for our experiment in order to test the effect of both product types. For the hedonic category, a frozen pizza Margherita from Levevis was selected, and for the utilitarian category pea-based minced meat substitute from Naturli' and vegetarian cold cuts from Den Grønne Slagter were selected. The three products are further clearly

distinguished in terms of two other relevant aspects. Firstly, the minced meat substitute and vegetarian cold cuts are meat substitutes whereas the frozen pizza Margherita is a product that is not directly developed to substitute meat. Secondly, the products differ in terms of the preparation effort required. The pea-based minced meat substitute is raw and thus needs to be cooked while the frozen pizza Margherita is partially cooked, and the vegetarian cold cuts are ready to eat.

Product Manipulations and Framing Interventions

To fit the purpose of this study and to avoid biases, it was essential to re-design the packages for the selected "meat free" food products. As the products are available in Danish supermarkets, it is likely that the participants are familiar with the brands. In order to minimize biases, all brand names and brand related elements were removed from the packages *(see figure 5 and 6).* According to Silayoi and Speece (2004) food purchases are made out of habit and therefore consumers tend to purchase the same brands when shopping for food, thus this emphasizes why brand names and brand related elements should be excluded when conducting this type of experiment. Furthermore, since this thesis aims to investigate the effect of vegetarian and climate friendly labels, all existing labels on the packages such as the EU organic label were removed to ensure that they did not influence the participants' perceptions of the products. Similarly, it was deemed relevant to change product names containing the word *"vegetarian"* or variations of this word in order to be able to objectively test the influence of vegetarian labels by exposing the control group to packages that were completely free from the word *"vegetarian"* or variations thereof. Hence, the name of the cold cuts was changed from "*Veggie Pålæg*" (veggie cold cuts) to "*Grøntsagspålæg*" (vegetable cold cuts). It was also deemed relevant to ensure that all product names were in Danish in order to avoid confusion among the Danish consumers. Thus, the name of the minced meat substitute was changed from "*Minced*" to "*Ærtefars*" (Pea Based Minced "Meat").

Furthermore, for each of the experimental groups, visual and written labels were placed on each package in order to frame the food products. We implemented both a visual and written element in order to enhance the framing. For the group with the vegetarian treatment, we used the European V-label (European Vegetarian Union, 2019a) and a written label stating "*vegetarisk*" (vegetarian). For the group with the climate friendly treatment, we used a modified version of one of Naturli's climate label and a written label stating "*klimavenligt*" (climate friendly), whereas for the mixed group, we used both the vegetarian and climate

friendly visual and written labels. In an experiment it is essential to hold all factors besides the independent variable constant in order to ensure that the changes in the dependent variable are attributed to the manipulation of the independent variable (Blumberg et al., 2011; Saunders et al., 2016). When manipulating the packages, we particularly took into consideration environmental control (Blumberg et al., 2011). More specifically, we ensured that all four versions of each product looked identical except for the presence or absence of the labels. For each product, the same size and font size were also used for the different labels in order to ensure that none of them stood out more than the others, which could potentially have an influence on consumers' perceptions of the products (*see figure 5 and 6 for an illustration of the manipulated products*).

	Pizza Margherita	Meat Substitute	Cold Cuts
Vegetarian group			
Climate friendly group			

Figure 5: Manipulated products: Vegetarian Group and Climate Friendly Group [own depiction].

	Pizza Margherita	Meat Substitute	Cold Cuts
Mixed group			
Control group			

Figure 6: Manipulated products: Mixed Group and Control Group [own depiction].

5.4.4 Main Study: Questionnaire

It is of paramount importance to develop questionnaires that allow researchers to collect precise data, which can be used to answer their research questions and achieve the objectives of their studies, especially since it is generally unlikely that researchers have more than one opportunity to collect data (Saunders et al., 2016). Particularly, if respondents seek anonymity in questionnaires, researchers are unable to collect additional data from them. The design of the questionnaire affects response rates and the reliability and validity of the collected data. Thus, it underlines the importance of the development when applying such data collection method (Saunders et al., 2016). The developed self-completion questionnaire in the present thesis was set up in Qualtrics, which is a professional system for questionnaires that can gather, analyze, and present quantitative data. As students enrolled at the university Copenhagen Business School, we are provided with free access to the program. The questionnaire was adapted to both web and mobile view to optimize the respondents' experience, and several considerations in regard to the design were taken into consideration, which are covered in the following sections.

The questionnaire (*see appendix 1 or 2*) was overall divided into five parts containing a total of 17 questions: 1) an introduction, 2) a screening, 3) the main part, 4) demographics and 5) the ending. All questions were conducted as closed-ended questions and mandatory to fill in, which eliminated the risk of missing data and thereby contributed to minimizing the non-response error. Furthermore, these types of questions support the quantitative method, as they make it easier to process the answers (Bryman & Bell, 2011).

Introduction

The first part of the questionnaire consisted of an introduction explaining that the study was being conducted as a part of a master's thesis at Copenhagen Business School, and the goal was to study the behavior of Danish consumers in relation to food products. Additionally, it contained information about a raffle in which the participants could win two tickets to the cinema, which we chose to set up. Furthermore, the participants were informed about their anonymity and encouraged to answer as truthfully as possible (*see appendix 1 &2)*. The cinema tickets were used as an incentive for people to participate in the survey, as it has been found to be one of the most effective ways to improve survey response rates (Dillman et al., 2014). Furthermore, as a huge amount of research is conducted by using the internet, the population

is prone to be over-researched and thus suffer from respondent fatigue (Bryman & Bell, 2011). Hence, an incentive such as a raffle can be of high importance to improve response rates.

Screening

The second part of the study consisted of a screening question, which aimed to exclude respondents that were either vegetarians or vegans, as the objective of the study focused on flexitarians and consumers who eat meat. The screening question concerned the frequency of meat consumption and the response options were intentionally not mutually exclusive, as both the response option "*less than once a week*" and "*never*" were included (*see appendix 1 or 2).* Respondents that follow either a vegetarian or a vegan diet are argued to answer "*never*" whereas consumers who follow a flexitarian diet might answer "*less than once a week*". Thereby, we could ensure higher reliability of our study, as respondents that should be excluded were excluded by including these non-mutually exclusive response options. The response options were ordered from "*every day*" (at the top) to "*never*" (at the bottom), as participants tend to go for the first response option. Additionally due to social desirability respondents' may be biased to answer "*never*" to a higher degree if this option is placed at the top (Dillman et al., 2014; Tourangeau, Rips & Rasinki, 2000).

Main section

The third part of the survey consisted of a total of 14 questions. It included questions about the purchase frequency of the product categories, the presentation of the manipulated products, previous product experience with the three chosen vegetarian products, a health scale, a value orientation scale to measure environmental consciousness, and a self-developed scale about vegetarian food and meat reduction (*see appendix 1 or 2)*. The order of the questions was carefully considered, as questions in questionnaires cannot be viewed as completely independent (Dillman et al., 2014). Thus, the health scale, value orientation scale, and self-developed vegetarian scale were presented after the product manipulations to avoid cognitive-based order effects such as *priming* and *anchoring*[4]. Order effects refer to an error that can occur when earlier questions unintentionally influence the answer of questions presented later.

[4] Priming, and anchoring refers to cognitive-based order effects. *Priming* occurs when early questions bring material to mind that influence the answers of questions asked later because the material is more accessible. *Anchoring* occurs when early questions set a standard to questions asked later because they are compared (Dillman, et al., 2014).

These effects would challenge the validity of the questionnaire, which makes them important to consider (Dillman et al., 2014).

The questions about the purchase frequency and previous product experience were placed right before and right after the product manipulations, respectively. These questions were asked in order for us to control for these variables in the analysis as it is expected that purchase frequency and previous product experience influence consumers' perceptions, attitudes and purchase intentions for the products. The questions about purchase frequency concerned the overarching product category that the "meat free" food products fall under as substitutes to meat i.e. frozen pizza, minced meat and cold cuts. In contrast, the questions about the previous product experience concerned the specific products that were selected in our study i.e. pizza Margherita, minced meat substitute and vegetarian cold cuts. The response options in the question related to purchase frequency ranged from "*never*" to "*every week*" whereas the question related to previous product experience was based on nominal response options "*yes"* and *"no"* (*see appendix 1 or 2).*

The questions related to the product manipulations aimed to measure respondents' purchase intentions, attitudes, and perceptions of taste, healthiness, price, and climate friendliness of each product. These questions allowed us to test the previously presented hypotheses. All questions were rated on a 5-point Likert scale (Likert, 1932) to measure both direction (positive vs. negative) and the level of magnitude (how positive vs. how negative) of respondents' opinions. For example, to measure the perception of the products' healthiness, the response options were ranged from "*very unhealthy*" to "*very healthy*". Each respondent was presented with one of the treatments to measure the isolated effect of the label. *See figure 7 for an example of how these questions were presented.*

All response options were developed on the basis of verbal labels (strongly agree, strongly disagree etc.), as opposed to numeric labels or a combination of the two. We designed the questionnaire in this way as numeric labels in questionnaires are an additional piece of information that respondents need to make sense of, which increases the response time (Dillman et al., 2014). However, verbal labels, can lead to inconsistencies, as respondents have subjective understandings of such labels, but it also reduces respondents' burden of quantifying their attitudes and opinions. Hence, verbal labels can result in fewer errors compared to response options based on numbers (Dillman et al., 2014) We applied a 5-point Likert scale for most of the questions (Likert, 1932), as we argue that more categories make the answers too

ambiguous, taking into consideration the simplicity of the questions. Furthermore, all response options were aligned vertically in one column in order to avoid bias among responses (Dillman et al., 2014).

Figure 7: Control Group product manipulation to measure perception

The respondents' health consciousness was measured by applying existing questions. Specifically, Roininen, Lähteenmäki and Tuorila's (1999) 8-item General health interest subscale was applied. Since this thesis focuses on measuring respondents' general health consciousness, this scale was found suitable to apply. The remaining two subscales, which the authors developed to measure health are product specific, and thus not deemed relevant for the general level of health consciousness. The respondents were asked to rate the items on a 5-point Likert scale (Likert, 1932). Following Roininen et al.'s (1999) approach, the response options were ranged from "*strongly disagree*" to "*strongly agree*". Furthermore, existing questions in the form of De Groot and Steg's (2008) 12-item Value orientation scale was applied, which allowed us to measure the respondents' levels of environmental consciousness. As discussed in the literature review, consumers' value orientations are good predictors of their

pro-environmental beliefs and intentions (Stern & Dietz, 1994). Thus, this scale was deemed suitable to use in order to measure respondents' environmental consciousness. Following the authors approach, respondents were asked to evaluate each of the 12 statements on a 5-point Likert scale (Likert, 1932) from "*not important at all"* to "*very important"*, and were additionally urged to vary their scores and only rate few values as "*very important*" (*see appendix 1 or 2)*. By instructing respondents on how to answer the question, respondents are less prone to answer based on social desirability. Moreover, it minimizes the norm of even-handedness, which is a normative-based order effect that says respondents use similar responses to questions after one another to be fair. Furthermore, we applied a randomizer in Qualtrics for all of the scales, which automatically shifted the order of the statements in order to minimize the order effect (Dillman et al., 2014).

The self-developed vegetarian scale was developed in order to understand and measure the respondents' attitudes toward vegetarian food and meat reduction. Three positive and three negative statements about the reduction of meat and vegetarian food were developed in order to have an equal number of positive and negative statements. The respondents were asked to rate the statements on a 5-point Likert scale (Likert, 1932) ranging from "*strongly disagree"* to "*strongly agree"* (*see appendix 1 or 2)*. The statements aimed to capture feelings that could not be captured in a single item, which is typically how scales are applied (Boateng, Neilands, Frongillo, Melgar-Quiñonez & Young, 2018). The statements were randomized in Qualtrics in order to avoid order effects (Dillman et al., 2014).

Demographics

The fourth part of the questionnaire consisted of two demographic questions. According to Dillman et al. (2014), sensitive questions should be placed near the end of a questionnaire, therefore the questions related to age and gender were placed near the end of the survey. The response options for the age question were mutually exclusive and divided into eight categories ranging from "*younger than 18 years*" to "*older than 75 years*". The response options related to the gender question were nominal response options (*see appendix 1 or 2)*.

Ending

The last section of the survey consisted of one non-mandatory field, where respondents who wished to participate in the raffle could enter their email. It also consisted of a final message,

which thanked the participants for their participation and provided them with information about the fact that the products were manipulated (*see appendix 1 or 2)*.

Overall, none of the response options included "I don't know", as it is plausible to believe that all respondents would have an opinion about the developed questions.

5.5 Data preparation

In its raw form, quantitative data convey very little meaning to most people. Therefore, it is essential to process and analyze data in order to turn it into useful information (Saunders et al., 2016). In this section, the data preparation is outlined.

The collected primary data was first exported from Qualtrics by using numeric values, which automatically coded the data to numeric values (*see codes in appendix 2)*. Therein, response options that were labeled as the most negative were coded as "*1*" (to the left on the scale) and those that were labeled as positive were coded as "*5*" (to the right on the scale), while the response options in between were coded in arranged order. The dataset was then cleaned, which resulted in the dismissal of data from 36 respondents due to the screening question, as these respondents never eat meat. Additionally, the data from 77 respondents were dismissed, as they only partially completed the questionnaire. Thus, the cleaned data set contained data from a total of 328 respondents.

The next stage of the data preparation involved the re-coding of several response options. In the questions related to the perception of the product attributes (*questions 5, 8 and 11*), the expected price was reverse coded. Thereby, "*very expensive*" was re-coded as "*5*" and "*very cheap*" was coded as "*1*" to make the interpretation of the data easier in the analysis. Moreover, in order to ensure comparability across statements in the health scale (*question 13)* and the self-developed vegetarian scale (*question 15),* half of the statements were reverse coded. Thus, higher scores represented higher levels of health consciousness and more positive attitudes toward vegetarian food and meat reduction, respectively (*see appendix 2*).

Additionally, some of the statements in the value orientation scale *(question 14)* were re-coded. As mentioned in the literature review, Stern and Dietz (1994) found a link between a social-altruistic value orientation and pro environmental intentions, and a link between a biospheric value orientation and pro environmental intentions. They also found an inverse link between an egoistic value orientation and pro environmental intentions. In order to measure the

participants' level of environmental consciousness, the egoistic statements were reverse coded so that high scores represented higher levels of environmental consciousness across all 12 statements (*see appendix 2*). The scores for the statements in each of the scales were summed, which allowed us to develop one score that measured the level of health consciousness, level of environmental consciousness, and the attitude toward vegetarian food and meat reduction.

The last step in the data preparation involved dummy coding of the vegetarian label and climate friendly label in order to ensure the effect of each label could be separated in the data analysis. Thus, a dummy for the vegetarian label and a dummy for the climate friendly label were included in the data set. If the vegetarian label was present i.e. if the treatment group was the vegetarian or mixed group, the vegetarian dummy was coded as "*1*" or else "*0*". If the climate friendly label was present i.e. if the treatment group was either the climate friendly or mixed group, the climate friendly dummy was coded as "*1*" or else "*0*".

5.6 Data Analysis

The data analysis of the collected primary data was carried out in *RStudio.* A combination of bivariate and multivariate analyses was applied in order to test the presented hypotheses. In academic research, there is an ongoing debate about whether Likert data should be treated as ordinal or interval data and thus if it is appropriate to analyze Likert scale data by applying parametric tests such as ANOVA, correlation analysis and regression analysis. Even though Likert scale data is prone to violate the assumptions of parametric tests such as linearity and normality, scholars have found that such statistical tests can be applied without arriving at wrong conclusions (Norman, 2010; Murray, 2013). Hence, it was deemed appropriate to treat the Likert data as interval data and use parametric tests in order to analyze the collected data in our thesis. Furthermore, our data consists of both Likert scale data[5] and Likert item data[6], as some of the respondents' scores were summed. This makes the parametric test even more appropriate to apply, as this type of data can be viewed as interval (Carifio & Perla, 2008). However, we acknowledge that the application of these tests can be considered a limitation of our research, and the issue will be further addressed in our discussion chapter *(see section 7.3 Limitations & Future Research).*

[5] Likert scale data refers to a collection of Likert items (Carifio & Perla, 2008).
[6] Likert item data refers to a single Likert question (Carifio & Perla, 2008).

The first step in our data analysis was to apply descriptive statistics on the collected data in the form of frequency distributions and graphs depicting the means across treatment groups and control group for each dependent variable (*see table 16 in appendix 3)*. This was done in order to describe and summarize the data. The second step consisted of conducting bivariate analyses to achieve a better understanding of the data and identify potential patterns. More specifically, one-way ANOVA (Analysis Of Variance) was conducted to analyze the variances of the different treatment groups and the control group by comparing the means for the dependent variables (*see table 17 appendix 4)*. As the ANOVA allowed us to test if the mean across more than three groups were significant, it was found suitable for this study (Saunders, et al., 2016). We ran the assumptions for the one-way ANOVA, which showed that not all assumptions were met. The *assumption of independence* and the *assumption of homogeneity of variance* were met, whereas the *assumption of normality* was not. However, as the sample size in all four groups is considered large ($n > 30$), it is not particularly important to meet this assumption (Saunders et al., 2016). The result from an ANOVA test only indicates whether there is a significant difference between the population means, but it does not specify which means are different. Thus, after we performed the ANOVA test, a Post Hoc test was performed for the dependent variables for which we found a significant difference in order to investigate which of the groups were different. More specifically, we performed a Tukey HSD test, which pairwise compares all means against each other (*see table 18 in appendix 5*). Furthermore, a correlation analysis was conducted to measure the correlation between dependent and independent variables. This means that the relationship between these variables in terms of size and direction was measured. Specifically, a Pearson correlation test, which measures the relationship between two continuous variables, was applied (Tabachnick & Fidell, 2020).

The third step of our data analysis consisted of performing multivariate analyses. Specifically, multiple linear regression analyses were applied, as it allowed us to employ several independent variables (*see appendix 6*). Thus, we were able to separate the effects of the labels and identify significant relationships between independent and dependent variables at a significance level of 0.1. Additionally, in contrast to a correlation analysis, which simply tests the correlation between variables, the multiple linear regression analysis allowed us to test the causality between variables. Thus, we could establish whether changes in the dependent variables could be attributed to changes in the independent variables, which was of interest (Saunders, et al., 2016). The mathematical model for the multiple regression models with dummies is outlined below:

$$y = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 x_1 + \beta_4 x_2 + \beta_5 (D_1 * D_2) + \varepsilon \quad (1)$$

$$y = \beta_0 + \beta_1 D_{vegetarian\ label} + \beta_2 D_{climate\ label} + \beta_3 x_{pf}[7] + \beta_4 x_{ppe}[8] + \beta_1 D_{vegetarian\ label} * \beta_2 D_{climate\ label} + \varepsilon \quad (2)$$

(Bowerman, O'Connell, Murphree & Orris, 2012)

We ran the assumptions for the multiple linear regression analysis. It showed that the *assumption of linearity* was not met, while the *assumption of normality* was approximately met for most of our models, however, there were exceptions where the data points had s-curves across the normality line. The *assumption of homoscedasticity* was partially met, as the variables did not have equal variances in all the models. Furthermore, when testing for *multicollinearity*, it was evident that the variance inflation factor (VIF) was under 10 for most of the models, which means no multicollinearity could be identified (Saunders et al., 2019). The models containing moderators had large VIF scores, however, according to McClelland, Irwin, Disatnik and Sivan (2017), the VIF score is irrelevant when moderators are tested. In order to test the effect of the combination of the vegetarian and climate friendly labels an interaction term consisting of the two labels was included in all the multiple linear regression models.

The fourth step in our data analysis concerned the comparison of confidence intervals (*see appendix 7*). After computing the multiple linear regression models, we tested if there were significant differences between the effect of the vegetarian label and the climate friendly label on the dependent variables by comparing their confidence intervals. The goal was to identify no overlaps between the confidence intervals in order to confirm significant differences between the effects. Lastly, we conducted moderation analyses by adding the interaction terms that was of interest (*outlined in section 4.2 Hypotheses*) in the regression model. The general mathematical model for the moderation analyses is outlined below:

$$y = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 x_1 + \beta_4 x_2 + \beta_5 Z + \beta_6 (D_n * Z) + \varepsilon \quad (3)$$

(Zhang & Wang, 2017).

[7] Pf refers to purchase frequency.
[8] Ppe refers to previous product experience.

5.7 Validity and Reliability

Validity and *reliability* are central indicators of the quality of research, especially among researchers who adopt a positivist approach (Saunders et al., 2016). Hence, in order to evaluate the quality of the research, it is relevant to assess it in terms of these two concepts.

5.7.1 Validity

Researchers often distinguish between internal and external validity. In an experiment, *internal validity* is achieved when it can be statistically shown that an intervention leads to an outcome and that the outcome is not attributed to any other explanation (Saunders el., 2016). There are various threats to establishing internal validity, however, we were able to minimize many of these by randomly assigning participants to groups, and by using a control group (Bryman & Bell, 2015).

External validity refers to the the ability to generalize the findings of a research to other relevant settings or groups. This can be harder to establish than internal validity, particularly for laboratory experiments, which the experiment in this thesis is characterized as. In *laboratory experiments*, researchers are able to control the research process (e.g. sample selection) to a greater extent compared to in field experiments, which leads to higher internal validity. However, these controlled environments often differ from the settings in which the research findings will be applied, which causes low external validity (Saunders et. al, 2016). To ensure the external validity, we arranged to collect our data in Rema 1000 where we intended to ask customers to participate in our study while they were grocery shopping. However, due to the outbreak of the COVID-19 virus, this was unfortunately not possible. Instead, we instructed participants to imagine that they were buying food in a supermarket before evaluating the products in order to stimulate the conditions of a real purchase environment.

Furthermore, in this thesis, a non-probability sample was used, which means that we cannot with certainty know the probability of each respondent being chosen from the target population. As previously mentioned, we are therefore not able to generalize our findings on statistical grounds, which decreases the external validity of our experiment (Saunders et al., 2016).

5.7.2 Reliability

Reliability refers to replication and consistency and is achieved when a research design can be repeated or replicated and produce consistent findings. In our study, we used pre-existing scales

to measure the level of health consciousness and environmental consciousness of respondents. This increased the reliability of the study as the reliability of the scales had already been assessed and established in prior studies (Roininen, et al., 1999; De Groot & Steg, 2008). However, in retrospect, it was concluded that we could have made an adjustment to the health scale and the self-developed vegetarian scale in order to further improve the reliability of the questionnaire. When asking participants to evaluate the statements in the health scale, we asked: "*How much do you agree with the following statements?*". Instead, we could have phrased the question neutrally and asked: "*How much do you agree or disagree with the following statements?*", which would have increased the reliability of the questionnaire (Dillman et al., 2014). Likewise, the question related to participants' purchase intentions could have been phrased "*How likely or unlikely is it that you will buy this product?*" instead of "*How likely is it that you will buy this product?*". This is referred to as a data collection error (Bryman & Bell, 2015).

Moreover, a pilot study was conducted in order to ensure that the questions were understood by the respondents, which helped us increase the reliability of the study. Similarly, as we used closed-ended questions, we did not have to interpret the answers to the questions, which makes it plausible to assume that the questionnaire can be replicated and produce consistent findings and thus improve its reliability. The reliability of a study also has implications for its validity – if a study is not reliable, it cannot be valid. Thus, by using closed-ended questions and conducting a pilot study to ensure that the participants understood all the questions, we were also able to establish *internal validity* (Saunders, et al., 2016).

5.8 Ethical Considerations

Research ethics are considered a critical part in formulating a research design and formally refers to "*the standards of behaviour that guide your conduct in relation to the rights of those who become the subject of your work, or are affected by it*" (Saunders et al., 2016, p. 239). In the present thesis, ethical considerations were naturally also taken into account. First of all, the respondents were presented with information about why the study was conducted and what the study was about on the first page of the questionnaire. This supports the ethical principles of integrity and informed consent (Saunders et al., 2016). By continuing the survey, the respondents provided their content for us to use the data they provided.

Second of all, as previously mentioned, the respondents voluntarily participated in the study and were additionally informed about their anonymity, which is especially considered important when conducting electronic surveys. A lot of research is being conducted online, and research participants show concerns about the confidentiality of replies due to a widespread of anxiety related to fraud and hackers (Bryman & Bell, 2011), which is why it was deemed highly important for us to ensure confidentiality and anonymity of the participants. In order to ensure 100% anonymity of the respondent's answers, their emails were excluded from the data before the coding and analysis took place. Thereby, the emails were only used to draw a winner of the raffle and afterwards deleted. Hence, we supported the ethical principle of avoidance of harm (Saunders et al., 2016). Lastly, the respondents were informed about the presented food products being manipulated in the survey on the last page of the questionnaire after they finished the survey. This was done in order to ensure transparency.

6. FINDINGS

This section presents the findings derived from our data analysis, which was based on the collected primary data. First, the participants of our survey are described in terms of their demographic characteristics and then the data is summarized and presented in order to provide an overview of the data. Hereafter, each hypothesis is either be accepted or rejected.

6.1 Participants

Out of 441 participants, 77 did not complete the entire survey and 36 were screened out of the survey, as they were identified as non-meat eaters. Thereby, data from a total of 328 respondents was used for further analysis (84 in the control group, 81 in the vegetarian group, 78 in the climate friendly group, and 85 in the mixed group). The exclusions were conducted in accordance with the pre-registered exclusion criteria.

The sample consisted of 104 men, 222 women, and 2 unidentified, and was distributed across seven out of eight age categories. The demographic characteristics of the sample are found in *table 3* and are separated by the control group and each of the treatment groups. The groups were found homogenous for the purpose of the experiment. Furthermore, as we are two students and primarily distributed our survey link on our social networks, it was not surprising that the majority of the participants belonged to the younger age segments (*18-25* and *26-35*).

Table 3
Demographic characteristics of the respondents per treatment group

	Control group (n=84)	Vegetarian group (n=81)	Climate friendly group (n=78)	Mixed group (n=85)	Total (n=328)
Gender					
Males	25	23	27	29	104
Females	59	58	50	55	222
Do not wish	-	-	1	1	2
Age (years)					
<18	-	1	1	-	2
18-25	25	25	24	24	98
26-35	33	36	31	33	133
36-45	8	3	6	6	23
46-55	11	11	7	11	40
56-65	6	4	8	10	28
66-75	1	1	1	1	4
>75	-	-	-	-	-

6.2 Overview of the Data

In order to provide a brief overview of the collected data, we developed *figure 8*, which shows the means and standard deviations of the participants' perceptions of the separate product attributes for each "meat free" food product. Furthermore, the figure illustrates the participants' attitudes and purchase intentions for each product. The perceived healthiness of the minced meat substitute and vegetarian cold cuts was on average evaluated above neutral, whereas it was evaluated rather low for the frozen pizza Margherita, which was expected due to the nature of the product. Furthermore, the average perceptions of taste and attitudes were slightly below neutral and were similar for all products. In terms of price, the minced meat substitute and the vegetarian cold cuts were on average evaluated as more expensive, whereas the pizza Margherita was evaluated to be cheaper, as the mean was below neutral. The perceptions of climate friendliness were on average evaluated high for the minced meat substitute, and the vegetarian cold cuts, whereas they were on average evaluated lower than neutral for the pizza Margherita. Lastly, the purchase intentions were on average low for all products, and lower than the attitudes toward the "meat free" food products. In order to test if there were significant differences between the attitudes and purchase intentions, we conducted a paired t-test[9]. The t-test revealed significant differences between the variables for the whole sample and in each treatment group *(see table 19 in appendix 8),* which was contrary to our expectations as we expected attitudes to lead to purchase intentions. Furthermore, the standard deviations were relatively large for all variables and products, which indicates that the scores were distributed across the scales. For a detailed overview of the frequency distribution, we refer to *table 16 in appendix 3.*

[9] A paired t-test refers to a statistical procedure that calculates if the mean difference between paired observations is significantly different (Saunders, et al., 2016).

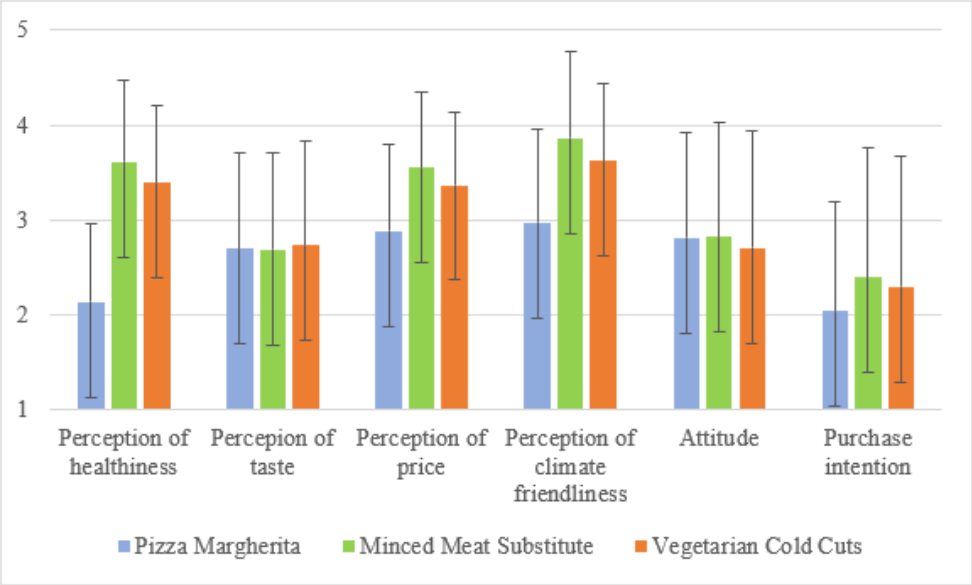

Figure 8: Means and standard deviations of product perceptions, attitudes, and purchase intentions [own depiction].

Furthermore, we developed *figure 9*, which illustrates the means for environmental consciousness, health consciousness, and general vegetarian attitudes in order to get a better understanding of our participants' characteristics. All the means were well above neutral, which suggests that the participants on average had high levels of environmental consciousness and health consciousness and positive attitudes toward vegetarian food and meat reduction. Furthermore, the standard deviation for environmental consciousness was fairly small, which means that the scores were relatively centered around the mean. This indicates that our sample mainly consisted of consumers with high levels of environmental consciousness. The standard deviations for health consciousness and general vegetarian attitude were larger, which means that our sample had more different levels of health consciousness and diverse attitudes toward vegetarian food and meat reduction.

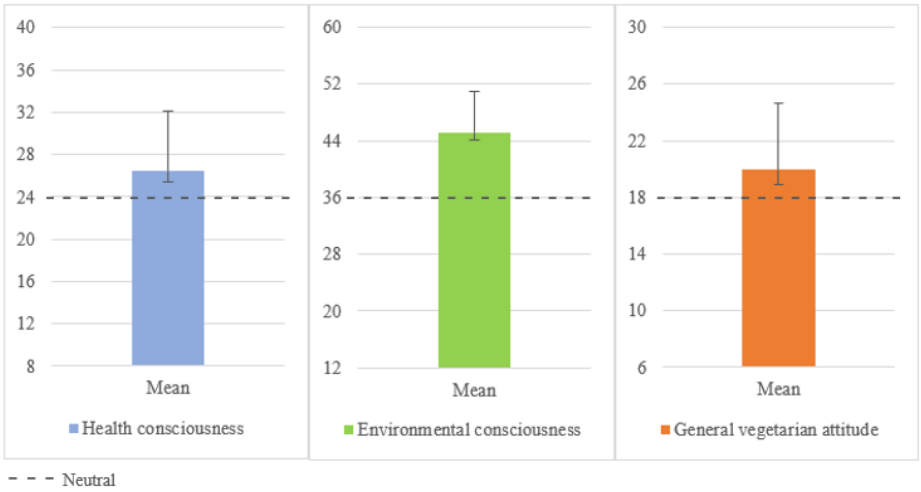

Figure 9: Means and standard deviations of health consciousness, environmental consciousness and general vegetarian attitude [own depiction].

6.3 Hypothesis 1: Perceptions of Product Attributes

To test *hypothesis 1* regarding the perceptions of the three product attributes for each ”meat free” food product, we conducted a total of nine multiple linear regression models (*see table 4)*. Each model consisted of; the vegetarian label and the climate friendly label[10] as the independent variables; the interaction between the two labels; and purchase frequency and previous product experience as control variables. The control group was set as the reference group in all models, which means that the results are in comparison to the control group. The results of the linear regression models are shown in *table 4* and hypothesis 1 is outlined below before the related findings are presented:

> ***H1:*** *Consumers perceive food products labeled as vegetarian to be (1a) healthier, (1b) less tasty, and (1c) more expensive compared to equivalent food products not labeled as vegetarian.*

[10] The vegetarian label and the climate friendly label refer to both the visual and written components (s*ee table 2 for a visualization of the labels)*.

Table 4
Multiple linear regression, α = 0.1

Dependent variable: Perception of healthiness	Model 1: Pizza Margherita		Model 2: Minced meat substitute		Model 3: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	1.633	<0.001 ***	3.259	<0.001 ***	3.217	<0.001 ***
Vegetarian label	0.120	0.339	0.040	0.766	0.076	0.550
Climate label	0.147	0.249	-0.134	0.322	-0.072	0.575
Vegetarian label*Climate label (interaction term)	-0.063	0.727	0.130	0.494	-0.058	0.748
Purchase frequency	0.231	<0.001 ***	0.068	0.206	0.065	0.166
Previous experience	-0.008	0.932	0.272	0.006 **	-0.066	0.476
Adjusted R^2	0.0393		0.0143		-0.0035	

Dependent variable: Perception of taste	Model 4: Pizza Margherita		Model 5: Minced meat substitute		Model 6: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	2.014	<0.001 ***	2.766	<0.001 ***	2.612	<0.001 ***
Vegetarian label	0.245	0.114	0.061	0.690	-0.062	0.717
Climate label	0.060	0.703	0.026	0.868	-0.273	0.115
Vegetarian label*Climate label (interaction term)	0.081	0.711	-0.241	0.265	0.076	0.753
Purchase frequency	0.338	<0.001 ***	-0.114	0.064 .	0.051	0.419
Previous experience	-0.025	0.832	0.498	<0.001 ***	0.250	0.043 *
Adjusted R^2	0.0575		0.0717		0.0138	

Dependent variable: Perception of price	Model 7: Pizza Margherita		Model 8: Minced meat substitute		Model 9: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	2.932	<0.001 ***	3.535	<0.001 ***	3.306	<0.001 ***
Vegetarian label	0.209	0.139	0.248	0.045 *	0.077	0.518
Climate label	0.157	0.273	0.106	0.396	-0.026	0.828
Vegetarian label*Climate label (interaction term)	-0.019	0.924	-0.105	0.549	-0.048	0.776
Purchase frequency	-0.020	0.768	0.003	0.948	0.030	0.488
Previous experience	-0.289	0.008 **	-0.256	0.005 **	-0.121	0.161
Adjusted R^2	0.0321		0.0303		-0.0057	

Dependent variable: Perception of climate friendliness	Model 10: Pizza Margherita		Model 11: Minced meat substitute		Model 12: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	2.411	<0.001 ***	3.878	<0.001 ***	3.831	<0.001 ***
Vegetarian label	0.234	0.105	-0.182	0.194	-0.009	0.946
Climate label	0.604	<0.001 ***	-0.093	0.511	0.111	0.394
Vegetarian label*Climate label (interaction term)	-0.107	0.604	0.168	0.398	-0.098	0.590
Purchase frequency	0.190	0.007 **	-0.039	0.496	-0.064	0.172
Previous experience	-0.219	0.050 *	0.344	<0.001 ***	-0.066	0.479
Adjusted R^2	0.1136		0.0298		-0.0041	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Hypothesis 1a: Perception of Healthiness

To test *hypothesis 1a* regarding the perception of healthiness, three multiple linear regression models were conducted (*model 1-3)*. The models did not report any significant effects of the implementation of labels on the ”meat free” food products. Furthermore, the models all had adjusted R^2 values of less than 4%. This means that they explained less than 4% of the variance for the dependent variable, which is considered a weak explanatory power (Ferguson, 2009). This is elaborated on at the end of this chapter.

Furthermore, *model 1: Pizza Margherita* revealed a significant relationship between the purchase frequency of frozen pizza, and the perception of healthiness (B_{pf}[11] $= 0.231, p <$

[11] Pf refers to purchase frequency.

0.001). The relationship was positive, which means that the more frequently consumers purchased frozen pizza, the healthier they perceived the pizza Margherita to be. In *model 2: Minced meat substitute*, we found a significant relationship between previous product experience and the perception of healthiness for the minced meat substitute (B_{ppe}[12] $= 0.272$, $p = 0.006$). The relationship was positive, which means that when previous product experience existed, the perception of healthiness for the minced meat substitute increased.

From *model 1-3* it can be concluded that none of the labels, individually or the combination of labels had a significant effect on the perception of healthiness compared to the control group for any of the three ”meat free” food products ($p > 0.1$) (*see table 4)*. As we could not find a significant effect on the perception of healthiness compared to the control group by implementing the labels, neither a halo nor a devil effect was detected. Therefore, we affirmatively rejected hypothesis 1a. Furthermore, as none of the labels were found significant individually, it was not found necessary to compare the confidence intervals in order to conclude whether a significant difference between the effect of the vegetarian label and the effect of the climate friendly label existed. As neither of the labels was significant it was concluded that a significant difference did not exist. In other words, the climate friendly label did not affect the perception of healthiness for any of the ”meat free” food products significantly better or worse than the vegetarian label did. Lastly, the interaction term between the labels was not found significant, which means the effect of the combination of the labels did not significantly influence the perception of healthiness for any of the ”meat free” food products.

Hypothesis 1b: Perception of Taste

To test *hypothesis 1b* regarding the perception of taste, three multiple linear regression models were conducted (*model 4-6)*. The models did not report any significant effects of the implementation of labels on the ”meat free” food products. Furthermore, the models had overall low adjusted R^2 values, as they were all smaller than 8% (Ferguson, 2009).

In *model 4: Pizza Margherita* and *model 5: Minced meat substitute*, purchase frequency was found significant. The relationship was positive for the pizza Margherita $(B_{pf} = 0.338,\ p < 0.001)$, whereas it was negative for the minced meat substitute ($B_{pf} = -0.114,\ p = 0.064$). Thus, the more frequently consumers bought frozen pizza the better the taste perception was

[12] Ppe refers to previous product experience.

of the pizza Margherita. Contrary, the more frequently the consumers bought minced meat[13], the worse their taste perception was of the minced meat substitute. Additionally, previous product experience was found significant in *model 6*: *Minced meat substitute* and *model 7: Vegetarian cold cuts*. The relationships were positive for both products (minced meat substitute: $B_{ppe} = 0.498,\ p < 0.001$ and vegetarian cold cuts: $B_{ppe} = 0.25,\ p = 0.043$), thus revealing that when previous product experience existed, the more positive the taste perception of the minced meat substitute and the vegetarian cold cuts was, respectively.

From *model 4-6*, it can be concluded that none of the labels, individually or the combination of labels, had a significant effect on the perception of taste compared to the control group for any of the three ”meat free” food products ($p > 0.1$) (*see table 4)*. As we could not find a significant effect on the taste perception by implementing the labels on the products' packaging, neither a halo nor a devil effect was detected. Therefore, we affirmatively rejected hypothesis 1b. Furthermore, as none of the labels were found significant, it could be concluded that no significant difference existed between the effect of the vegetarian label and the effect of the climate friendly label. Lastly, the interaction term between the labels was not found significant, which means that the effect of the combination of labels did not significantly influence the taste perception for any of the ”meat free” food products.

Hypothesis 1c: Perception of Price

To test *hypothesis 1c* regarding the perception of price, three multiple linear regression models were conducted (*model 7-9)*. The models only revealed a significant effect of the vegetarian label on the minced meat substitute. The relationship was positive ($B_{vegetarian\ label} = 0.248$, $p = 0.045$), which means that the presence of the vegetarian label on the minced meat substitute led to an increase in price perception compared to the control group. Thus, the vegetarian label made the minced meat substitute seem more expensive. Overall, the models had low adjusted R^2 values, as they were smaller than 4% (Ferguson, 2009).

Furthermore, previous product experience was significant in both *model 7: Pizza Margherita* $(B_{ppe} = -0.289,\ p = 0.008)$ and *model 8: Minced meat substitute* ($B_{ppe} = -0.256,\ p = 0.005$). As the coefficients were negative, previous product experience with the respective products

[13] Purchase frequency of minced meat refers to the actual meat product and not the vegetarian substitute.

influenced the price perception in the sense that the products were perceived cheaper compared to the control group.

From *model 7-9*, it can be concluded that the vegetarian label only had a significant effect on the price perception for the minced meat substitute compared to the control group (*see table 4*) As the coefficient was positive, our findings were in accordance with our assumption - the participants perceived the minced meat substitute to be more expensive when the vegetarian label was present on the product, thus we argue that a devil effect was identified. Since we did not find consistent significant relationships between the vegetarian label and the price perception across all three ”meat free” food products, hypothesis 1c was only partially accepted.

By comparing the confidence intervals of the vegetarian label and the climate friendly label, we could conclude that even though the vegetarian label had a significant relationship with the price perception of the minced meat substitute, the confidence intervals overlapped. Thus, no significant difference between the effect of the vegetarian label and the climate friendly label was found (*see table 5)*. Lastly, the interaction term between the labels was not significant for any of the ”meat free” food products, which means that the effect of the combination of the labels did not significantly influence the price perception.

Table 5
Confidence intervals for perceptions of product attributes, $\alpha = 0.1$

	Pizza Margherita		Minced meat substitute		Vegetarian cold cuts	
	5 %	95 %	5 %	95 %	5 %	95 %
Perception of price						
Vegetarian labels	-0.023 ;	0.442	0.045 ;	0.452	-0.120 ;	0.274
Climate friendly labels	-0.079 ;	0.392	-0.010 ;	0.311	-0.225 ;	0.173
Perception of climate friendliness						
Vegetarian labels	-0.003 ;	0.472	-0.414 ;	0.049	-0.220 ;	0.203
Climate friendly labels	0.364 ;	0.845	-0.327 ;	0.140	-0.103 ;	0.324

Perception of Climate Friendliness

In section *4.2 Hypotheses*, we argued for why it was of interest to investigate the perception of the ”meat free” food products’ climate friendliness when such products were labeled as vegetarian. It was especially of interest to compare the perception of the food products labeled as vegetarian compared to the food products labeled as climate friendly. In the following section, we present the related findings, which are based on the results from three multiple linear regression models (*model 10-12)*. The models only revealed a significant effect of the

climate friendly label for the pizza Margherita. The relationship was positive ($B_{climate\ label} = 0.604,\ p < 0.001$), which means that the presence of the climate friendly label on the minced meat substitute led to a more positive perception of the climate friendliness of the product compared to the control group. Overall, the models had rather low adjusted R^2 values, as they were all smaller than 12% (Ferguson, 2009).

Furthermore, purchase frequency was found significant in *model 10: Pizza Margherita* ($B_{pf} = 0.19,\ p = 0.007$), which means that the more frequently the consumers bought frozen pizza, the more climate friendly they perceived the pizza Margherita to be. Previous product experience was found significant in *model 10: pizza Margherita* ($B_{ppe} = -0.219,\ p = 0.050$) and *model 11: Minced meat substitute* ($B_{ppe} = 0.344,\ p < 0.001$). For the pizza Margherita, previous product experience led to a decrease in the perception of climate friendliness, whereas our findings were contrary for the minced meat substitute. Here, previous product experience led to an increase in the perception of climate friendliness. Thus, the pizza Margherita was perceived to be less climate friendly, and the minced meat substitute was perceived to be more climate friendly compared to the control group when previous product experience existed.

From *model 10-12, it* can be concluded that despite our assumption about the influence of a vegetarian label on the perception of climate friendliness, significant effects were not found for any of the ”meat free” food products compared to the control group ($p > 0.1$) (*see table 4)*. Moreover, we did not find consistent effects of the climate friendly label across all the ”meat free” food products, as the label only showed a significant effect for the pizza Margherita. This was contradictory to our expectations, as we assumed consumers would perceive the products to be more climate friendly compared to the control group when they were exposed to a climate friendly label on the packaging. Even though we did find a significant effect of the climate friendly label, we argue that it did not lead to a halo effect, as the product attribute (climate friendliness) is directly related to the communication of the label. Instead, we only conclude that the consumer evaluated the perceived climate friendliness of the pizza Margherita significantly higher compared to the control group when the climate label was present on the product.

Furthermore, based on the comparison of confidence intervals between the vegetarian label and the climate friendly label for the pizza Margherita, it can be concluded that no significant difference exists. Thus, the climate friendly label did not significantly affect the perception of climate friendliness more or less compared to the vegetarian label (*see table 5)*. Lastly, the

interaction between the two labels was not significant for any of the ”meat free” food products, which means that the effect of the combination of the labels did not significantly influence the perception of climate friendliness.

6.4 Hypothesis 2-5: Attitudes and Purchase Intentions

To test *hypotheses 2-5* regarding the attitude and purchase intentions for each of the ”meat free” food products, we conducted a total of six multiple linear regression models (*see table 6)*. Each model consisted of; the vegetarian label and climate friendly label as independent variables; the interaction term between the two labels; and purchase frequency and previous product experience as control variables. The control group was set as the reference group in all models. The results of the linear regression models are shown in table 6, and the hypotheses are outlined below before the related findings are presented:

> ***H2:*** *Consumers have less positive attitudes toward food products labeled as vegetarian compared to equivalent food products not labeled as vegetarian.*
>
> ***H3:*** *Consumers have lower purchase intentions for products labeled as vegetarian compared to equivalent food products not labeled as vegetarian.*
>
> ***H4:*** *Consumers have more positive attitudes toward food products labeled as climate friendly compared to equivalent food products labeled as vegetarian.*
>
> ***H5:*** *Consumers have higher purchase intentions for food products labeled as climate friendly compared to equivalent food products labeled as vegetarian.*

Table 6
Multiple linear regression, α = 0.1

Dependent variable: Attitude						
	Model 13: Pizza Margherita		Model 14: Minced meat substitute		Model 15: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	1.671	<0.001 ***	2.893	<0.001 ***	2.408	<0.001 ***
Vegetarian label	0.330	0.040 *	0.019	0.912	-0.187	0.318
Climate label	0.372	0.022 *	-0.287	0.092 .	-0.333	0.079 .
Vegetarian label*Climate label (interaction term)	-0.212	0.352	0.262	0.272	0.162	0.540
Purchase frequency	0.570	<0.001 ***	-0.197	0.004 **	0.087	0.207
Previous experience	-0.165	0.183	1.031	<0.001 ***	0.564	<0.001 ***
Adjusted R^2	0.1637		0.2117		0.0606	

Dependent variable: Purchase intention						
	Model 16: Pizza Margherita		Model 17: Minced meat substitute		Model 18: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	0.524	0.003 **	2.224	<0.001 ***	1.275	<0.001 ***
Vegetarian label	0.325	0.040 *	-0.128	0.485	-0.172	0.387
Climate label	0.067	0.674	-0.130	0.485	-0.270	0.178
Vegetarian label*Climate label (interaction term)	-0.120	0.591	0.230	0.377	0.128	0.649
Purchase frequency	0.729	<0.001 ***	-0.175	0.019 *	0.249	<0.001 ***
Previous experience	0.188	0.122	1.342	<0.001 ***	0.956	<0.001 ***
Adjusted R^2	0.2377		0.2585		0.1541	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Hypothesis 2: Attitude

The three models (*model 13-15*), which were conducted to test *hypothesis 2* revealed different effects of the labels on consumers' attitude across the three "meat free" products. We found a positive significant effect of the vegetarian label $(B_{vegetarian\ label} = 0.330,\ p = 0.040)$ for the pizza Margherita on consumers' attitude, whereas no significant effect was found for the minced meat substitute and vegetarian cold cuts. Furthermore, we found significant effects of the climate label on consumers' attitude across all three "meat free" food products. The effect was positive for the pizza Margherita ($B_{climate\ label} = 0.372,\ p = 0.022$), but negative for the minced meat substitute ($B_{climate\ label} = -0.287,\ p = 0.092$) and the vegetarian cold cuts ($B_{climate\ label} = -0.333,\ p = 0.079$). All models had rather low adjusted R^2 values smaller than 22% (Ferguson, 2009).

Furthermore, in *model 13: Pizza Margherita* and *model 14: Minced meat substitute* purchase frequency was found significant. The relationship was positive for the pizza Margherita $(B_{pf} = 0.570,\ p < 0.001)$ and negative for the minced meat substitute $(B_{pf} = -0.197,\ p = 0.004)$. This means that the more frequently consumers bought frozen pizza, the more positive attitudes they had toward the pizza Margherita. In reverse, the more frequently consumers purchased minced meat, the more negative attitudes they had toward minced meat substitute. Additionally, *Model 14: Minced meat substitute* and *model 15: Vegetarian cold cuts* both revealed significant positive effects for previous product experience (minced meat substitute: $B_{pe} = 1.031,\ p < 0.001$ and cold cuts: $B_{pe} = 0.564,\ p < 0.001$) on consumers' attitudes toward

these products. This means that consumers who had previous experience with the products also had more positive attitudes toward them.

From *model 13-15*, it can be concluded that consumers had more positive attitudes toward the pizza Margherita when it was labeled as vegetarian compared to the control group, which provides evidence for the halo effect (*see table 6*) This finding is inconsistent with our expectations as we predicted that the vegetarian label would have a negative effect on consumers' attitudes. For the minced meat substitute and vegetarian cold cuts, the vegetarian label had neither a positive nor negative effect on consumers' attitudes. Thus, hypothesis 2 was rejected. Furthermore, consumers had more positive attitudes toward the pizza Margherita when the product was labeled as climate friendly compared to the control group. In reverse, they had more negative attitudes toward the minced meat substitute and vegetarian cold cuts when they were labeled as climate friendly compared to the control group. Thus, this indicates that the climate friendly label gave rise to both a halo effect and a devil effect. Furthermore, no significant effect was found for the interaction term between the labels, which means that the effect of the combination of the labels did not significantly influence the attitude.

Hypothesis 3: Purchase Intention

The three models (*model 16-18*), which tested *hypothesis 3* found a positive significant effect of the vegetarian label ($B_{vegetarian\ label} = 0.325,\ p = 0.040$) on consumers' purchase intentions for the pizza Margherita, whereas no significant effects were found for the minced meat substitute and vegetarian cold cuts. Furthermore, no significant effect was found for the climate friendly label for any of the "meat free" food products. The models had adjusted R2 values between 15% and 26%.

Model 16: Pizza Margherita and *model 18: Cold cuts* revealed positive significant effects for purchase frequency of frozen pizza and cold cuts[14] (pizza Margherita: $B_{pf} = 0.729,\ p < 0.001$, cold cuts: $B_{pf} = 0.249,\ p = 0.001$). This means that the more frequently consumers purchased frozen pizza, the higher purchase intentions they had for the pizza Margherita. Similarly, the more frequently consumers purchased cold cuts, the higher purchase intentions for the vegetarian cold cuts they had. *Model 17: Minced meat substitute* found the reverse effect for the purchase frequency of minced meat on consumers' purchase intentions for the minced meat substitute $(B_{pf} = -0.175,\ p = 0.019)$. Hence, the more frequently consumers bought minced

[14] Purchase frequency of cold cuts refers to the actual meat product and not the vegetarian substitute.

meat, the lower were their purchase intentions for the minced meat substitute. Additionally, *model 17: Minced meat substitute* and *model 18: Vegetarian cold cuts* found a significant positive effect of previous product experience (minced meat substitute: $B_{pe} = 1.342,\ p < 0.001$ and vegetarian cold cuts: $B_{pe} = 0.956,\ p < 0.001$) on the purchase intention for these products. This means that consumers who had previous experience with the products had higher purchase intentions compared to consumers who did not have previous experience with the products.

From *models 16-18,* it can be concluded that a significant effect of the vegetarian label on purchase intention was only found for the pizza Margherita (*see table 6*) However, this finding is inconsistent with our assumptions, as it was found that the vegetarian label positively, as opposed to negatively, influenced consumers' purchase intentions for the pizza Margherita. Thus, we could affirmatively reject hypothesis 3. The detected effect of the vegetarian label for the pizza Margherita was consistent with the finding related to hypothesis 2, as the vegetarian label was shown to produce a halo effect for consumers' attitudes. However, the attitudes and purchase intentions for the minced meat substitute and the vegetarian cold cuts were not consistent, as no significant effect was found for the purchase intention. Furthermore, as the climate friendly label did not have a significant effect on consumers' purchase intentions, it means that the presence of a climate friendly label did neither increased or decreased consumers' purchase intentions compared to the control group. Similarly, as no significant effect was found for the interaction term between the labels, it means that the combined effect of the labels did not significantly influence the purchase intention.

Hypothesis 4: Attitude

To test *hypothesis 4* regarding the comparison of food products labeled as vegetarian and climate friendly on consumers' attitudes, we compared the confidence intervals of the two labels. As the confidence intervals overlapped for all three products *(see table 7),* it can be concluded that there was no significant difference between the effects of the vegetarian label and the climate friendly label on consumers' attitudes towards the products. Thus, hypothesis 4 was rejected.

Hypothesis 5: Purchase Intention

To test *hypothesis 5* regarding the comparison of food products labeled as vegetarian and climate friendly on consumers' purchase intentions, we compared the confidence intervals of the two labels. Similar to the findings for hypothesis 4, the confidence intervals for the

vegetarian label and climate friendly label were overlapping for all three products *(see table 7)*. Hence, hypothesis 5 was also rejected since no significant difference between the effect of the vegetarian label and climate friendly label on the purchase intention could be detected.

Table 7
Confidence intervals for attitude and purchase intention, α = 0.1

	Pizza Margherita			Minced meat substitute			Vegetarian cold cuts		
	5 %		95 %	5 %		95 %	5 %		95 %
Attitude									
Vegetarian labels	0.066	;	0.594	-0.259	;	0.296	-0.495	;	0.121
Climate friendly labels	0.105	;	0.638	-0.567	;	-0.007	-0.644	;	-0.022
Purchase intention									
Vegetarian labels	0.065	;	0.585	-0.431	;	0.174	-0.498	;	0.155
Climate friendly labels	-0.196	;	0.330	-0.435	;	0.176	-0.600	;	0.060

6.5 Hypothesis 6 and 7: Environmental Consciousness

To test *hypothesis 6 and 7* regarding the moderating effect of environmental consciousness on the attitude and purchase intention for each of the ”meat free” food products, we conducted a total of six moderation analyses (*see table 8)*. For each model; the vegetarian label and climate label served as the independent variables; environmental consciousness served as the moderating variable; and purchase frequency and previous product experience served as the control variables. The control group was set as the reference group in all six analyses. The results of the linear regression models are shown in table 8, and the hypotheses are presented before the related findings below:

> ***H6:*** *Consumers who have higher levels of environmental consciousness, have more positive attitudes toward food products labeled as (6a) vegetarian, and (6b) climate friendly compared to consumers with lower levels of environmental consciousness.*
>
> ***H7:*** *Consumers who have higher levels of environmental consciousness have higher purchase intentions for food products labeled as (7a) vegetarian, and (7b) climate friendly compared to consumers with lower levels with environmental consciousness.*

Table 8
Multiple linear regression with environmental consciousness as moderator, α = 0.1

Dependent variable: Attitude	Model 19: Pizza Margherita		Model 20: Minced meat substitute		Model 21: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	1.421	0.084 .	2.286	0.012 *	1.966	0.044 *
Vegetarian label	0.814	0.379	0.236	0.810	0.602	0.578
Climate label	-0.456	0.629	-0.094	0.925	-0.826	0.455
Purchase frequency	0.585	<0.001 ***	-0.191	0.006 **	0.087	0.206
Previous experience	-0.167	0.177	1.019	<0.001 ***	0.561	<0.001 ***
Environmental consciousness	0.006	0.730	0.012	0.532	0.009	0.670
Vegetarian label*Environmental consciousness (moderator)	-0.013	0.524	-0.002	0.933	-0.016	0.512
Climate label*Environmental consciousness (moderator)	0.016	0.445	-0.001	0.948	0.013	0.603
Adjusted R^2	0.1604		0.206		0.0569	

Dependent variable: Purchase intention	Model 22: Pizza Margherita		Model 23: Minced meat substitute		Model 24: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	0.417	0.603	1.000	0.309	0.070	0.945
Vegetarian label	0.331	0.714	0.552	0.605	0.943	0.408
Climate label	-1.241	0.179	0.527	0.628	-1.198	0.303
Purchase frequency	0.744	<0.001 ***	-0.165	0.028 *	0.252	<0.001 ***
Previous experience	0.176	0.148	1.327	<0.001 ***	0.943	<0.001 ***
Environmental consciousness	0.003	0.882	0.025	0.214	0.026	0.238
Vegetarian label*Environmental consciousness (moderator)	-0.001	0.949	-0.012	0.597	-0.023	0.359
Climate label*Environmental consciousness (moderator)	0.027	0.177	-0.012	0.612	0.022	0.397
Adjusted R^2	0.2452		0.256		0.1642	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Hypothesis 6

The three models (*model 19-21*), which tested *hypothesis 6* did not reveal any significant moderating effects of environmental consciousness on the relationship between any of the labels and consumers' attitudes ($p > 0.1$) (*see table 8*). Thus, it can be concluded that consumers' attitudes toward any of the labeled "meat free" food products did not significantly change depending on their level of environmental consciousness. This means that hypothesis 6a and 6b were affirmatively rejected. The adjusted R^2 values were all rather low as they were smaller than 21% (Ferguson, 2009).

Hypothesis 7

The three models (*model 22-24*) that tested *hypothesis 7* found no significant moderating effects of environmental consciousness on the relationship between any of the labels and consumers' purchase intentions ($p > 0.1$) (*see table 8)*. Hence, it can be concluded that consumers' purchase intentions for any of the labeled "meat free" food products did not change depending on their level of environmental consciousness, which is consistent with the findings for hypothesis 6. Hence, hypothesis 7a and 7b were affirmatively rejected. The adjusted R^2 value was between 16% and 26% for the three models.

6.6 Hypothesis 8 and 9: Gender

To test *hypothesis 8 and 9* regarding the moderating effect of gender on the attitude and purchase intention for each of the ”meat free” food products we conducted a total of six moderation analyses (*see table 9)*. For each model; the vegetarian label and climate friendly label were included as independent variables; gender was included as a moderator variable; purchase frequency and previous product experience were included as control variables. The control group was set as the reference group in all six analyses. The results of the linear regression models are shown in *table 9* and the hypotheses are outlined before the related findings below:

> ***H8:*** *Female consumers have more positive attitudes toward food products labeled as (8a) vegetarian, and (8b) climate friendly compared to male consumers.*
>
> ***H9:*** *Female consumers have higher purchase intentions for food products labeled as (9a) vegetarian, and (9b) climate friendly compared to male consumers.*

Table 9
Multiple linear regression with gender as moderator, α = 0.1

Dependent variable: Attitude						
	Model 25: Pizza Margherita		Model 26: Minced meat substitute		Model 27: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	1.472	<0.001 ***	2.708	<0.001 ***	2.126	<0.001 ***
Vegetarian label	0.348	0.084 .	0.172	0.419	0.185	0.431
Climate label	0.140	0.487	-0.140	0.511	-0.363	0.122
Purchase frequency	0.596	<0.001 ***	-1.964	0.004 **	0.092	0.181
Previous experience	-0.138	0.265	1.036	<0.001 ***	0.574	<0.001 ***
Gender	0.270	0.202	0.166	0.459	0.307	0.216
Vegetarian label*Gender (moderator)	-0.177	0.468	-0.034	0.895	-0.404	0.155
Climate label*Gender (moderator)	0.207	0.395	0.015	0.952	0.189	0.507
Adjusted R^2	0.1737		0.2124		0.0667	
Dependent variable: Purchase intention						
	Model 28: Pizza Margherita		Model 29: Minced meat substitute		Model 30: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	0.376	0.109	2.102	<0.001 ***	1.366	<0.001 ***
Vegetarian label	0.238	0.230	-0.094	0.686	0.002	0.995
Climate label	0.099	0.616	-0.039	0.867	-0.611	0.015 *
Purchase frequency	0.741	<0.001 ***	-0.174	0.020 *	0.240	0.001 **
Previous experience	0.215	0.081 .	1.348	<0.001 ***	0.971	<0.001 ***
Gender	0.197	0.346	0.087	0.721	-0.148	0.574
Vegetarian label*Gender (moderator)	0.035	0.884	0.107	0.702	-0.135	0.654
Climate label*Gender (moderator)	-0.108	0.653	0.082	0.771	0.611	0.044 *
Adjusted R^2	0.2389		0.2627		0.1604	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Hypothesis 8

The three models (*model 25-27*) that tested the moderating effect of gender on consumers' attitudes for the "meat free" food products found no significant moderating effect ($p > 0.1$) of gender between the vegetarian label or the climate friendly label and consumers' attitudes

toward any of the products (*see table 9)*. This means that consumers' attitudes toward the labeled products did not significantly differ between males and females. Thus, hypothesis 8a and 8b were affirmatively rejected. The adjusted R^2 values were rather low as they were smaller than 22% in all three models (Ferguson, 2009).

Hypothesis 9

The three models (*model 28-30*), which tested the moderating effect of gender on consumers' purchase intentions, found no significant moderating effect of gender between the vegetarian label on consumers' attitudes toward any of the products ($p > 0.1$) (*see table 9*). Similarly, no significant moderating effect of gender was found for the climate friendly label for the pizza Margherita and the minced meat substitute ($p > 0.1$). However, we found that gender significantly moderated $\left(B_{moderating\ effect} = 0.611,\ p = 0.044\right)$ the relationship between the climate friendly label and the purchase intentions for the vegetarian cold cuts. As males were coded as 0 in our model, the estimated effect of the climate friendly label on males' purchase intentions was represented by the coefficient for the climate friendly label, which was -0.611 ($B_{climate\ label} = -0.611$). In order to identify the estimated effect of the climate friendly label on females' purchase intentions, we needed to calculate the effect by using the coefficients for the climate friendly label and the interaction between the climate friendly label and gender. As females were coded as 1, the estimated effect was calculated to 0. The calculation (3) is presented below:

$$Code\ for\ females\ *\ interaction\ term\ +\ B_{climate\ label}$$

$$1 * 0.611 + (-0.611) = 0 \qquad (3)$$

Based on the above, it can be concluded that the effect of the climate friendly label on consumers' purchase intentions for the vegetarian cold cuts significantly differed between genders. It can thus be concluded that the presence of the climate friendly label significantly decreased purchase intentions for males, whereas the label did not affect purchase intentions for females. We illustrate the moderating effect of gender on the relationship between the climate friendly label and purchase intention for the cold cuts in *figure 10*. The R^2 values were between 16% and 26% in the three models.

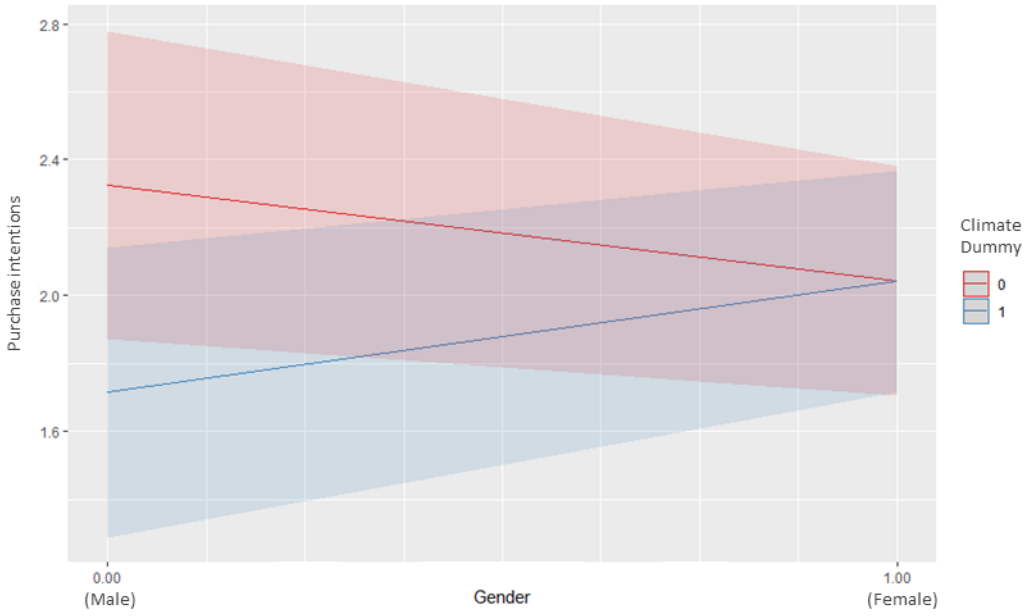

Figure 10: Illustration of gender as a moderating effect on cold cuts

From *model 28-30,* it can be concluded that gender did not significantly moderate the relationship between the vegetarian label and the purchase intention toward any of the ”meat free” food products. Thus, hypothesis 9a was affirmatively rejected. However, it was found that gender significantly moderated the relationship between the climate friendly label and consumers' purchase intentions for the vegetarian cold cuts. As no moderating effect of gender was found for the other two products, hypothesis 9b could only be partially accepted.

6.7 Hypothesis 10 and 11: Age

To test *hypothesis 10 and 11* regarding the moderating effect of age on both the attitude and purchase intention for each of the ”meat free” food products, we conducted a total of six multiple linear regression models (*see table 10).* Each model consisted of; the vegetarian label and the climate friendly label as the independent variables; age as the moderator; and purchase frequency and previous product experience as control variables. The control group was set as the reference group in all models. The results of the linear regression models are shown in *table 10* and hypotheses 10 and 11 is presented below before the related findings are presented:

> ***H10:*** *Younger consumers have more positive attitudes toward food products labeled as (10a) vegetarian, and (10b) climate friendly compared to older consumers.*

H11: *Younger consumers have higher purchase intentions for food products labeled as (11a) vegetarian, and (11b) climate friendly compared to older consumers.*

Table 10
Multiple linear regression with age as moderator, α = 0.1

Dependent variable: Attitude						
	Model 31: Pizza Margherita		Model 32: Minced meat substitute		Model 33: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	2.354	<0.001 ***	3.582	<0.001 ***	2.753	<0.001 ***
Vegetarian label	0.109	0.718	0.356	0.252	-0.012	0.973
Climate label	0.118	0.695	-0.375	0.229	-0.421	0.228
Purchase frequency	0.542	<0.001 ***	-0.173	0.008 **	0.104	0.129
Previous experience	-0.100	0.419	0.956	<0.001 ***	0.581	<0.001 ***
Age	-0.194	0.009 **	-0.241	0.002 **	-0.139	0.114
Vegetarian label*Age (moderator)	0.037	0.664	-0.065	0.453	-0.030	0.764
Climate label*Age (moderator)	0.050	0.554	0.077	0.382	0.060	0.550
Adjusted R^2	0.1885		0.2708		0.0720	
Dependent variable: Purchase intention						
	Model 34: Pizza Margherita		Model 35: Minced meat substitute		Model 36: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	0.711	0.022 *	2.569	<0.001 ***	1.476	<0.001 ***
Vegetarian label	0.254	0.399	0.137	0.695	0.124	0.742
Climate label	0.052	0.864	-0.214	0.543	-0.537	0.159
Purchase frequency	0.721	<0.001 ***	-0.162	0.029 *	0.260	<0.001 ***
Previous experience	0.217	0.079 .	1.299	<0.001 ***	0.957	<0.001 ***
Age	-0.051	0.489	-0.128	0.143	-0.083	0.372
Vegetarian label*Age (moderator)	0.005	0.955	-0.048	0.626	-0.073	0.494
Climate label*Age (moderator)	-0.011	0.893	0.066	0.505	0.104	0.330
Adjusted R^2	0.2362		0.2662		0.1557	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Hypothesis 10

The models (*model 31-34)* that aimed to test *hypothesis 10a and 10b*, did not reveal any significant moderating effects of age for any of the labels ($p > 0.1$) (*see table 10*). However, age as an independent variable revealed a significant negative relationship with the attitude toward both the pizza Margherita $(B_{age} = -0.194,\ p = 0.009)$ and the minced meat substitute ($B_{age} = -0.241,\ p = 0.002$). Thus, it showed that the higher the age, the more negative the attitudes toward the products were. The adjusted R^2 values were all between 7% and 27% in the models (*see table 10)*.

From *model 31-33*, it can be concluded that age did not moderate the relationship between the vegetarian label or the climate friendly label and the attitude toward the ”meat free” food products when compared to the control group. Therefore, hypotheses 10a and 10b were affirmatively rejected.

Hypothesis 11

To test *hypothesis 11a and 11b* regarding the moderating effect of age on purchase intention, three multiple linear regression models were conducted (*model 34-36)*. The models did not reveal any significant moderating effects of gender between any of the labels and the purchase intention of the three ”meat free” food products ($p > 0.1$) (*see table 10)*. All the models had R^2 values between 15% and 27%.

From *model 34-36*, it can be concluded that age did not moderate the relationship between the vegetarian label or climate friendly label and the purchase intention the “meat free” food products compared to the control group. Thereby we affirmatively rejected hypotheses 11a and 11b.

6.8 Health Consciousness and General Vegetarian Attitude

Health Consciousness

We previously presented our interest in investigating if consumers with higher levels of health consciousness had more or less positive attitudes toward products labeled as vegetarian or climate friendly and if they have higher or lower purchase intentions for them. In order to test these relationships, we conducted a total of six moderation analyses (*see table 11)*. Each model consisted of; the vegetarian label and the climate friendly label as the independent variables; health consciousness as moderator; and purchase frequency and previous product experience as control variables. The control group was still set as the reference group in all the analyses. The results of the linear regression models are shown in *table 11*.

Model 37-42 did not reveal any significant moderating effects of health consciousness between any of the labels and consumers' attitudes or purchase intentions ($p > 0.1$) (*see table 11)*. Thus, it was concluded that health consciousness did not affect how the labeled products were evaluated in terms of the consumers’ attitudes and purchase intentions compared to the control group. The adjusted R^2 values were all between 5% and 26%.

Table 11
Multiple linear regression with health consciousness as moderator, α = 0.1

Dependent variable: Attitude						
	Model 37: Pizza Margherita		Model 38: Minced meat substitute		Model 39: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	2.183	<0.001 ***	3.530	<0.001 ***	2.224	0.0005 ***
Vegetarian label	-0.592	0.277	-0.382	0.508	0.213	0.739
Climate label	-0.406	0.457	-0.801	0.166	-0.624	0.333
Purchase frequency	0.606	<0.001 ***	-0.202	0.003 **	0.084	0.234
Previous experience	-0.169	0.171	1.027	<0.001 ***	0.562	<0.001 ***
Health consciousness	-0.019	0.283	-0.026	0.172	0.006	0.777
Vegetarian label*Health consciousness (moderator)	0.030	0.131	0.020	0.352	-0.012	0.600
Climate label*Health consciousness (moderator)	0.025	0.221	0.024	0.255	0.014	0.554
Adjusted R^2	0.1664		0.209		0.0566	

Dependent variable: Purchase intention						
	Model 40: Pizza Margherita		Model 41: Minced meat substitute		Model 42: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	0.444	0.388	2.123	0.001 ***	1.080	0.107
Vegetarian label	-0.366	0.496	0.410	0.513	0.083	0.903
Climate label	0.037	0.946	-0.933	0.138	-0.556	0.416
Purchase frequency	0.773	<0.001 ***	-0.179	0.017 *	0.250	<0.001 ***
Previous experience	0.182	0.135	1.323	<0.001 ***	0.950	<0.001 ***
Health consciousness	0.002	0.914	0.003	0.890	0.006	0.776
Vegetarian label*Health consciousness (moderator)	0.024	0.234	-0.017	0.469	-0.008	0.762
Climate label*Health consciousness (moderator)	-0.002	0.924	0.035	0.135	0.013	0.603
Adjusted R^2	0.2394		0.261		0.1506	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

General Vegetarian Attitude

In the Research Gap & Hypotheses chapter (*see section 4.2 Hypotheses*), we argued for why it was of interest to investigate if consumers' attitudes toward vegetarian food and meat reduction had a moderating effect on the relationship between the vegetarian or climate friendly label and the attitudes toward the "meat free" food products. Furthermore, our interest to investigate purchase intention was also argued for. Therefore, we conducted a total of six moderation analyses (*model 43-48)*. Each model consisted of; the vegetarian label and the climate friendly label as the independent variables; the general vegetarian attitude as the moderator; and purchase frequency and previous product experience as control variables. The control group was also set as the reference group in all models. The output of the models is shown in *table 12*.

Table 12
Multiple linear regression with general vegetarian attitude as moderator, α = 0.1

Dependent variable: Attitude						
	Model 43: Pizza Margherita		Model 44: Minced meat substitute		Model 45: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	1.221	0.008 **	0.995	0.066 .	1.747	0.003 **
Vegetarian label	0.103	0.831	0.163	0.738	-0.569	0.318
Climate label	-0.136	0.782	-0.688	0.160	-0.865	0.130
Purchase frequency	0.592	<0.001 ***	-0.055	0.411	0.168	0.020 *
Previous experience	-0.176	0.151	0.748	<0.001 ***	0.502	<0.001 ***
General vegetarian attitudes	0.024	0.254	0.078	<0.001 ***	0.019	0.428
Vegetarian label*General vegetarian attitudes (moderator)	0.006	0.799	-0.001	0.961	0.023	0.412
Climate label*General vegetarian attitudes (moderator)	0.020	0.397	0.0277	0.248	0.031	0.272
Adjusted R^2	0.1844		0.3113		0.0895	

Dependent variable: Purchase intention						
	Model 46: Pizza Margherita		Model 47: Minced meat substitute		Model 48: Vegetarian cold cuts	
Independent variable	B	Sig.	B	Sig.	B	Sig.
Intercept	0.480	0.283	0.395	0.511	0.602	0.336
Vegetarian label	-1.028	0.030 *	-0.148	0.786	-0.326	0.591
Climate label	-0.130	0.785	-0.218	0.690	-0.772	0.205
Purchase frequency	0.748	<0.001 ***	-0.043	0.564	0.320	<0.001 ***
Previous experience	0.186	0.118	1.084	<0.001 ***	0.902	<0.001 ***
General vegetarian attitudes	0.002	0.907	0.076	0.002 **	0.022	0.404
Vegetarian label*General vegetarian attitudes (moderator)	0.065	0.005 **	0.006	0.807	0.011	0.721
Climate label*General vegetarian attitudes (moderator)	0.006	0.781	0.011	0.680	0.028	0.340
Adjusted R^2	0.2776		0.3224		0.1703	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

The models only revealed a significant moderating effect of the general vegetarian attitude between the vegetarian label, and the purchase intention of the pizza Margherita $(B_{moderating\ effect} = 0.065,\ p = 0.005)$. The coefficient for the vegetarian label $(B_{vegetarian\ label} = -1.028)$ represents the estimated effect of the vegetarian label on the purchase intention for the consumer with the lowest general vegetarian attitude score. In order to identify the estimated effect of the vegetarian label on the purchase intention for the consumer with the highest general vegetarian attitude score, we applied the coefficients of the vegetarian label and the interaction between the vegetarian label and the general vegetarian attitude. As 30 was the highest possible score, the estimated effect was calculated to be 0.922. The calculation (4) is presented below:

$$Highest\ general\ vegetarian\ attitude\ score\ *interaction\ term\ +\ B_{vegetarian\ label}$$

$$30 * 0.065 + (-1.028) = 0.922 \qquad (4)$$

The above calculation shows that the effect of the vegetarian label on consumers' purchase intentions significantly differed between consumers with low and high scores on the self-developed general vegetarian attitude scale. Thus, for consumers with more positive attitudes toward vegetarian food and meat reduction, the purchase intentions of the pizza Margherita significantly increased whereas the purchase intentions significantly decreased for consumers with less positive attitudes toward vegetarian food and meat reduction. We illustrated the

moderating effect of the general vegetarian attitude on the relationship between the vegetarian label and purchase intention for the pizza Margherita in *figure 11*. The models had adjusted R^2 values between 8% and 32%.

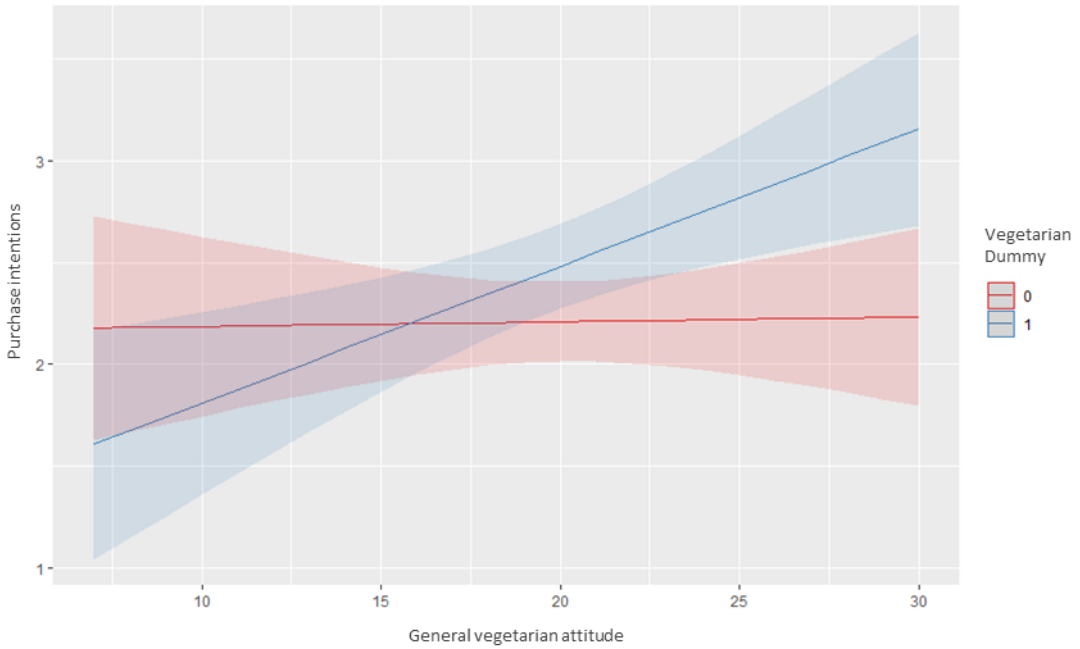

Figure 11: Illustration of general vegetarian attitude as moderating effect for pizza Margherita

Based on the presented findings from *models 43-48,* it can be concluded the general vegetarian attitude did not significantly moderate the relationships between the labeled ”meat free” food products and the attitude toward them. Furthermore, it can be concluded that a consistent significant moderating effect of the general vegetarian attitude on the relationship between the labels and the purchase intention was not found. It was only the relationship between the vegetarian label and the purchase intention for the pizza Margherita that was significantly moderated by the general vegetarian attitude. When the participants had more positive attitudes toward vegetarian food and meat reduction, the higher were the purchase intention for the pizza Margherita.

6.9 Summary of Findings

From the conducted multiple linear regression models, we found several significant effects (*see table 13 for an overview).* The models regarding the consumers’ perception revealed that the vegetarian label significantly affected the perception of price for the minced meat substitute, while the climate friendly label significantly affected the perception of climate friendliness for the pizza Margherita. Furthermore, we found that the vegetarian label only had significant

effects on the attitude and purchase intention for the pizza Margherita. The climate label had significant effects on the attitude for all the three ”meat free” products, however the direction of the effect differed between the products. Contrary to our expectations, most of the tested moderator variables were not found to be significant. Gender and the general vegetarian attitude were the only two significant moderating variables. Gender significantly moderated the relationship between the climate label and purchase intention for the vegetarian cold cuts. Furthermore, the general vegetarian attitude significantly moderated the relationship between the vegetarian label and attitude toward the pizza Margherita.

Table 13
Overview of significant effects from multiple linear regression models

	Pizza Margherita	
Dependent variable: Perception of climate friendliness	B	Sig.
Climate label	0.604	<0.001 ***
Dependent variable: Attitude	B	Sig.
Vegetarian label	0.330	0.040 *
Climate label	0.372	0.022 *
Dependent variable: Purchase intention	B	Sig.
Vegetarian label	0.325	0.040 *
The general vegetarian attitude*Vegetarian label (moderator)	-1 028	0.030 *
	Minced meat substitute	
Dependent variable: Perception of price	B	Sig.
Vegetarian label	0.248	0.045 *
Dependent variable: Attitude	B	Sig.
Climate label	-0.287	0.092 .
	Vegetarian cold cuts	
Dependent variable: Attitude	B	Sig.
Climate label	-0.333	0.079 .
Dependent variable: Purchase intention	B	Sig.
Gender*Climate label (moderator)	0.611	0.044 *

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Since we found opposite effects than expected for several hypotheses or no consistent significant effects across all three ”meat free” food products, we could not find support for most of our hypotheses (*see table 14 and 15 for an overview*). We partially accepted hypothesis 1c, as the perceived price increased for the minced meat substitute when the vegetarian label was present. Additionally, we partially accepted hypothesis 9b, as gender moderated the relationship between the climate friendly label and the purchase intention for the vegetarian cold cuts. Furthermore, most of our models had adjusted R^2 values of less than 25%, which indicates a weak explanatory power (Ferguson, 2009). However, as the aim of this thesis was to test the effects of the labels and not to fully investigate the factors influencing consumers' perception, attitude, and purchase intention, it was not deemed relevant to focus on achieving high adjusted R^2 values but rather sufficient to evaluate the output by interpreting the coefficients and their corresponding p-values (Saunders et al., 2016).

Table 14

Overview of hypotheses including results

Testing	Product	B	Sig.	Result	Overall result
H1a: Consumers perceive food products labeled as vegetarian to be healthier compared to equivalent food products not labeled as vegetarian.	Pizza Margherita	0.120	0.339	Rejected	Rejected
	Minced meat substitute	0.040	0.766	Rejected	
	Vegetarian cold cuts	0.076	0.550	Rejected	
H1b: Consumers perceive food products labeled as vegetarian to be less tasty compared to equivalent food products not labeled as vegetarian.	Pizza Margherita	0.245	0.114	Rejected	Rejected
	Minced meat substitute	0.061	0.690	Rejected	
	Vegetarian cold cuts	-0.062	0.717	Rejected	
H1c: Consumers perceive food products labeled as vegetarian to be more expensive compared to equivalent food products not labeled as vegetarian.	Pizza Margherita	0.209	0.139	Rejected	Partially accepted
	Minced meat substitute	0.248	0.045 *	Accepted	
	Vegetarian cold cuts	0.077	0.518	Rejected	
H2: Consumers have less positive attitudes toward food products labeled as vegetarian compared to equivalent food products not labeled as vegetarian.	Pizza Margherita	0.330	0.040 *	Rejected	Rejected
	Minced meat substitute	0.019	0.912	Rejected	
	Vegetarian cold cuts	-0.187	0.318	Rejected	
H3: Consumers have lower purchase intentions for products labeled as vegetarian compared to equivalent food products not labeled as vegetarian.	Pizza Margherita	0.325	0.040 *	Rejected	Rejected
	Minced meat substitute	-0.128	0.485	Rejected	
	Vegetarian cold cuts	-0.172	0.387	Rejected	
H6a: Consumers who have higher levels of environmental consciousness, have more positive attitudes toward food products labeled as vegetarian compared to consumers with lower levels with environmental consciousness.	Pizza Margherita	-0.013	0.524	Rejected	Rejected
	Minced meat substitute	-0.002	0.933	Rejected	
	Vegetarian cold cuts	-0.016	0.512	Rejected	
H6b: Consumers who have higher levels of environmental consciousness, have more positive attitudes toward food products labeled as climate-friendly compared to consumers with lower levels of environmental consciousness.	Pizza Margherita	0.016	0.445	Rejected	Rejected
	Minced meat substitute	-0.001	0.948	Rejected	
	Vegetarian cold cuts	0.013	0.603	Rejected	
H7a: Consumers who have higher levels of environmental consciousness have higher purchase intentions for food products labeled as vegetarian compared to consumers with lower levels with environmental consciousness.	Pizza Margherita	-0.001	0.949	Rejected	Rejected
	Minced meat substitute	-0.012	0.597	Rejected	
	Vegetarian cold cuts	-0.023	0.359	Rejected	
H7b: Consumers who have higher levels of environmental consciousness have higher purchase intentions for food products labeled as climate-friendly and compared to consumers with lower levels with environmental consciousness.	Pizza Margherita	0.027	0.177	Rejected	Rejected
	Minced meat substitute	-0.012	0.612	Rejected	
	Vegetarian cold cuts	0.022	0.397	Rejected	
H8a: Female consumers have more positive attitudes toward food products labeled as vegetarian compared to male consumers.	Pizza Margherita	-0.177	0.468	Rejected	Rejected
	Minced meat substitute	-0.034	0.895	Rejected	
	Vegetarian cold cuts	-0.404	0.155	Rejected	
H8b: Female consumers have more positive attitudes toward food products labeled as climate friendly compared to male consumers.	Pizza Margherita	0.207	0.395	Rejected	Rejected
	Minced meat substitute	0.015	0.952	Rejected	
	Vegetarian cold cuts	0.189	0.507	Rejected	
H9a: Female consumers have higher purchase intentions for food products labeled as vegetarian compared to male consumers.	Pizza Margherita	0.035	0.884	Rejected	Rejected
	Minced meat substitute	0.107	0.702	Rejected	
	Vegetarian cold cuts	-0.135	0.654	Rejected	
H9b: Female consumers have higher purchase intentions for food products labeled as vegetarian compared to male consumers.	Pizza Margherita	-0.108	0.653	Rejected	Partially accepted
	Minced meat substitute	0.082	0.772	Rejected	
	Vegetarian cold cuts	0.611	0.044 *	Accepted	
H10a: Younger consumers have more positive attitudes toward food products labeled as vegetarian compared to older consumers.	Pizza Margherita	0.037	0.664	Rejected	Rejected
	Minced meat substitute	-0.065	0.453	Rejected	
	Vegetarian cold cuts	-0.030	0.764	Rejected	
H10b: Younger consumers have more positive attitudes toward food products labeled as climate friendly compared to older consumers.	Pizza Margherita	0.050	0.554	Rejected	Rejected
	Minced meat substitute	0.077	0.382	Rejected	
	Vegetarian cold cuts	0.060	0.550	Rejected	
H11a: Younger consumers have higher purchase intentions for food products labeled as vegetarian compared to older consumers.	Pizza Margherita	0.005	0.955	Rejected	Rejected
	Minced meat substitute	-0.048	0.626	Rejected	
	Vegetarian cold cuts	-0.073	0.494	Rejected	
H11b: Younger consumers have higher purchase intentions for food products labeled as climate friendly compared to older consumers.	Pizza Margherita	-0.011	0.893	Rejected	Rejected
	Minced meat substitute	0.066	0.505	Rejected	
	Vegetarian cold cuts	0.104	0.330	Rejected	

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Table 15
Overview of hypotheses including results, 90% confidence interval

Testing	Product	Conf. interval vegetarian label	Conf. interval climate label	Result	Overall result
H4: Consumers have more positive attitudes toward food products labeled as climate friendly compared to equivalent food products labeled as vegetarian.	Pizza Margherita	0.066 ; 0.594	0.105 ; 0.638	Rejected	Rejected
	Minced meat substitute	-0.259 ; 0.296	-0.567 ; -0.007	Rejected	
	Vegetarian cold cuts	-0.495 ; 0.121	-0.644 ; -0.022	Rejected	
H5: Consumers have higher purchase intentions for food products labeled as climate friendly compared to equivalent food products labeled as vegetarian.	Pizza Margherita	0.065 ; 0.585	-0.196 ; 0.330	Rejected	Rejected
	Minced meat substitute	-0.431 ; 0.174	-0.435 ; 0.176	Rejected	
	Vegetarian cold cuts	-0.498 ; 0.155	-0.600 ; 0.060	Rejected	

7. DISCUSSION

This chapter discusses the key findings of our research in relation to the research question and its corresponding hypotheses. First, it discusses the findings by relating them to previous studies. Second, it presents managerial implications for marketers who work with ”meat free” food products and policy makers within the food industry. Lastly, it discusses the limitations of our research and presents recommendations for future research, which cover areas that were beyond the scope of this thesis.

7.1 Discussion of Findings

7.1.1 Price Perception of Vegetarian Framed Food Products

Our study partially supported our hypothesis regarding consumers' price perception of food products labeled as vegetarian, as the minced meat substitute was perceived to be more expensive when it was framed as vegetarian compared to when it was not framed. Other researchers have found similar effects but for organically labeled food products (Ellison et al., 2016), which first of all supports that a spillover effect can occur from framing food products. Second of all, our findings were consistent with those of previous research, which found vegetarian diets to be perceived as more expensive (Povey, et. al, 2001; Rosenfeld & Tomiyama, 2020). Thus, we argue that the vegetarian framed minced meat substitute created a devil effect in terms of price. We characterized the minced meat substitute as a utilitarian product, which contributes with low prices as functional benefits (Maehle et al., 2015). Thus, when consumers purchase these types of products, they want to pay a low price, and since the vegetarian label increases the price perception of the product, the gap between their wants of a low price and the price perception of the product increases when the product is framed as vegetarian. Therefore, we argue that the vegetarian label created a devil effect as opposed to a halo effect. However, since price is often perceived as a quality sign (Völckner & Hofmann, 2007), it could also be argued that the effect of the vegetarian label could be characterized as a halo effect. Thus, the evaluation of whether labels create a halo or devil effect depends on how the product is aimed at being positioned in the market.

Furthermore, despite our expectations, the vegetarian label only significantly affected the price perception out of all the tested variables (perception of healthiness, taste, and climate

friendliness). This was a surprising result but indicates that for most parts, the vegetarian framed food products did not lead to changes in the consumers' perceptions.

7.1.2 Vegetarian and Climate Friendly Labels as Sources of Information

Contrary to our expectations, our study found that the vegetarian label had positive effects on consumers' attitudes and purchase intentions for the pizza Margherita. This is consistent with the theory of planned behavior (Ajzen & Fishbein, 1980), which argues for consistency between individuals' attitudes and intentions. Furthermore, our findings are consistent with previous studies on the halo effect in relation to food labels as these studies also found that food labels positively influenced consumers' evaluations of food products (e.g. Schuldt and Schwarz, 2010; Sörqvist et al., 2015). Although we identified a positive effect for the pizza Margherita, we did not detect any effects of the vegetarian label for the minced meat substitute or the vegetarian cold cuts. This can likely be explained by the clear difference between the types of products. The minced meat substitute and the vegetarian cold cuts are similar in the sense that they are both clearly substitutes to meat, and have been specifically developed to replace meat, whereas the pizza Margherita has not. Furthermore, scholars have previously found that labels serve as a source of information when consumers make decisions in-store (Sirieix et al., 2013). Thus, our findings suggest the vegetarian label did not provide the consumers with any additional information about the minced meat substitute and the vegetarian cold cuts. We argue that this was because the consumers were aware that these products are vegetarian products, despite the presence of the vegetarian label. Thus, framing the products as vegetarian did simply not affect consumers' attitudes and intentions compared to when they were not framed as vegetarian. Furthermore, we argue that the reason why an effect of the vegetarian label on consumers' attitudes and purchase intentions for the pizza Margherita was found is that consumers do not categorize the pizza Margherita as a typical vegetarian product since it is not a meat substitute. Hence, the vegetarian label informed the consumers about the vegetarian nature of the product, which resulted in the significant effect of the vegetarian label on their attitudes and purchase intentions.

A similar conclusion can be drawn for the effect of the climate friendly label on consumers' perception of the pizza Margherita. Our study found that the climate friendly framed pizza Margherita was perceived by consumers to be more climate friendly compared to the equivalent product that was not framed as climate friendly. However, the climate friendly label did not affect consumers' perceptions of the climate friendliness for the minced meat substitute

or the vegetarian cold cuts. Hence, this suggests that consumers perceived these two products to be climate friendly despite the presence of the climate friendly label. This was also confirmed in the descriptive statistics, as consumers on average perceived the minced meat substitute, and vegetarian cold cuts to be more climate friendly compared to the pizza Margherita (*see figure 8*). Thus, we argue that the climate friendly label did not provide consumers with any additional information about the minced meat substitute, or the vegetarian cold cuts. However, it provided them with useful information regarding the climate friendliness of the pizza Margherita. We argue that this is because consumers do not associate a pizza Margherita to be climate friendly. This provides evidence for why we could detect a significant effect of the climate friendly label for the pizza Margherita and not for the other two products.

Furthermore, we found it rather surprising that consumers had more positive attitudes and higher purchase intentions for the pizza Margherita when the product was framed as vegetarian compared to when it was not, as we hypothesized the opposite effect. We argue that this is evidence for a halo effect. A recent study by Rosenfeld and Tomiyama (2020) indicated that meat eaters had negative perceptions toward vegetarian diets, and we thus expected the vegetarian label to give rise to a devil effect as opposed to a halo effect. The detected halo effect can possibly be explained by the tendency among Danish consumers to increasingly be open to vegetarian food (Coop Analyse, 2019c). We found evidence for this tendency in our sample, as the consumers on average had positive attitudes toward vegetarian food and meat reduction (*see table 8*).

Moreover, we found that consumers' general attitudes toward vegetarian food and meat reduction moderated the effect between the vegetarian label and consumers' purchase intentions. More specifically, for consumers with more positive attitudes toward vegetarian food and meat reduction, the purchase intentions for the pizza Margherita increased when it was framed as vegetarian. Furthermore, it decreased for consumers with less positive attitudes toward vegetarian food and meat reduction. Hence, the latter suggests that the vegetarian label, in fact, gave rise to a devil effect as we expected. The detected difference in purchase intentions between the consumers is consistent with findings from previous studies, as it has been found that different consumer groups hold diverse perceptions and attitudes toward vegetarianism (Povey, Wellens & Conner, 2001; Ruby et al., 2016; Rosenfeld & Tomiyama, 2020). Furthermore, in the study by Schuldt and Hannahan (2013), it was concluded that the occurrence of a devil effect was due to inconsistencies between consumers' personal values and those values conveyed by the (organic) label. In our study, the devil effect was only found

for consumers with negative attitudes toward vegetarian food and meat reduction, hence their attitudes were clearly inconsistent with what the vegetarian label portrays. This supports the conclusion made by Schuldt and Hannahan (2013).

7.1.3 Inconsistencies Between Attitudes and Purchase Intentions for Climate Friendly Framed Food Products

The theory of planned behavior (Ajzen & Fishbein, 1980) argues, as previously mentioned, for consistency between individuals' attitudes and intentions, thus, in line with this theory, we expected to find similar results in our study. However, we did not find consistent effects across the attitudes and purchase intentions for the pizza Margherita when it was framed as climate friendly. The attitudes for the pizza Margherita were positively influenced by the climate friendly label, whereas a significant effect was not found for the purchase intentions. Hence, an inconsistency between the consumers' attitudes and purchase intentions was identified. This inconsistency was only present for the climate friendly label and not for the vegetarian label.

Within the research literature on green consumerism, the "attitude-behavior gap" is a recurring and notable theme (Peattie, 2010). The attitude-behavior gap refers to the failure of translating environmental knowledge and strongly held pro environmental values and attitudes into pro environmental behaviors. Studies on the attitude-behavior gap, have found that even though consumers have positive attitudes toward green products, they often do not intend to purchase them (Peattie, 2010; Vermeir & Verbeke, 2006). From our descriptive statistics, it was evident that our sample in general held pro environmental values (*see figure 9)*. Thus, we argue that an attitude-behavior gap was identified for the climate friendly framed pizza Margherita, as the attitudes toward the product increased when the climate friendly label was present whereas the purchase intention was unaffected. The attitude-behavior gap is interesting for at least two reasons. First, research that only focuses on attitudes of food products with a sustainable agenda cannot directly conclude on how consumers' behaviors are influenced. Within sustainable research, it is especially of interest to investigate the behavior of consumers, as it directly has an environmental impact, whereas perceptions and attitudes only have an indirect environmental impact. Second, together with our findings, the attitude-behavior gap implies that by framing food products in certain ways, consumer behavior is still challenging to affect, as we saw that the climate friendly framing did not influence the consumers' purchase intentions.

In order to identify if the discrepancy between the attitudes toward the pizza Margherita and the purchase intentions for the pizza Margherita was significant, we conducted a t-test (*see table 19 in appendix 8)*. As the test revealed a significant difference between the attitude and the purchase intention, it supports our argumentation that an attitude-behavior gap was identified. Thus, we acknowledge that framing effects might not be an optimal strategy to change consumers' behaviors. However, as the aim of our thesis was to focus on the perception, attitudes, and purchase intentions and not the actual behavior, we argue that our findings provide profound bases for future research within this field. We return to the discussion on behavior at the end of this chapter *(see section 7.3 Limitations & Future Research).*

7.1.4 The Backlash Effect of Climate Friendly Framed Food Products

As previous research showed that consumers are increasingly becoming environmentally conscious (Kim & Choi, 2005), we expected the climate friendly label to have a positive effect on consumers' attitudes toward the "meat free" food products. In line with our expectations, consumers had more positive attitudes toward the pizza Margherita when it was framed as climate friendly compared to when it was not, which provides evidence for a halo effect. Pickett-Baker and Ozaki (2008) found that purchasing environmentally friendly products, makes consumers feel good, and thus enhances their desired self-concept, which can explain the positive effect of the climate friendly label.

On the other hand, consumers had less positive attitudes toward the two meat substitutes (minced meat substitute and the vegetarian cold cuts) when they were framed as climate friendly compared to when they were not, which indicates that the label created a devil effect for these products. We argue that this is because of a backlash effect of the climate friendly label. Scholars have found that green marketing can result in a backlash effect since many companies are using green marketing merely as a selling strategy. This has resulted in skepticism toward green products among consumers, and instead of having a positive effect for the company, the application of green marketing backlashes and creates the opposite effect of what was intended (Peattie & Crane, 2005; Johnstone & Tan, 2015). Furthermore, previous research has found that the distrust in green marketing is higher when there are no official regulations from the government regarding the climate friendliness of products (Johnstone & Tan, 2015). This reflects the current situation in Denmark, as there is no official climate label for food products (Food tank, 2019).

We argue that the appearance of the backlash effect for the meat substitutes can be explained by several factors. First of all, Pickett-Baker and Ozaki (2008) found that purchasing environmentally friendly products did not necessarily enhance consumers' desired self-concept when these products did not function as effectively as conventional products. Similar conclusions were made by Alston and Roberts (1999) who argued that environmental benefits serve as secondary product differentiators, which could persuade consumers into buying a product if the product's performance did not decrease. Second of all, as the majority of our sample eat meat a minimum of five days per week (*see figure 12 in appendix 3)*, it can be argued that they are not heavy users of meat substitutes. In continuation of this, the findings from Hoek et al. (2011) suggest that consumers who are non-users and light/medium users of meat substitutes, avoid purchasing meat substitutes due to negative beliefs about the sensory appeal of the substitutes compared to meat. Hence, for meat eaters, meat substitutes could be perceived to not "function" and perform as well as the meat-based conventional products.

In conclusion, the presented arguments suggest that meat eaters are less likely to be persuaded by green marketing initiatives for meat substitutes due to a weakened product performance compared to meat. This explains why we did not see a positive effect of the climate friendly label on the attitude toward any of the meat substitutes. Additionally, as consumers are aware that companies promote their products as environmentally friendly for strategic purposes, and not only for informational purposes (Peattie & Crane, 2005), it is plausible that our sample viewed the implementation of the climate friendly label as a strategy to "trick" them into eating less meat. Thus, it explains the occurrence of the backlash effect. Furthermore, as the pizza Margherita is not developed to directly replace meat, it can be argued that consumers do not seek the sensory aspects of meat. Thus, we argue that there is no tradeoff between product performance (the sensory properties of meat) and the environmental benefits. Hence, it explains the differences in the effects of the climate label for the pizza Margherita in comparison to the meat substitutes.

Our study also found a moderating effect of gender on the relationship between the climate friendly label and consumers' purchase intentions for the vegetarian cold cuts. More specifically, we found that the purchase intentions for males decreased when the vegetarian cold cuts were framed as climate friendly compared to when the product was not. In contrast, for females, the purchase intentions were unchanged. This provides evidence for a backlash effect of the climate friendly label on males' purchase intentions, which is consistent with the backlash effect of the climate friendly label on the attitudes as discussed earlier. Furthermore,

we presented arguments for why meat eaters are less likely to be persuaded by green marketing for meat substitutes, and as males generally have less positive attitudes toward vegetarian food in comparison to females (Mullee et al., 2017), it can explain why the backlash effect occurred for males and not for females.

7.2 Managerial Implications

This thesis has highlighted the impact of framing effects, and their relations to halo, and devil effects for ”meat free” food products. Our findings have several managerial implications for marketers, but also for the Danish policy makers, who are currently in the process of developing a generic label that can inform consumers about food products’ environmental impact. Overall, we argue that it is important for any marketer to carefully consider the way a ”meat free” food product is framed in relation to the product type, as it can result in both positive and negative changes in consumers’ perceptions, attitudes and purchase intentions (halo and devil effects). We start by discussing the managerial implications of framing ”meat free” food products as vegetarian, and thereafter we discuss the managerial implications of framing such products as climate friendly.

First of all, framing a ”meat free” food product as vegetarian can lead to an increased price perception, thus if marketers are particularly aiming at positioning a product or brand at a premium price level in the consumers’ minds, our study shows that vegetarian framing can be beneficial. Contrary, if marketers are particularly interested in positioning a product or brand at a low price level, our findings indicate that the product should not be framed as vegetarian. By taking into consideration the potential halo or devil effects that labels create, marketers can to a higher degree influence consumers as intended.

Second of all, marketers can benefit from framing ”meat free” food products as vegetarian when the product has not been developed to specifically substitute meat e.g. pizza Margherita or tomato soup. For food products of this type, our study indicated that a vegetarian label provided consumers with relevant information, which in turn created a halo effect on the attitudes and purchase intentions. However, marketers must consider the target group of the food product that they are marketing before determining the most optimal framing. This is due to the detected moderating effect of the general vegetarian attitude on the relationship between the vegetarian label and the consumers' purchase intentions. When consumers had a general negative vegetarian attitude, their purchase intentions decreased, whereas they increased for

consumers with general positive attitudes. Thus, it indicates that when the ”meat free” food products were framed in accordance with the consumers' vegetarian attitudes, their purchase intentions increased. Therefore, when marketers of ”meat free” food products are targeting consumers who have pro vegetarian attitudes e.g. vegetarians or flexitarian, it is beneficial to frame the product as vegetarian, whereas it should be avoided if the target group has negative vegetarian attitudes, which might be the case for heavy meat eaters. Additionally, as we did not find significant effects of the vegetarian label on the attitudes toward or purchase intentions of the meat substitute products, we argue that it is not relevant for marketers to use resources on framing such types of products as vegetarian when targeting meat eaters and flexitarians.

Third of all, our study implies that marketers should frame ”meat free” food products as climate friendly when they are not naturally substitutes to meat. This type of framing provides information to consumers about the product's climate friendliness and positively influences their attitudes, which creates a halo effect. However, we did not see an effect of the climate friendly label on the purchase intention. This indicates that it could be more beneficial to label this type of product as vegetarian since we saw an effect of the vegetarian label on the purchase intention. However, as the general vegetarian attitude had a moderating effect, as previously mentioned, it again highlights the importance of identifying and characterizing the target group before framing food products.

Fourth of all, we also recommend marketers to be careful with framing products that are clearly meat substitutes as climate friendly, since our study showed that such a framing resulted in a backlash effect of the attitude for these types of products. This indicates that the climate friendly framing of such types of products at least should be more indirect than what we tested in our study.

Fifth of all, our findings indicated that the Danish policy makers could prevent potential sustainable food behavior by demanding that an official climate label is implemented on all food products including meat substitutes due to the backlash effect identified for the meat substitutes. The implementation of such a label could have negative consequences for the CO^2 emissions, as these products could substitute meat, which emits high levels of CO^2 in its production (Reisch et al., 2013). However, as our study did not focus on the trust aspect of the labels and as consumers' trust is higher for official climate labels (Johnstone & Tan, 2015), it is unknown if an official label developed by policy makers in Denmark could lead to positive attitudes and intentions for ”meat free” food products.

Overall, based on our findings, we recommend marketers to evaluate the potential devil effects and halo effects that framing may cause before investing resources in developing new labels or implementing labels from third parties. Additionally, we recommend marketers to avoid framing meat substitutes as climate friendly or vegetarian as we saw negative and no effects, respectively. However, we are not able to provide a uniform implication for which type of framing (vegetarian or climate friendly) marketers should apply for products that are not meat substitutes.

7.3 Limitations & Future research

Naturally, our research was not free of limitations. First of all, we did not find as many effects of the labels as we expected, which could possibly be due to the sample size. This was despite our attempt to reach as large of a sample as possible by combining convenience sampling with snowball sampling. It is well established in research that a larger sample size increases the likely precision of a sample, as the sampling error decreases (Bryman & Bell, 2007). Furthermore, as the target population consisted of Danish consumers who either eat meat occasionally or regularly, it is expected that the population is heterogeneous since it represents almost the entire Danish population. Therefore, a larger sample size could be required to detect significant effects (Bryman & Bell, 2007). Furthermore, as a non-probability sample was applied, it makes it hard to generalize our findings (Blumberg et al., 2011), which we acknowledge to be a limitation of our study.

Second of all, the distributions across age groups and levels of environmental consciousness were uneven in our sample, as the majority of our sample consisted of younger participants with higher levels of environmental consciousness. This can reduce the ability to detect moderating effects of these variables (Aguinis, 1995). Thus, a possible reason for why we did not detect moderating effects of either age or environmental consciousness, as expected, could be due to the uneven distributions of these variables. We consider this a limitation of our study.

Third of all, we applied parametric tests for Likert item data, which one school of thought considers inappropriate, as it is argue that such data should not be treated as interval data (Carifio & Perla, 2008; Jamieson, 2004). It has been argued that treating Likert item data as interval data can lead to the arrival at wrongful conclusions about the significance of the research (Jamieson, 2004). Thus, it can be argued that this is a limitation of our research. In relation to this, not all the assumptions for the parametric tests were met, which is also

considered a limitation. However, another school of thought argues that even though Likert scale data is prone to violating the assumptions of linearity and normality for parametric tests, such statistical tests can be applied without arriving at wrong conclusions (Norman, 2010; Murray, 2013). Hence, we deemed it appropriate to apply parametric tests in our research.

Lastly, our survey was conducted online, which allowed the participants to complete the survey when it suited them. This means that their evaluations were not made in a supermarket environment, which is a natural setting where consumers encounter and evaluate food products. We argue that the study could have been more robust if it would have been conducted in a natural setting (Blumberg et al., 2011). Hence, we consider this a limitation of our research. Given that other studies regarding similar topics have been conducted online (Krpan & Houtsma, 2020; Schuldt & Hannahan, 2013), we evaluated this approach to be appropriate given the circumstances. Additionally, as previously argued in our methodology chapter (*see section 5.7.1 Validity)*, we attempted to overcome this limitation by instructing participants to imagine that they were shopping for food in a supermarket.

For future research, it is recommended to conduct a similar study in a natural setting, to investigate the consumers' responses in the environment where they normally evaluate food products. Furthermore, our study focused on the effect of the vegetarian and climate friendly label exclusively for “meat free” food products. However, we do not know the effects of the labels in a natural environment where consumers are confronted with several choices including meat-based alternatives. It would therefore additionally be relevant to investigate consumers' attitudes and purchase intentions for framed ”meat free” food products compared to equivalent products that contain meat and are not framed. This could potentially provide managerial implications for where food products should be placed in supermarkets. It could also provide implications for whether or not marketers benefit from implementing labels on their food products when consumers are presented with several alternatives. Moreover, we recommend future research to investigate consumers' actual choice of framed ”meat free” food products, as we identified an attitude-behavior gap, which underlines that researchers cannot solely rely on consumers' attitudes to predict consumers' choice, especially when climate friendly frames are applied.

Based on our findings, it could be relevant for future research to investigate if the identified backlash effect would persist for food products that are indirectly framed as climate friendly. In our study, the climate friendly label explicitly informed consumers about the products’

climate friendliness. Thus, future research could test different variations of framing e.g. synonyms to the word “climate friendly” or incorporating the framing into the product name (e.g. Green Cold Cuts). Further studies in this area would broaden the scope of research within this field, and possibly contribute with ways to market meat substitutes as climate friendly.

Furthermore, as we found inconsistent patterns in terms of price perceptions across the ”meat free” products, we encourage scholars to further explore the price perception of vegetarian framed ”meat free” food products in future research.

8. CONCLUSION

The overall aim of this thesis was to make vegetarian food more acceptable among meat eaters and flexitarians. By answering our research question, we were able to gain a better understanding of how the framing of ”meat free” food products through the implementation of food labels could help achieve this agenda. We specifically focused on researching consumers' perceptions, attitudes, and purchase intentions, as these factors are crucial to study before attempting to influence behavior. Thus, based on the findings in this thesis, we contribute with practical implications for how ”meat free” food products should be marketed to meat eaters and flexitarians, which can ultimately lead to more sustainable food consumption behaviors.

From our study, we can conclude that by framing ”meat free” food products as either vegetarian or climate friendly, we could evoke halo effects, but also devil effects, which confirms findings from previous studies on food labels (e.g. Schuldt and Schwarz, 2010; Sörqvist et al., 2015; Besson et al., 2020). We conclude that framing ”meat free” food products as vegetarian or climate friendly had a limited impact on consumers' perception. Contrary to our expectations, food products that were labeled as vegetarian or climate friendly were not perceived as healthier or less tasty. Additionally, only limited support was found for a higher price perception and a more positive perception of climate friendliness.

Furthermore, we conclude that consumers’ attitudes toward vegetarian and climate friendly framed food products differed depending on the product type and the information that the label provided. The vegetarian framed food product, which was not a direct substitute to meat, evoked more positive attitudes and purchase intentions among consumers, whereas the climate friendly framed food product only positively influenced attitudes. This indicates the presence of an attitude-behavior gap, which is consistent with previous studies on green consumerism (e.g. Peattie, 2010; Vermeir & Verbeke, 2006). On the contrary, the products that were framed as climate friendly, and direct substitutes to meat evoked negative attitudes, which indicates a backlash effect. Overall, vegetarian and climate friendly food labels can serve as sources of information and thus have positive effects when providing consumers with information about a product’s vegetarian contents or its climate friendliness. Additionally, we conclude that climate friendly framed food products did not evoke more positive attitudes or higher purchase

intentions than vegetarian framed food products, thus a climate friendly frame cannot be considered more beneficial.

Moreover, we conclude that the effects of framing food products as vegetarian or climate friendly did not differ in terms of attitudes and purchase intentions between consumers across different age groups or with different levels of environmental and health consciousness. Additionally, we conclude that female consumers did not have more positive attitudes toward the vegetarian or climate friendly framed food products compared to males, and no differences between genders were found for the purchase intentions for the vegetarian framed food products. However, our study found that females had neutral purchase intentions for one of the climate friendly framed products, whereas males had low purchase intentions. Thus, for the males a devil effect was identified. Furthermore, it was found that consumers with more positive attitudes toward vegetarian food and meat reduction had high purchase intentions for one of the vegetarian framed products, while those consumers who had less positive attitudes toward vegetarian food and meat reduction had low purchase intentions. Hence, we emphasize the importance of considering the target group before framing food products.

Overall, we conclude that vegetarian and climate friendly labels do affect consumers' attitudes and purchase intentions. Based on our findings, we are unable to draw any uniform conclusions in terms of determining the most optimal label for promoting sustainable food consumption. However, we can conclude that consumers' attitudes and purchase intentions for framed "meat free" food products highly depend on the product type, as positive attitudes and purchase intentions depend on whether or not the labels provide additional information. Thus, for meat substitutes, which are clearly vegetarian and climate friendly, the labels do not have a positive effect. Thereby, our findings suggest that framing can contribute to making vegetarian food more acceptable among meat eaters and flexitarians. Thus, it can lead to a shift toward sustainable food consumption for products that are not developed to substitute meat. Although we consider this a positive finding, we acknowledge that framing might not lead to bigger behavioral changes.

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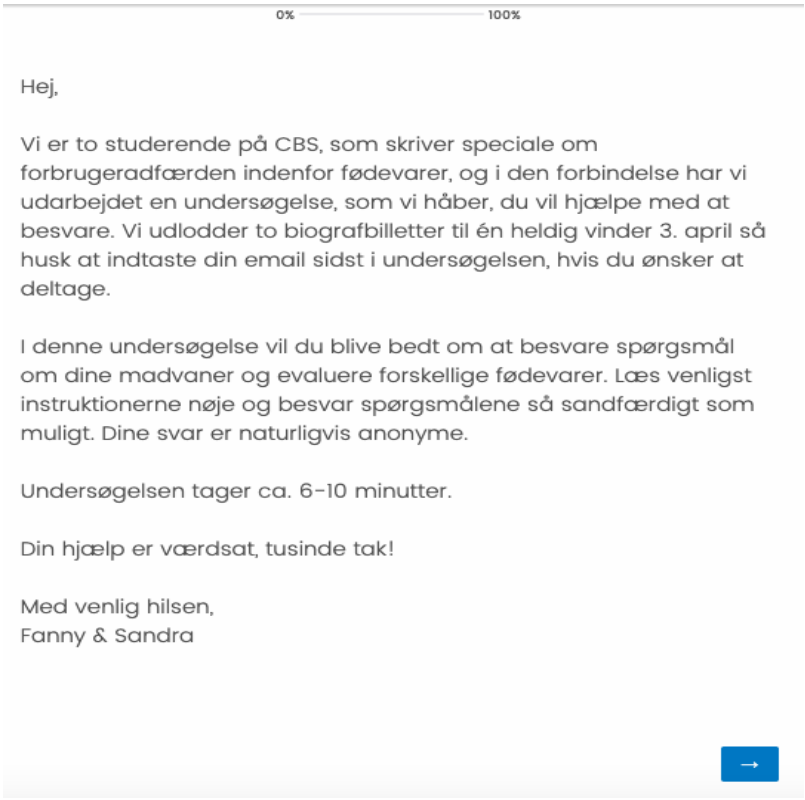
APPENDIX

Appendix 1: Questionnaire

Introduction:

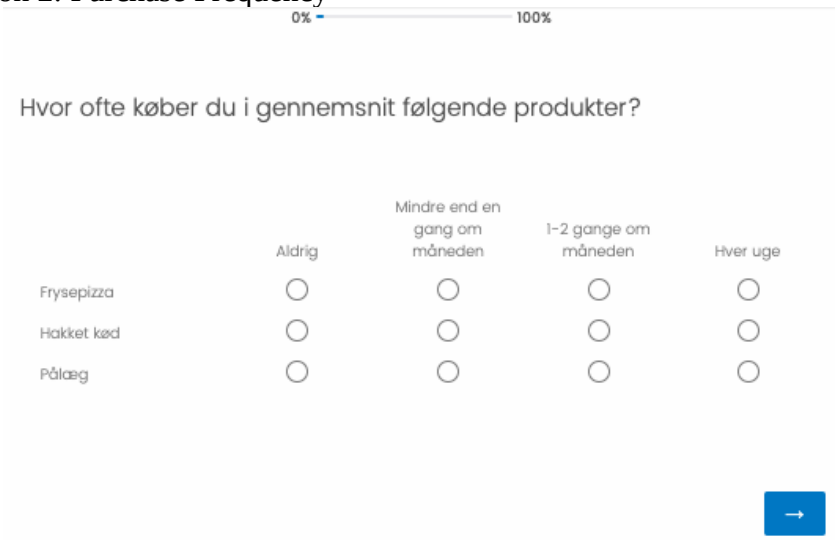


Screening:

Question 1: Meat consumption

Main section:

Question 2: Purchase Frequency

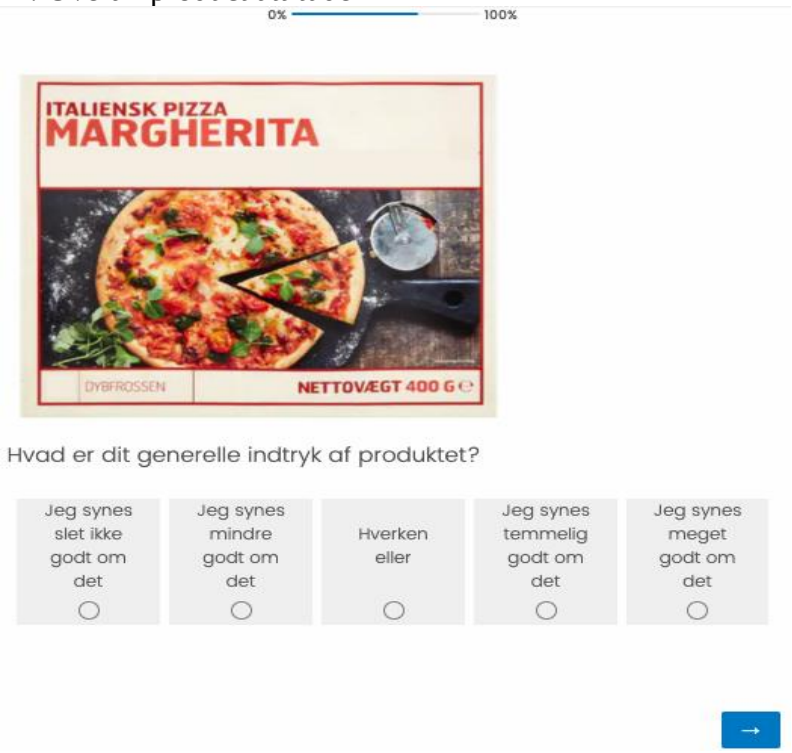


Control group[15]*:*

Question 3: Purchase intention

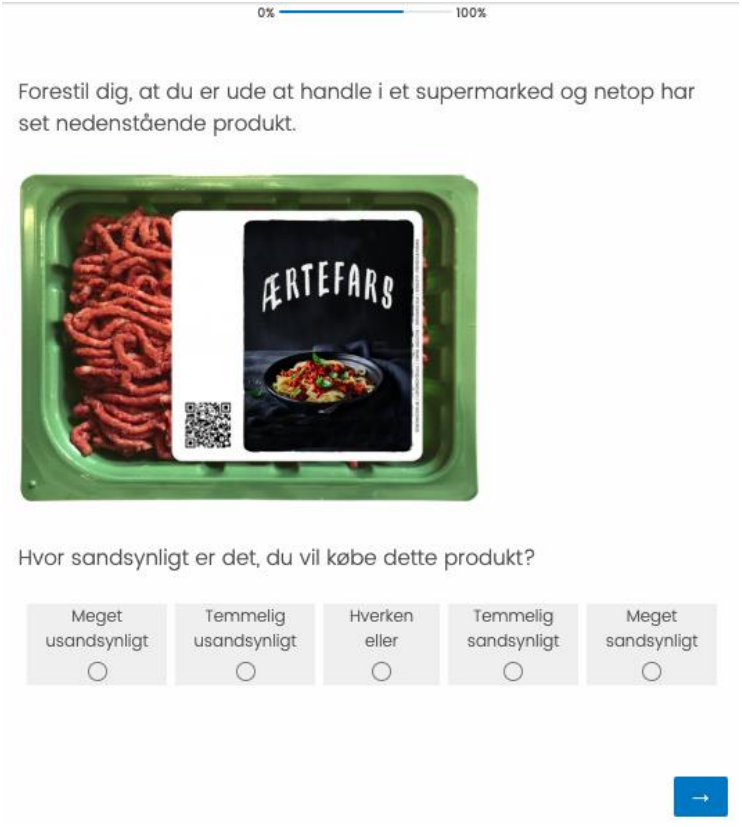
[15] The product manipulations illustrated in the appendix are for the control group. We refer to *figure 5-6* in the thesis for the illustrations of the products for each treatment group. All the questions were formulated and presented identically. Only the illustrations of the pizza, minced meat substitute and cold cuts varied across the groups.

Question 4: Overall product attitude

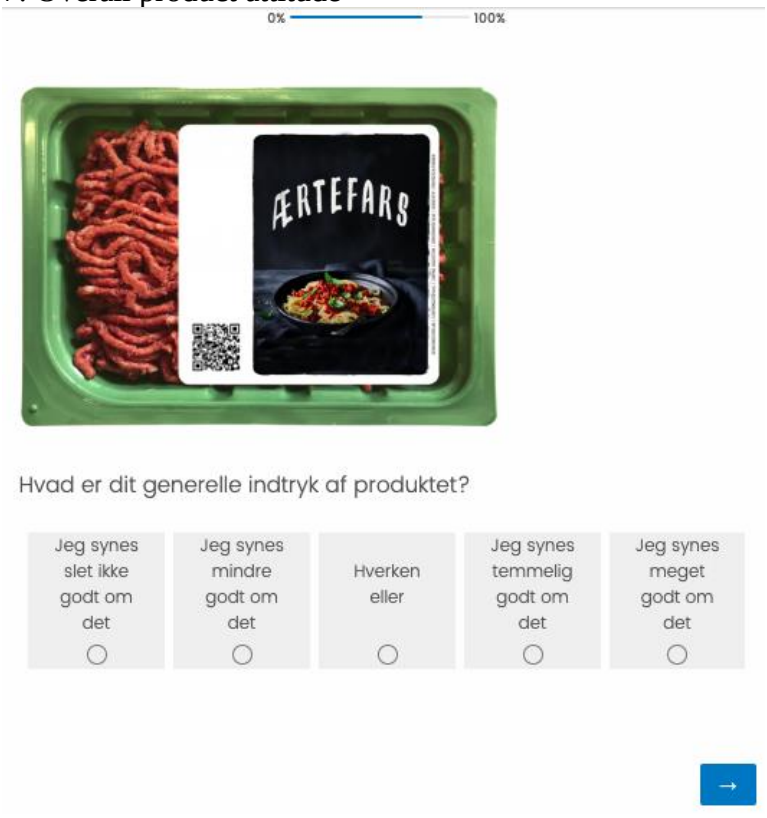


Question 5: Perception of product attributes

Question 6: Purchase intention

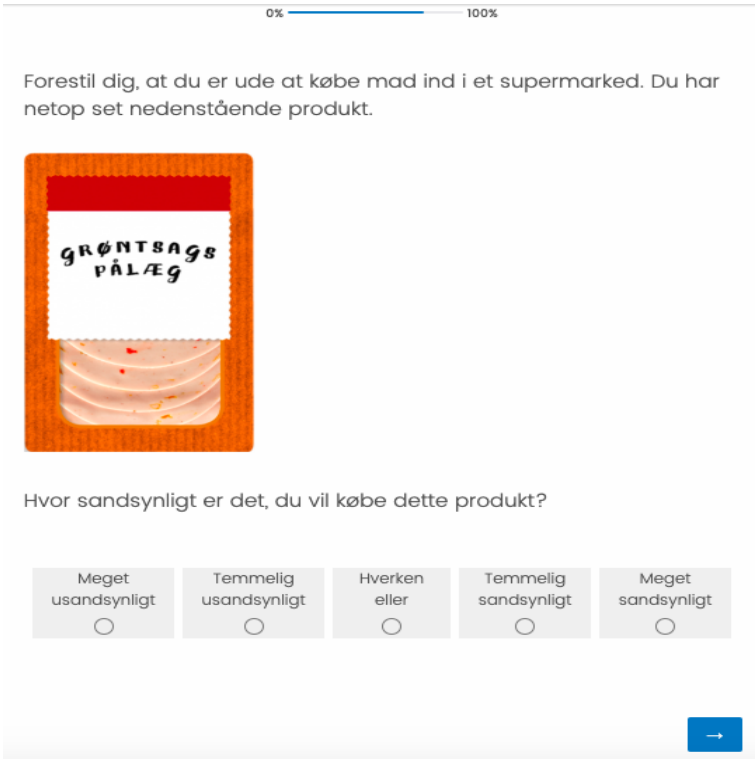


Question 7: Overall product attitude



Question 8: Perception of product attributes

Question 9: Purchase intention



Question 10: Overall product attitude

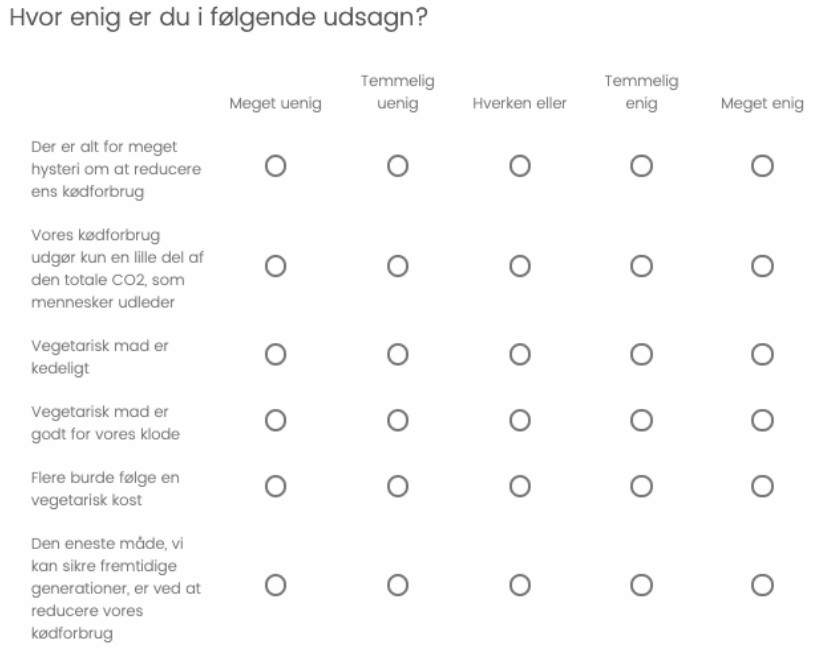
Question 11: Perception of product attributes

Question 12: Previous product experience

Question 13: Health consciousness

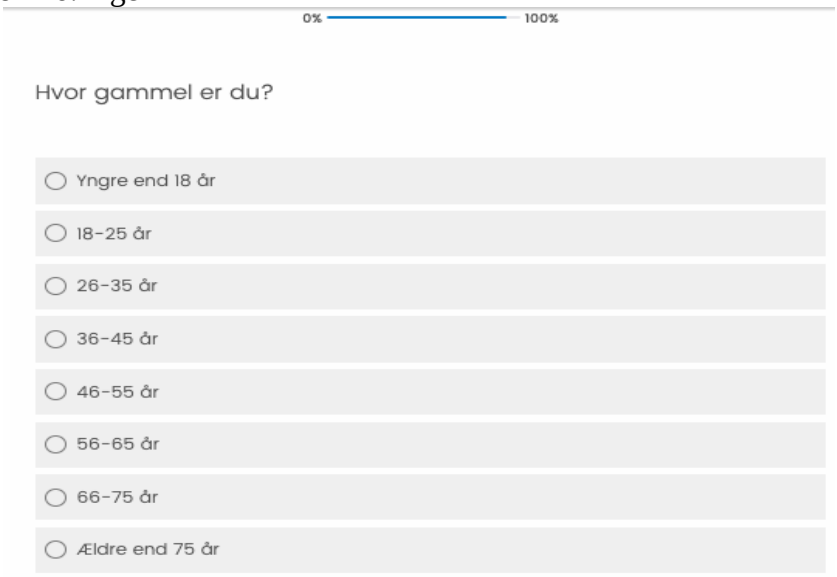
Question 14: Environmental consciousness

Question 15: Attitude toward vegetarian food and meat reduction



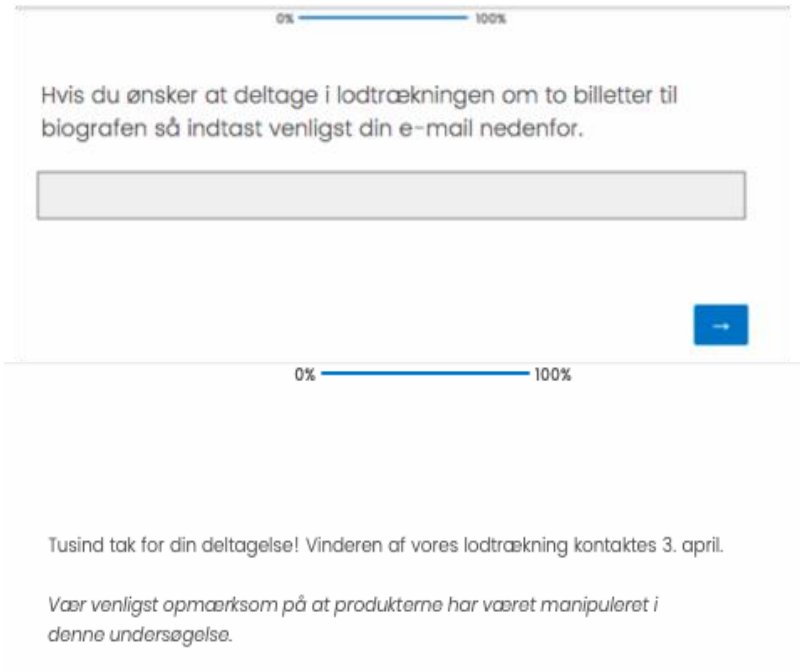
Demographics:

Question 16: Age



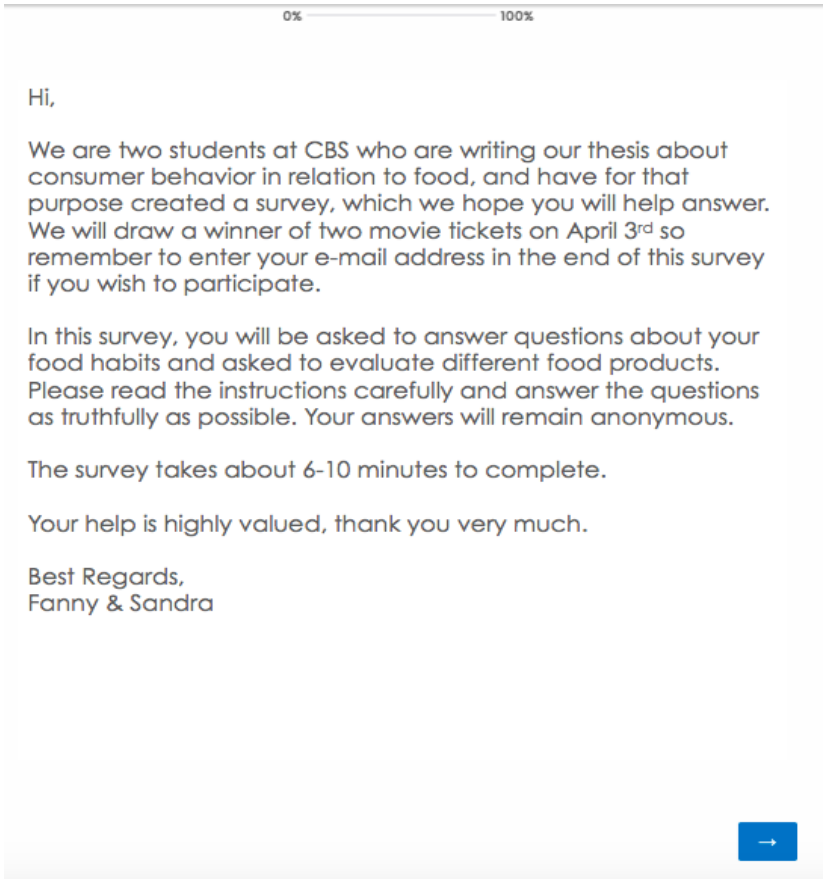
Question 17: Gender

Ending:


0%
100%
Hvis du ønsker at deltage i lodtrækningen om to billetter til biografen så indtast venligst din e-mail nedenfor.
→
0%
100%
Tusind tak for din deltagelse! Vinderen af vores lodtrækning kontaktes 3. april.
Vær venligst opmærksom på at produkterne har været manipuleret i denne undersøgelse.

Appendix 2: Questionnaire (translated incl. coding)

Introduction:



Screening:

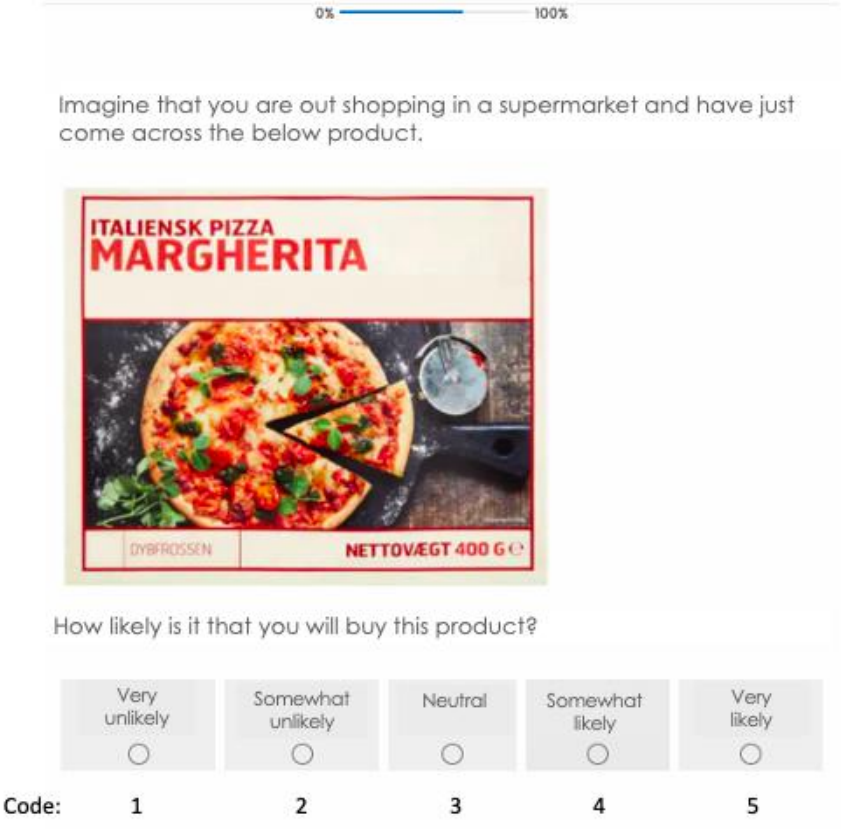
Question 1: Meat consumption

Main section:

Question 2: Purchase frequency

Control group[16]*:*

Question 3: Purchase intention



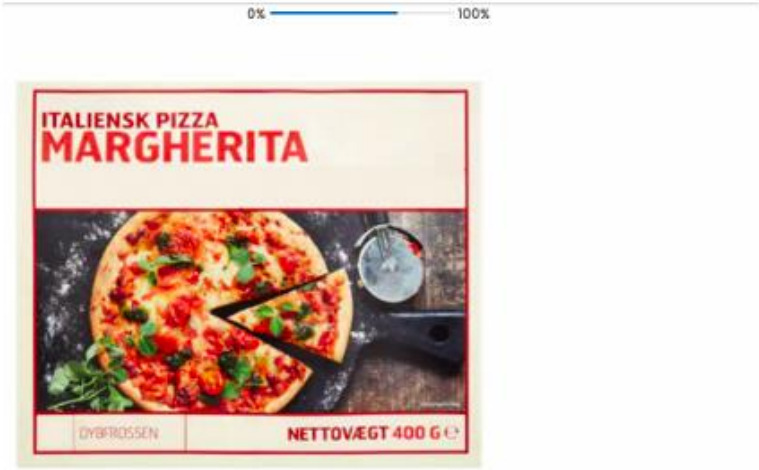
[16] The product manipulations illustrated in the appendix are for the control group. We refer to *figure 5-6* in the thesis for the illustrations of the products for each treatment group. All the questions were formulated and presented identically. Only the illustrations of the pizza, minced meat substitute and cold cuts varied across the groups.

Question 4: Overall product attitude

What is your overall impression of this product?

	I do not like it at all	I do not like it very much	Neutral	I somewhat like it	I like it a lot
	○	○	○	○	○
Code:	**1**	**2**	**3**	**4**	**5**

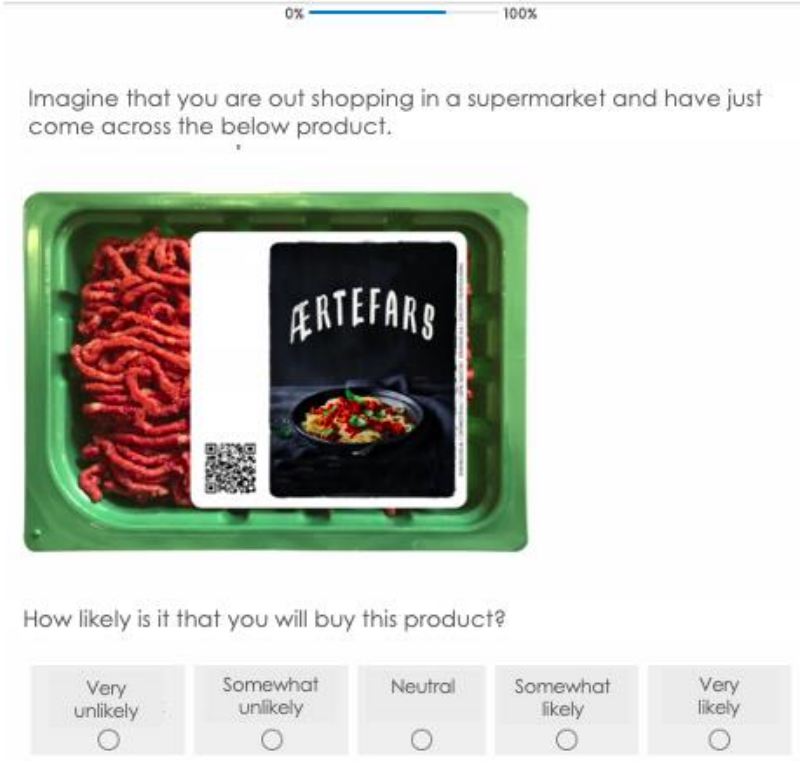
Question 5: Perception of product attributes



Please evaluate the product based on the below criteria.

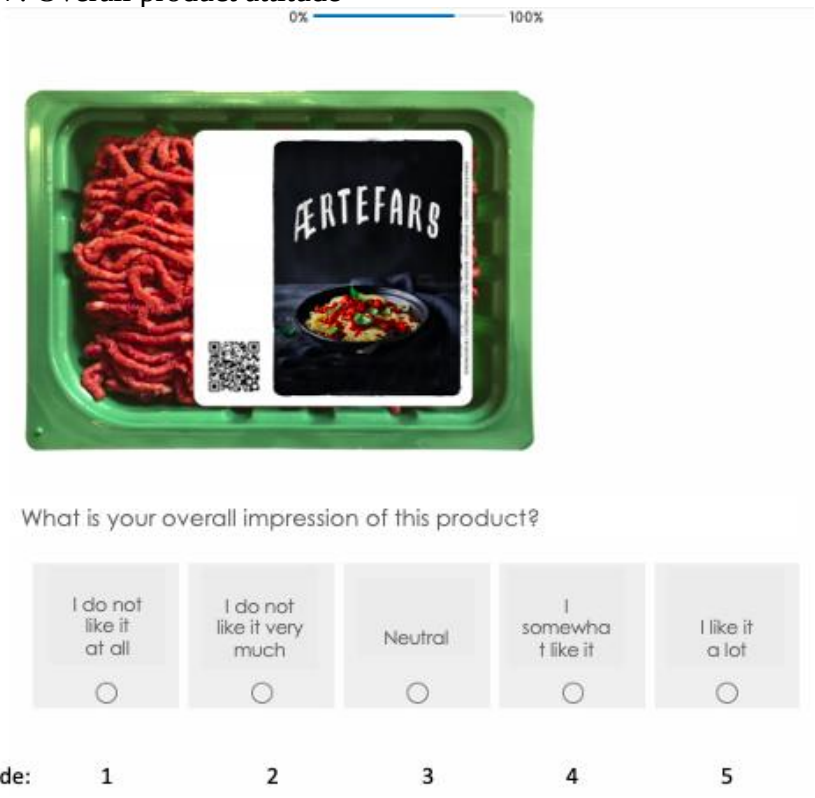
Expected taste	Not tasty at all	Not very tasty	Neutral	Somewhat tasty	Very tasty
Code:	**1**	**2**	**3**	**4**	**5**
Healthiness	Very unhealthy	Somewhat unhealthy	Neutral	Somewhat healthy	Very healthy
Code:	**1**	**2**	**3**	**4**	**5**
Expected price level	Very expensive	Somewhat expensive	Neutral	Somewhat cheap	Very cheap
Code:	**5**	**4**	**3**	**2**	**1**
Climate friendliness	Not climate friendly at all	Not very climate friendly	Neutral	Somewhat climate friendly	Very climate friendly
Code:	**1**	**2**	**3**	**4**	**5**

Question 6: Purchase intention



Code:	1	2	3	4	5

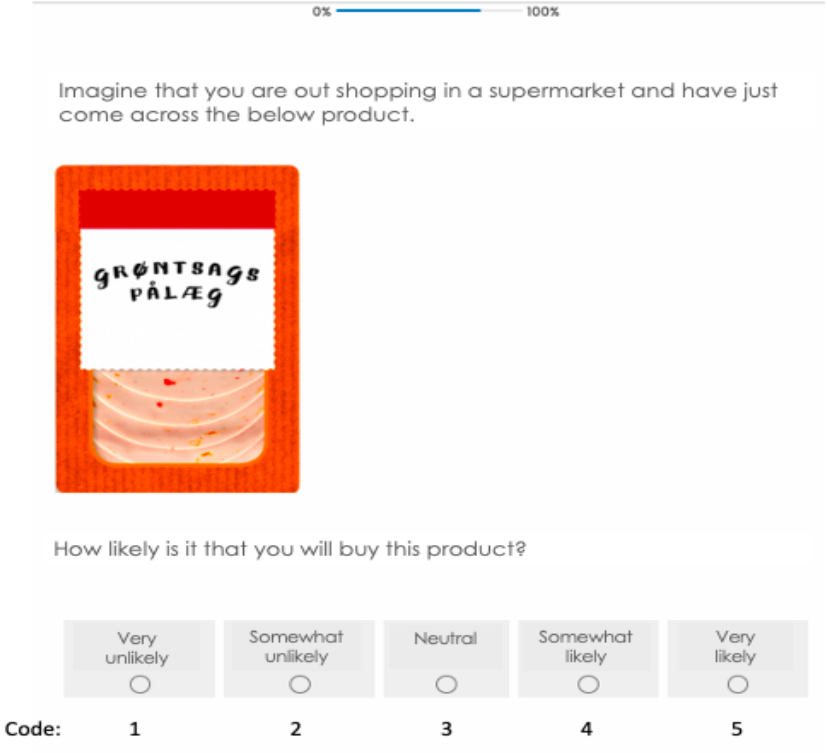
Question 7: Overall product attitude



Code:	1	2	3	4	5

Question 8: Perception of product attributes

Question 9: Purchase intention



Question 10: Overall product attitude

What is your overall impression of this product?

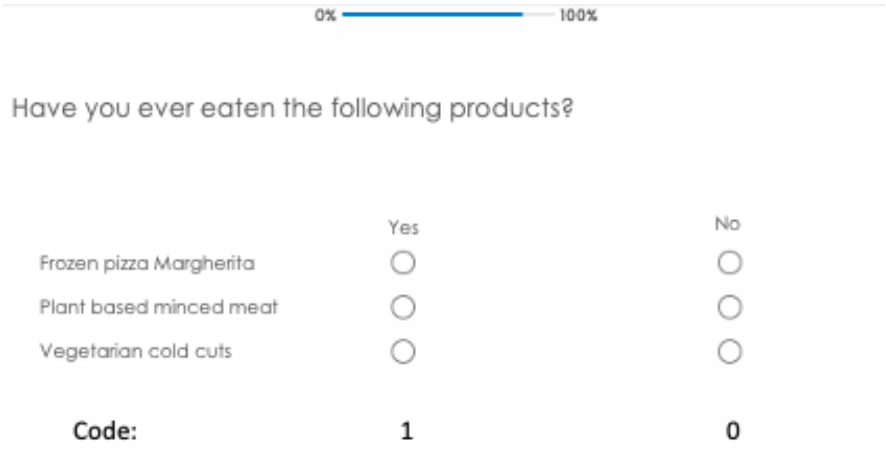
	I do not like it at all	I do not like it very much	Neutral	I somewhat like it	I like it a lot
	○	○	○	○	○
Code:	**1**	**2**	**3**	**4**	**5**

Question 11: Perception of product attributes

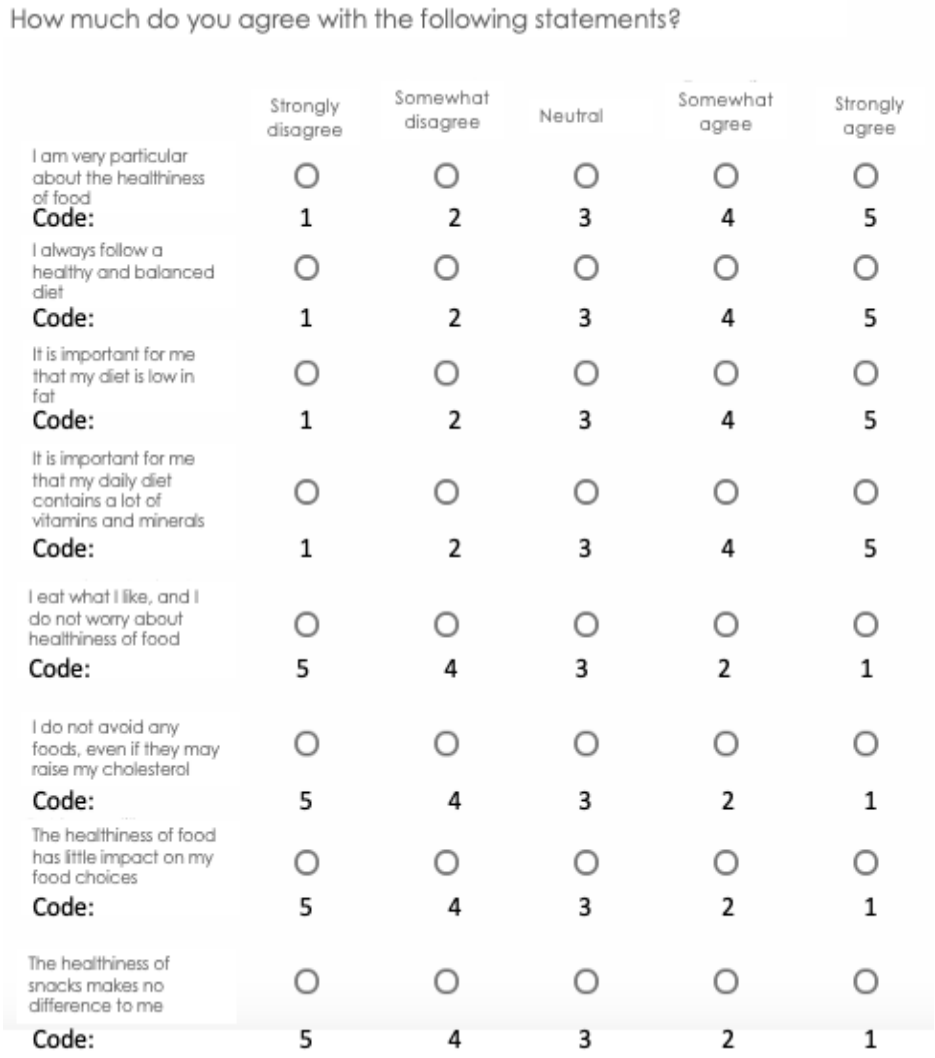
Please evaluate the product based on the below criteria.

Expected taste	Not tasty at all	Not very tasty	Neutral	Somewhat tasty	Very tasty
Code:	**1**	**2**	**3**	**4**	**5**
Healthiness	Very unhealthy	Somewhat unhealthy	Neutral	Somewhat healthy	Very healthy
Code:	**1**	**2**	**3**	**4**	**5**
Expected price level	Very expensive	Somewhat expensive	Neutral	Somewhat cheap	Very cheap
Code:	**5**	**4**	**3**	**2**	**1**
Climate friendliness	Not climate friendly at all	Not very climate friendly	Neutral	Somewhat climate friendly	Very climate friendly
Code:	**1**	**2**	**3**	**4**	**5**

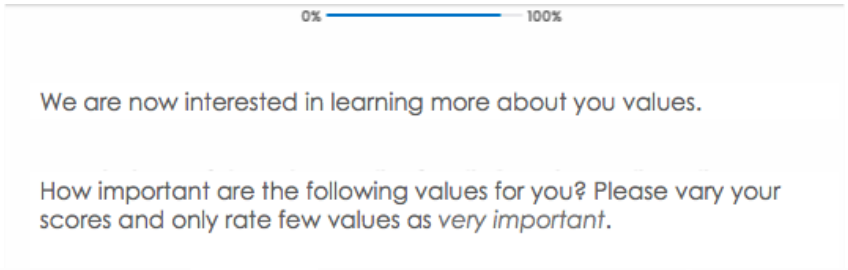
Question 12: Previous product experience



Question 13: Health consciousness



Question 14: Environmental consciousness



	Not important at all	Not very important	Neutral	Somewhat important	Very important	
Social power: control over others, dominance Code:	5	4	3	2	1	Ego
Wealth: material possessions, money Code:	5	4	3	2	1	
Authority: the right to lead or command Code:	5	4	3	2	1	
Influential: having an impact on people and events Code:	5	4	3	2	1	
Equality: equal opportunity for all Code:	1	2	3	4	5	Social-altruistic
A world at peace: free of war and conflict Code:	1	2	3	4	5	
Social justice: correcting injustice, care for the weak Code:	1	2	3	4	5	
Helpful: working for the welfare of others Code:	1	2	3	4	5	
Preventing pollution: protecting natural resources Code:	1	2	3	4	5	Biospheric
Respecting the earth: harmony with other species Code:	1	2	3	4	5	
Unity with nature: fitting into nature Code:	1	2	3	4	5	
Protecting the environment: preserving nature Code:	1	2	3	4	5	

Question 15: Attitude toward vegetarian food and meat reduction

How much do you agree with the following statements?

	Strongly disagree	Somewhat disagree	Neutral Hverken eller	Somewhat agree	Strongly agree
There is too much fuzz around meat reduction	○	○	○	○	○
Code:	**5**	**4**	**3**	**2**	**1**
Our meat consumption represents only a small part the total CO2 humans emit	○	○	○	○	○
Code:	**5**	**4**	**3**	**2**	**1**
Vegetarian food is boring	○	○	○	○	○
Code:	**5**	**4**	**3**	**2**	**1**
Vegetarian food is good for our planet	○	○	○	○	○
Code:	**1**	**2**	**3**	**4**	**5**
More people should follow a vegetarian diet	○	○	○	○	○
Code:	**1**	**2**	**3**	**4**	**5**
The only way we can secure a future for coming generations is to reduce our meat consumption	○	○	○	○	○
Code:	**1**	**2**	**3**	**4**	**5**

Demographics:

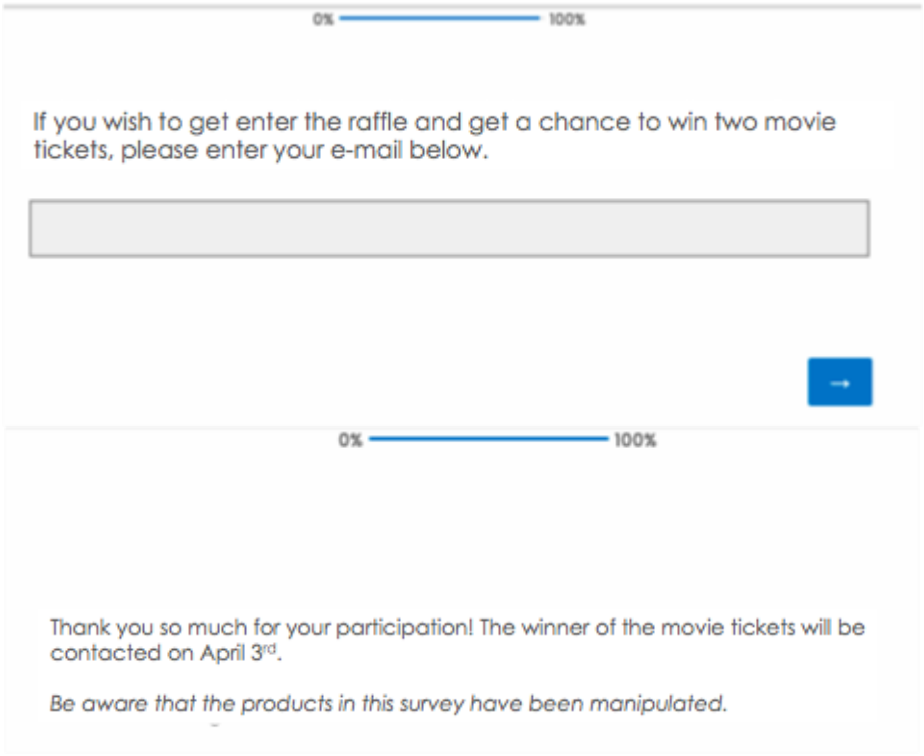
Question 16: Age

How old are you?

	Code
○ Younger than 18 years old	1
○ 18-25 years old	2
○ 26-35 years old	3
○ 36-45 years old	4
○ 46-55 years old	5
○ 56-65 years old	6
○ 66-75 years old	7
○ Older than 75 years old	8

Question 17: Gender

Ending:



Appendix 3: Descriptive Statistics

Table 16
Frequency distribution of dependent variables.

Product categories	Pizza (n=328)					Minced meat substitute (n=328)					Vegetarian cold cuts (n=328)				
Scores	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
Perception of healthiness	67	170	75	12	4	8	22	97	163	38	9	28	132	144	15
Perception of expected taste	41	107	93	84	3	43	99	112	66	8	49	95	89	84	11
Perception of expected price	14	107	121	76	10	-	34	111	152	31	1	37	147	126	17
Perception of climate friendliness	31	56	144	85	12	8	16	66	161	77	6	18	106	163	35
Attitude	52	67	116	76	17	63	70	75	103	17	69	80	81	74	24
Purchase intention	140	90	56	28	14	123	70	44	65	26	136	68	45	48	31

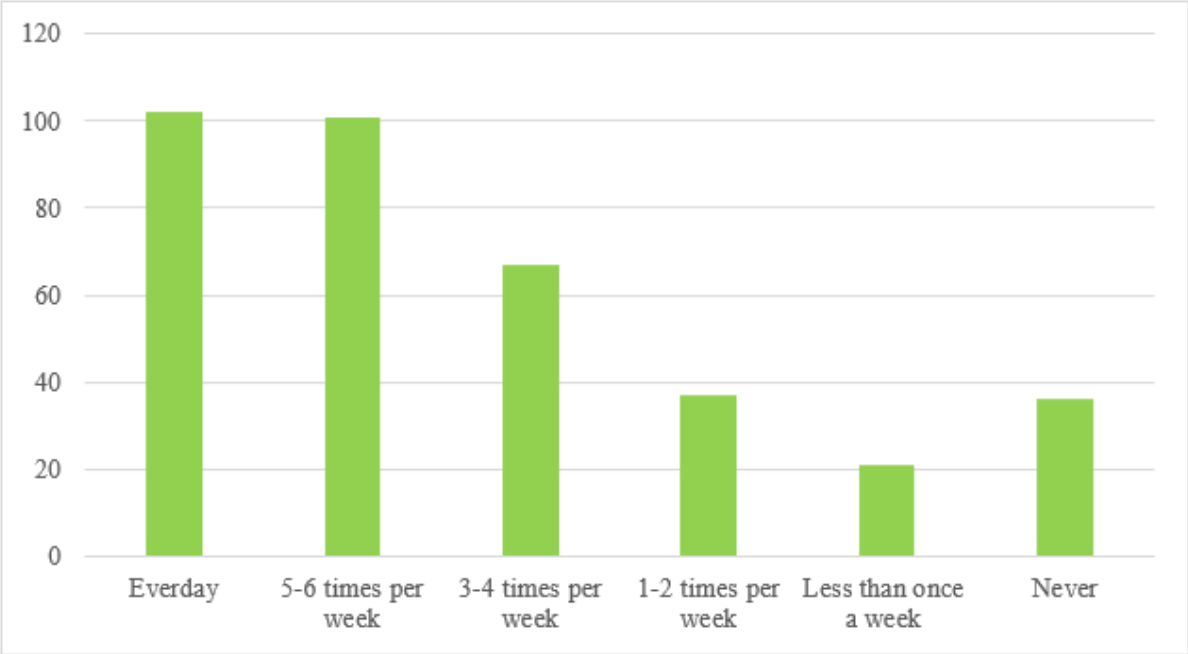


Figure 12: Overview of meat consumption [own depiction].

Table 17
ANOVA - comparison of groups , α = 0.1

	Pizza Margherita	Minced meat substitute	Vegetarian cold cuts
Predictor	Sig.	Sig.	Sig.
Perception of healthiness	0.280	0.709	0.668
Perception of taste	0.225	0.422	0.213
Perception of price	0.044 *	0.085 .	0.849
Perception of climate friendliness	<0.001 ***	0.558	0.764
Attitude	0.004 **	0.562	0.119
Purchase intention	0.100	0.842	0.254

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Table 18

Post Hoc Test - significant groups from the ANOVA, α = 0.1

	Pizza Margherita: Perception of price	Pizza Margherita: Perception of climate	Pizza Margherita: Attitude	Minced meat substitute: Perception of
	Sig.	Sig.	Sig.	Sig.
Climate Group - Control Group	0.750	<0.001 ***	0.018 *	0.876
Mixed Group - Control Group	0.027 *	<0.001 ***	0.006 **	0.136
Vegetarian Group - Control Group	0.394	0.219	0.055	0.155
Mixed Group - Climate Group	0.301	0.784	0.991	0.519
Vegetarian Group - Climate Group	0.945	0.067 .	0.976	0.552
Vegetarian Group - Mixed Group	0.630	0.003 **	0.888	0.999

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1

Appendix 6: Multiple Linear Regression Analyses

Model 1:

```
Call:
lm(formula = He_Piz ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Piz + Ex_Piz, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-1.69779 -0.43976 -0.06937  0.53827  2.93890

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         1.633082   0.141015  11.581  < 2e-16 ***
Veg_Dummy           0.120469   0.125860   0.957 0.339201
Cli_Dummy           0.147014   0.127346   1.154 0.249176
Fr_Piz              0.231490   0.061549   3.761 0.000201 ***
Ex_Piz             -0.008265   0.097210  -0.085 0.932298
Veg_Dummy:Cli_Dummy -0.062688   0.179180  -0.350 0.726673
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8041 on 322 degrees of freedom
Multiple R-squared:  0.05397,   Adjusted R-squared:  0.03928
F-statistic: 3.674 on 5 and 322 DF,  p-value: 0.003013
```

Model 2:

```
Call:
lm(formula = He_Min ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Min + Ex_Min, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.8413 -0.5689  0.2272  0.4658  1.6037

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         3.25935    0.20740  15.715  < 2e-16 ***
Veg_Dummy           0.03992    0.13417   0.298  0.76623
Cli_Dummy          -0.13443    0.13548  -0.992  0.32184
Fr_Min              0.06846    0.05408   1.266  0.20643
Ex_Min              0.27238    0.09811   2.776  0.00582 **
Veg_Dummy:Cli_Dummy  0.13020    0.19035   0.684  0.49447
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8608 on 322 degrees of freedom
Multiple R-squared:  0.02937,   Adjusted R-squared:  0.0143
F-statistic: 1.949 on 5 and 322 DF,  p-value: 0.086
```

Model 3:

```
Call:
lm(formula = He_Co ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Co + Ex_Co, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.4768 -0.4119 -0.2160  0.5891  1.6614

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         3.21697    0.17690  18.185   <2e-16 ***
Veg_Dummy           0.07644    0.12764   0.599    0.550
Cli_Dummy          -0.07234    0.12902  -0.561    0.575
Fr_Co               0.06497    0.04681   1.388    0.166
Ex_Co              -0.06591    0.09226  -0.714    0.476
Veg_Dummy:Cli_Dummy -0.05809    0.18091  -0.321    0.748
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.818 on 322 degrees of freedom
Multiple R-squared:  0.01189,   Adjusted R-squared:  -0.003457
F-statistic: 0.7747 on 5 and 322 DF,  p-value: 0.5686
```

Model 4:

```
Call:
lm(formula = Ta_Piz ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Piz + Ex_Piz, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.08926 -0.72559  0.08584  0.74832  2.08935

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         2.01442    0.17286  11.654  < 2e-16 ***
Veg_Dummy           0.24470    0.15428   1.586    0.114
Cli_Dummy           0.05964    0.15610   0.382    0.703
Fr_Piz              0.33840    0.07545   4.485 1.01e-05 ***
Ex_Piz             -0.02528    0.11916  -0.212    0.832
Veg_Dummy:Cli_Dummy -0.08140    0.21964  -0.371    0.711
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9857 on 322 degrees of freedom
Multiple R-squared:  0.07194,   Adjusted R-squared:  0.05753
F-statistic: 4.992 on 5 and 322 DF,  p-value: 0.0002031
```

Model 5:

```
Call:
lm(formula = Ta_Min ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Min + Ex_Min, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.0976 -0.7680  0.0515  0.7305  2.3460

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         2.76626    0.23553  11.745  < 2e-16 ***
Veg_Dummy           0.06077    0.15237   0.399   0.6903
Cli_Dummy           0.02567    0.15386   0.167   0.8676
Fr_Min             -0.11396    0.06141  -1.856   0.0644 .
Ex_Min              0.49846    0.11141   4.474 1.07e-05 ***
Veg_Dummy:Cli_Dummy -0.24126    0.21617  -1.116   0.2652
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9776 on 322 degrees of freedom
Multiple R-squared:  0.08594,   Adjusted R-squared:  0.07174
F-statistic: 6.055 on 5 and 322 DF,  p-value: 2.25e-05
```

Model 6:

```
Call:
lm(formula = Ta_Co ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Co + Ex_Co, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.0648 -0.8064  0.1894  0.9971  2.4437

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)         2.61220    0.23632  11.054   <2e-16 ***
Veg_Dummy          -0.06191    0.17051  -0.363   0.7168
Cli_Dummy          -0.27268    0.17235  -1.582   0.1146
Fr_Co               0.05065    0.06253   0.810   0.4186
Ex_Co               0.25004    0.12325   2.029   0.0433 *
Veg_Dummy:Cli_Dummy  0.07612    0.24167   0.315   0.7530
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.093 on 322 degrees of freedom
Multiple R-squared:  0.02889,   Adjusted R-squared:  0.01381
F-statistic: 1.916 on 5 and 322 DF,  p-value: 0.09129
```

Model 7:

```
Call:
lm(formula = Pr_Piz ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Piz + Ex_Piz, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.25865 -0.75895  0.06119  0.74135  2.37731

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         2.93234    0.15803  18.556  < 2e-16 ***
Veg_Dummy           0.20933    0.14104   1.484  0.13874
Cli_Dummy           0.15666    0.14271   1.098  0.27313
Fr_Piz             -0.02040    0.06897  -0.296  0.76759
Ex_Piz             -0.28924    0.10894  -2.655  0.00832 **
Veg_Dummy:Cli_Dummy -0.01928    0.20079  -0.096  0.92357
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9011 on 322 degrees of freedom
Multiple R-squared:  0.04694,   Adjusted R-squared:  0.03214
F-statistic: 3.172 on 5 and 322 DF,  p-value: 0.008247
```

Model 8:

```
Call:
lm(formula = Pr_Min ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Min + Ex_Min, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-1.7967 -0.5414  0.2033  0.4660  1.7110

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         3.535349   0.190683  18.540   <2e-16 ***
Veg_Dummy           0.248249   0.123359   2.012   0.0450 *
Cli_Dummy           0.105869   0.124563   0.850   0.3960
Fr_Min              0.003266   0.049720   0.066   0.9477
Ex_Min             -0.256173   0.090197  -2.840   0.0048 **
Veg_Dummy:Cli_Dummy -0.104936   0.175006  -0.600   0.5492
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.7914 on 322 degrees of freedom
Multiple R-squared:  0.04512,   Adjusted R-squared:  0.03029
F-statistic: 3.043 on 5 and 322 DF,  p-value: 0.01065
```

Model 9:

```
Call:
lm(formula = Pr_Co ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Co + Ex_Co, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.2802 -0.4170 -0.2802  0.6164  1.7544

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         3.30592    0.16548  19.978   <2e-16 ***
Veg_Dummy           0.07718    0.11940   0.646    0.518
Cli_Dummy          -0.02617    0.12068  -0.217    0.828
Fr_Co               0.03040    0.04379   0.694    0.488
Ex_Co              -0.12111    0.08630  -1.403    0.161
Veg_Dummy:Cli_Dummy -0.04819    0.16923  -0.285    0.776
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.7652 on 322 degrees of freedom
Multiple R-squared:  0.009632,  Adjusted R-squared:  -0.005746
F-statistic: 0.6263 on 5 and 322 DF,  p-value: 0.6798
```

Model 10:

```
Call:
lm(formula = Cl_Piz ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Piz + Ex_Piz, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.55527 -0.50049  0.01451  0.61869  2.00442

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        2.41065    0.16146  14.930  < 2e-16 ***
Veg_Dummy          0.23442    0.14411   1.627  0.10479
Cli_Dummy          0.60418    0.14581   4.144 4.38e-05 ***
Fr_Piz             0.18993    0.07047   2.695  0.00741 **
Ex_Piz            -0.21927    0.11131  -1.970  0.04970 *
Veg_Dummy:Cli_Dummy -0.10660    0.20516  -0.520  0.60370
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9208 on 322 degrees of freedom
Multiple R-squared:  0.1271,    Adjusted R-squared:  0.1136
F-statistic: 9.381 on 5 and 322 DF,  p-value: 2.327e-08
```

Model 11:

```
Call:
lm(formula = Cl_Min ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Min + Ex_Min, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-3.10568 -0.61616  0.02613  0.45885  1.42029

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        3.87771    0.21677  17.889  < 2e-16 ***
Veg_Dummy         -0.18232    0.14023  -1.300 0.194501
Cli_Dummy         -0.09325    0.14160  -0.659 0.510660
Fr_Min            -0.03856    0.05652  -0.682 0.495582
Ex_Min             0.34365    0.10254   3.352 0.000899 ***
Veg_Dummy:Cli_Dummy  0.16826    0.19895   0.846 0.398306
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8997 on 322 degrees of freedom
Multiple R-squared:  0.04465,   Adjusted R-squared:  0.02981
F-statistic:  3.01 on 5 and 322 DF,  p-value: 0.01136
```

Model 12:

```
Call:
lm(formula = Cl_Co ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Co + Ex_Co, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.6851 -0.5786  0.2957  0.4269  1.4998

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        3.83136    0.17749  21.586   <2e-16 ***
Veg_Dummy         -0.00871    0.12806  -0.068    0.946
Cli_Dummy          0.11059    0.12944   0.854    0.394
Fr_Co             -0.06422    0.04697  -1.367    0.172
Ex_Co             -0.06560    0.09257  -0.709    0.479
Veg_Dummy:Cli_Dummy -0.09777    0.18151  -0.539    0.590
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8207 on 322 degrees of freedom
Multiple R-squared:  0.01128,   Adjusted R-squared:  -0.004074
F-statistic: 0.7346 on 5 and 322 DF,  p-value: 0.5979
```

Model 13:

```
Call:
lm(formula = At_Piz ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Piz + Ex_Piz, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.70641 -0.66150  0.02349  0.69909  2.75897

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        1.67089    0.17905   9.332  < 2e-16 ***
Veg_Dummy          0.32999    0.15981   2.065   0.0397 *
Cli_Dummy          0.37173    0.16170   2.299   0.0222 *
Fr_Piz             0.57014    0.07815   7.295 2.34e-12 ***
Ex_Piz            -0.16465    0.12343  -1.334   0.1832
Veg_Dummy:Cli_Dummy -0.21198    0.22751  -0.932   0.3522
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.021 on 322 degrees of freedom
Multiple R-squared:  0.1765,    Adjusted R-squared:  0.1637
F-statistic:  13.8 on 5 and 322 DF,  p-value: 3.183e-12
```

Model 14:

```
Call:
lm(formula = At_Min ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Min + Ex_Min, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.54907 -0.84979 -0.01577  0.86308  2.59063

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        2.89328    0.25983  11.136  < 2e-16 ***
Veg_Dummy          0.01856    0.16809   0.110  0.91216
Cli_Dummy         -0.28712    0.16973  -1.692  0.09168 .
Fr_Min            -0.19680    0.06775  -2.905  0.00393 **
Ex_Min             1.03082    0.12290   8.387 1.58e-15 ***
Veg_Dummy:Cli_Dummy  0.26218    0.23846   1.099  0.27239
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.078 on 322 degrees of freedom
Multiple R-squared:  0.2237,    Adjusted R-squared:  0.2117
F-statistic: 18.56 on 5 and 322 DF,  p-value: 3.345e-16
```

Model 15:

```
Call:
lm(formula = At_Co ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Co + Ex_Co, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.31781 -1.13100  0.08549  0.86900  2.66546

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         2.40763    0.25864   9.309  < 2e-16 ***
Veg_Dummy          -0.18681    0.18661  -1.001   0.3176
Cli_Dummy          -0.33287    0.18863  -1.765   0.0786 .
Fr_Co               0.08659    0.06844   1.265   0.2067
Ex_Co               0.56380    0.13489   4.180 3.77e-05 ***
Veg_Dummy:Cli_Dummy 0.16235    0.26450   0.614   0.5398
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.196 on 322 degrees of freedom
Multiple R-squared:  0.075,     Adjusted R-squared:  0.06064
F-statistic: 5.222 on 5 and 322 DF,  p-value: 0.0001263
```

Model 16:

```
Call:
lm(formula = In_Piz ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Piz + Ex_Piz, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.1713 -0.5778 -0.2451  0.5588  3.5588

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         0.52357    0.17627   2.970   0.0032 **
Veg_Dummy           0.32503    0.15733   2.066   0.0396 *
Cli_Dummy           0.06701    0.15918   0.421   0.6741
Fr_Piz              0.72919    0.07694   9.478   <2e-16 ***
Ex_Piz              0.18845    0.12151   1.551   0.1219
Veg_Dummy:Cli_Dummy -0.12035    0.22398  -0.537   0.5914
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.005 on 322 degrees of freedom
Multiple R-squared:  0.2493,    Adjusted R-squared:  0.2377
F-statistic: 21.39 on 5 and 322 DF,  p-value: < 2.2e-16
```

Model 17:

```
Call:
lm(formula = In_Min ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Min + Ex_Min, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3916 -0.7464 -0.3286  0.9242  3.6049

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)          2.2242     0.2834   7.847 6.33e-14 ***
Veg_Dummy           -0.1281     0.1834  -0.698   0.4854
Cli_Dummy           -0.1295     0.1852  -0.700   0.4847
Fr_Min              -0.1749     0.0739  -2.366   0.0186 *
Ex_Min               1.3423     0.1341  10.012  < 2e-16 ***
Veg_Dummy:Cli_Dummy  0.2301     0.2601   0.884   0.3771
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.176 on 322 degrees of freedom
Multiple R-squared:  0.2698,    Adjusted R-squared:  0.2585
F-statistic:  23.8 on 5 and 322 DF,  p-value: < 2.2e-16
```

Model 18:

```
Call:
lm(formula = In_Co ~ Veg_Dummy + Cli_Dummy + Veg_Dummy * Cli_Dummy +
    Fr_Co + Ex_Co, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.2259 -0.9616 -0.2179  1.0435  3.0435

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         1.27472    0.27448   4.644 4.98e-06 ***
Veg_Dummy          -0.17154    0.19804  -0.866 0.387040
Cli_Dummy          -0.26995    0.20018  -1.349 0.178426
Fr_Co               0.24885    0.07263   3.426 0.000691 ***
Ex_Co               0.95579    0.14315   6.677 1.07e-10 ***
Veg_Dummy:Cli_Dummy  0.12786    0.28070   0.456 0.649056
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.269 on 322 degrees of freedom
Multiple R-squared:  0.167,     Adjusted R-squared:  0.1541
F-statistic: 12.92 on 5 and 322 DF,  p-value: 1.844e-11
```

Model 19:

```
Call:
lm(formula = At_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Envi + Envi * Veg_Dummy + Envi * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.7342 -0.7405  0.1015  0.6575  2.6766

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     1.420819   0.819603   1.734    0.084 .
Veg_Dummy       0.813833   0.922904   0.882    0.379
Cli_Dummy      -0.455907   0.941718  -0.484    0.629
Fr_Piz          0.584581   0.078111   7.484 7.03e-13 ***
Ex_Piz         -0.167474   0.123882  -1.352    0.177
Envi            0.006116   0.017685   0.346    0.730
Veg_Dummy:Envi -0.012940   0.020273  -0.638    0.524
Cli_Dummy:Envi  0.015829   0.020713   0.764    0.445
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.023 on 320 degrees of freedom
Multiple R-squared:  0.1784,    Adjusted R-squared:  0.1604
F-statistic: 9.927 on 7 and 320 DF,  p-value: 3.2e-11
```

Model 20:

```
Call:
lm(formula = At_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Envi + Envi * Veg_Dummy + Envi * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.5871 -0.9463  0.0106  0.8156  2.4622

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     2.286214   0.899401   2.542   0.0115 *
Veg_Dummy       0.236028   0.979810   0.241   0.8098
Cli_Dummy      -0.094041   0.997341  -0.094   0.9249
Fr_Min         -0.190672   0.068652  -2.777   0.0058 **
Ex_Min          1.019159   0.123572   8.248 4.25e-15 ***
Envi            0.011756   0.018782   0.626   0.5318
Veg_Dummy:Envi -0.001824   0.021512  -0.085   0.9325
Cli_Dummy:Envi -0.001442   0.021934  -0.066   0.9476
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.082 on 320 degrees of freedom
Multiple R-squared:  0.223,     Adjusted R-squared:  0.206
F-statistic: 13.12 on 7 and 320 DF,  p-value: 7.315e-15
```

Model 21:

```
Call:
lm(formula = At_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Envi + Envi * Veg_Dummy + Envi * Cli_Dummy, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.37768 -1.11922  0.08043  0.87800  2.65739

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      1.96619    0.97239   2.022    0.044 *
Veg_Dummy        0.60237    1.08091   0.557    0.578
Cli_Dummy       -0.82617    1.10341  -0.749    0.455
Fr_Co            0.08686    0.06856   1.267    0.206
Ex_Co            0.56135    0.13537   4.147 4.32e-05 ***
Envi             0.00882    0.02066   0.427    0.670
Veg_Dummy:Envi  -0.01558    0.02374  -0.657    0.512
Cli_Dummy:Envi   0.01264    0.02426   0.521    0.603
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.198 on 320 degrees of freedom
Multiple R-squared:  0.07705,   Adjusted R-squared:  0.05686
F-statistic: 3.816 on 7 and 320 DF,  p-value: 0.0005347
```

Model 22:

```
Call:
lm(formula = In_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Envi + Envi * Veg_Dummy + Envi * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.1463 -0.6111 -0.2643  0.5541  3.5496

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     0.417463   0.801177   0.521    0.603
Veg_Dummy       0.330988   0.902155   0.367    0.714
Cli_Dummy      -1.241040   0.920546  -1.348    0.179
Fr_Piz          0.743981   0.076354   9.744   <2e-16 ***
Ex_Piz          0.175812   0.121097   1.452    0.148
Envi            0.002572   0.017287   0.149    0.882
Veg_Dummy:Envi -0.001271   0.019817  -0.064    0.949
Cli_Dummy:Envi  0.027412   0.020248   1.354    0.177
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1 on 320 degrees of freedom
Multiple R-squared:  0.2616,    Adjusted R-squared:  0.2454
F-statistic: 16.19 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 23:

```
Call:
lm(formula = In_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Envi + Envi * Veg_Dummy + Envi * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3306 -0.7835 -0.2664  0.8871  3.7092

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      0.99786    0.97926   1.019   0.3090
Veg_Dummy        0.55283    1.06681   0.518   0.6047
Cli_Dummy        0.52722    1.08590   0.486   0.6276
Fr_Min          -0.16541    0.07475  -2.213   0.0276 *
Ex_Min           1.32679    0.13454   9.861   <2e-16 ***
Envi             0.02547    0.02045   1.245   0.2140
Veg_Dummy:Envi  -0.01241    0.02342  -0.530   0.5965
Cli_Dummy:Envi  -0.01211    0.02388  -0.507   0.6124
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.178 on 320 degrees of freedom
Multiple R-squared:  0.2719,    Adjusted R-squared:  0.256
F-statistic: 17.07 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 24:

```
Call:
lm(formula = In_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Envi + Envi * Veg_Dummy + Envi * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.4882 -0.9789 -0.1773  1.0452  3.3242

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)     0.07011    1.02372   0.068 0.945439
Veg_Dummy       0.94261    1.13797   0.828 0.408104
Cli_Dummy      -1.19793    1.16165  -1.031 0.303209
Fr_Co           0.25246    0.07218   3.498 0.000536 ***
Ex_Co           0.94293    0.14251   6.616 1.55e-10 ***
Envi            0.02571    0.02175   1.182 0.238137
Veg_Dummy:Envi -0.02295    0.02499  -0.918 0.359244
Cli_Dummy:Envi  0.02167    0.02555   0.848 0.396906
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.262 on 320 degrees of freedom
Multiple R-squared:  0.1821,    Adjusted R-squared:  0.1642
F-statistic: 10.18 on 7 and 320 DF,  p-value: 1.642e-11
```

Model 25:

```
Call:
lm(formula = At_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Gender + Gender * Veg_Dummy + Gender * Cli_Dummy, data = mydata.gender)

Residuals:
     Min       1Q   Median       3Q      Max
-2.73770 -0.70016  0.06991  0.66161  2.66161

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      1.47272    0.23680   6.219 1.57e-09 ***
Veg_Dummy        0.34750    0.20022   1.736   0.0836 .
Cli_Dummy        0.13979    0.20063   0.697   0.4865
Fr_Piz           0.59553    0.07793   7.641 2.55e-13 ***
Ex_Piz          -0.13815    0.12378  -1.116   0.2652
Gender           0.27015    0.21106   1.280   0.2015
Veg_Dummy:Gender -0.17678    0.24323  -0.727   0.4679
Cli_Dummy:Gender  0.20661    0.24270   0.851   0.3952
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.018 on 318 degrees of freedom
Multiple R-squared:  0.1915,    Adjusted R-squared:  0.1737
F-statistic: 10.76 on 7 and 318 DF,  p-value: 3.56e-12
```

Model 26:

```
Call:
lm(formula = At_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Gender + Gender * Veg_Dummy + Gender * Cli_Dummy, data = mydata.gender)

Residuals:
     Min       1Q   Median       3Q      Max
-2.65538 -0.95468  0.03662  0.81062  2.44734

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      2.70814    0.30695   8.823  < 2e-16 ***
Veg_Dummy        0.17234    0.21298   0.809  0.41902
Cli_Dummy       -0.14008    0.21266  -0.659  0.51054
Fr_Min          -0.19643    0.06822  -2.879  0.00425 **
Ex_Min           1.03610    0.12340   8.396 1.54e-15 ***
Gender           0.16567    0.22362   0.741  0.45932
Veg_Dummy:Gender -0.03402    0.25724  -0.132  0.89488
Cli_Dummy:Gender  0.01536    0.25751   0.060  0.95248
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.08 on 318 degrees of freedom
Multiple R-squared:  0.2294,    Adjusted R-squared:  0.2124
F-statistic: 13.52 on 7 and 318 DF,  p-value: 2.677e-15
```

Model 27:

```
Call:
lm(formula = At_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Gender + Gender * Veg_Dummy + Gender * Cli_Dummy, data = mydata.gender)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3770 -1.0397  0.1092  0.8428  2.5968

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      2.12556    0.32192   6.603 1.69e-10 ***
Veg_Dummy        0.18455    0.23395   0.789    0.431
Cli_Dummy       -0.36342    0.23467  -1.549    0.122
Fr_Co            0.09253    0.06896   1.342    0.181
Ex_Co            0.57397    0.13531   4.242 2.91e-05 ***
Gender           0.30733    0.24815   1.238    0.216
Veg_Dummy:Gender -0.40437    0.28340  -1.427    0.155
Cli_Dummy:Gender  0.18912    0.28469   0.664    0.507
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.19 on 318 degrees of freedom
Multiple R-squared:  0.08683,   Adjusted R-squared:  0.06673
F-statistic:  4.32 on 7 and 318 DF,  p-value: 0.0001381
```

Model 28:

```
Call:
lm(formula = In_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Gender + Gender * Veg_Dummy + Gender * Cli_Dummy, data = mydata.gender)

Residuals:
    Min      1Q  Median      3Q     Max
-2.1524 -0.5791 -0.2704  0.6645  3.6680

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      0.37611    0.23406   1.607   0.1091
Veg_Dummy        0.23799    0.19790   1.203   0.2300
Cli_Dummy        0.09954    0.19831   0.502   0.6160
Fr_Piz           0.74140    0.07703   9.625   <2e-16 ***
Ex_Piz           0.21450    0.12235   1.753   0.0805 .
Gender           0.19699    0.20862   0.944   0.3457
Veg_Dummy:Gender  0.03498    0.24042   0.145   0.8844
Cli_Dummy:Gender -0.10790    0.23989  -0.450   0.6532
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.006 on 318 degrees of freedom
Multiple R-squared:  0.2553,    Adjusted R-squared:  0.2389
F-statistic: 15.57 on 7 and 318 DF,  p-value: < 2.2e-16
```

Model 29:

```
Call:
lm(formula = In_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Gender + Gender * Veg_Dummy + Gender * Cli_Dummy, data = mydata.gender)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3626 -0.7234 -0.2452  0.9347  3.4637

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      2.10163    0.33393   6.294 1.03e-09 ***
Veg_Dummy       -0.09379    0.23170  -0.405   0.6859
Cli_Dummy       -0.03869    0.23135  -0.167   0.8673
Fr_Min          -0.17382    0.07421  -2.342   0.0198 *
Ex_Min           1.34798    0.13425  10.041  < 2e-16 ***
Gender           0.08685    0.24328   0.357   0.7213
Veg_Dummy:Gender  0.10714    0.27985   0.383   0.7021
Cli_Dummy:Gender  0.08177    0.28015   0.292   0.7706
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.175 on 318 degrees of freedom
Multiple R-squared:  0.2786,    Adjusted R-squared:  0.2627
F-statistic: 17.54 on 7 and 318 DF,  p-value: < 2.2e-16
```

Model 30:

```
Call:
lm(formula = In_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Gender + Gender * Veg_Dummy + Gender * Cli_Dummy, data = mydata.gender)

Residuals:
    Min      1Q  Median      3Q     Max
-2.2951 -1.0134 -0.2344  0.9865  3.2857

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)      1.365500   0.341802   3.995 8.04e-05 ***
Veg_Dummy        0.001509   0.248393   0.006  0.99516
Cli_Dummy       -0.611011   0.249163  -2.452  0.01473 *
Fr_Co            0.239571   0.073223   3.272  0.00119 **
Ex_Co            0.971292   0.143668   6.761 6.58e-11 ***
Gender          -0.148250   0.263471  -0.563  0.57405
Veg_Dummy:Gender -0.134843   0.300895  -0.448  0.65436
Cli_Dummy:Gender  0.610514   0.302271   2.020  0.04425 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.264 on 318 degrees of freedom
Multiple R-squared:  0.1785,    Adjusted R-squared:  0.1604
F-statistic: 9.868 on 7 and 318 DF,  p-value: 3.802e-11
```

Model 31:

```
Call:
lm(formula = At_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Age + Age * Veg_Dummy + Age * Cli_Dummy, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.78598 -0.63051  0.09174  0.65092  2.49824

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    2.35398    0.30855   7.629 2.73e-13 ***
Veg_Dummy      0.10877    0.30100   0.361  0.71806
Cli_Dummy      0.11808    0.30131   0.392  0.69540
Fr_Piz         0.54246    0.07721   7.025 1.29e-11 ***
Ex_Piz        -0.09968    0.12323  -0.809  0.41917
Age           -0.19438    0.07415  -2.622  0.00917 **
Veg_Dummy:Age  0.03667    0.08440   0.434  0.66424
Cli_Dummy:Age  0.05019    0.08477   0.592  0.55423
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.006 on 320 degrees of freedom
Multiple R-squared:  0.2058,    Adjusted R-squared:  0.1885
F-statistic: 11.85 on 7 and 320 DF,  p-value: 1.977e-13
```

Model 32:

```
Call:
lm(formula = At_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Age + Age * Veg_Dummy + Age * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.6294 -0.7754  0.1146  0.6920  2.4573

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    3.58211    0.35686  10.038  < 2e-16 ***
Veg_Dummy      0.35552    0.30994   1.147  0.25221
Cli_Dummy     -0.37538    0.31174  -1.204  0.22943
Fr_Min        -0.17321    0.06539  -2.649  0.00847 **
Ex_Min         0.95590    0.11956   7.995 2.38e-14 ***
Age           -0.24060    0.07697  -3.126  0.00194 **
Veg_Dummy:Age -0.06531    0.08700  -0.751  0.45338
Cli_Dummy:Age  0.07701    0.08795   0.876  0.38189
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.037 on 320 degrees of freedom
Multiple R-squared:  0.2864,    Adjusted R-squared:  0.2708
F-statistic: 18.34 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 33:

```
Call:
lm(formula = At_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Age + Age * Veg_Dummy + Age * Cli_Dummy, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.47376 -0.97142  0.07971  0.83723  2.70673

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    2.75302    0.37512   7.339 1.79e-12 ***
Veg_Dummy     -0.01189    0.35417  -0.034    0.973
Cli_Dummy     -0.43079    0.35662  -1.208    0.228
Fr_Co          0.10425    0.06843   1.523    0.129
Ex_Co          0.58077    0.13473   4.311 2.17e-05 ***
Age           -0.13852    0.08732  -1.586    0.114
Veg_Dummy:Age -0.02990    0.09968  -0.300    0.764
Cli_Dummy:Age  0.05990    0.10022   0.598    0.550
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.189 on 320 degrees of freedom
Multiple R-squared:  0.09184,   Adjusted R-squared:  0.07197
F-statistic: 4.623 on 7 and 320 DF,  p-value: 6.05e-05
```

Model 34:

```
Call:
lm(formula = In_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Age + Age * Veg_Dummy + Age * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.2233 -0.5799 -0.2677  0.6450  3.5563

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.711287   0.308646   2.305   0.0218 *
Veg_Dummy      0.254231   0.301096   0.844   0.3991
Cli_Dummy      0.051612   0.301400   0.171   0.8641
Fr_Piz         0.721065   0.077238   9.336   <2e-16 ***
Ex_Piz         0.217128   0.123266   1.761   0.0791 .
Age           -0.051436   0.074169  -0.693   0.4885
Veg_Dummy:Age  0.004811   0.084426   0.057   0.9546
Cli_Dummy:Age -0.011410   0.084794  -0.135   0.8930
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.006 on 320 degrees of freedom
Multiple R-squared:  0.2526,    Adjusted R-squared:  0.2362
F-statistic: 15.45 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 35:

```
Call:
lm(formula = In_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Age + Age * Veg_Dummy + Age * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3235 -0.8156 -0.1739  0.9153  3.4282

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    2.56901    0.40265   6.380 6.19e-10 ***
Veg_Dummy      0.13725    0.34970   0.392   0.6950
Cli_Dummy     -0.21399    0.35174  -0.608   0.5434
Fr_Min        -0.16232    0.07377  -2.200   0.0285 *
Ex_Min         1.29947    0.13490   9.633  < 2e-16 ***
Age           -0.12756    0.08685  -1.469   0.1429
Veg_Dummy:Age -0.04785    0.09817  -0.487   0.6263
Cli_Dummy:Age  0.06628    0.09923   0.668   0.5047
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.17 on 320 degrees of freedom
Multiple R-squared:  0.2819,    Adjusted R-squared:  0.2662
F-statistic: 17.94 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 36:

```
Call:
lm(formula = In_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Age + Age * Veg_Dummy + Age * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3072 -0.9492 -0.2221  0.9990  3.2328

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    1.47614    0.40015   3.689 0.000264 ***
Veg_Dummy      0.12425    0.37780   0.329 0.742456
Cli_Dummy     -0.53669    0.38042  -1.411 0.159278
Fr_Co          0.26025    0.07300   3.565 0.000419 ***
Ex_Co          0.95678    0.14372   6.657 1.21e-10 ***
Age           -0.08336    0.09315  -0.895 0.371522
Veg_Dummy:Age -0.07284    0.10633  -0.685 0.493804
Cli_Dummy:Age  0.10437    0.10690   0.976 0.329671
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.268 on 320 degrees of freedom
Multiple R-squared:  0.1737,    Adjusted R-squared:  0.1557
F-statistic: 9.612 on 7 and 320 DF,  p-value: 7.45e-11
```

Model 37:

```
Call:
lm(formula = At_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Health + Health * Veg_Dummy + Health * Cli_Dummy, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.72860 -0.73123  0.07641  0.67846  2.53958

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      2.18269    0.52139   4.186 3.67e-05 ***
Veg_Dummy       -0.59248    0.54456  -1.088    0.277
Cli_Dummy       -0.40568    0.54461  -0.745    0.457
Fr_Piz           0.60607    0.08220   7.373 1.43e-12 ***
Ex_Piz          -0.16896    0.12322  -1.371    0.171
Health          -0.01931    0.01795  -1.076    0.283
Veg_Dummy:Health  0.03044    0.02012   1.513    0.131
Cli_Dummy:Health  0.02467    0.02011   1.226    0.221
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.019 on 320 degrees of freedom
Multiple R-squared:  0.1843,    Adjusted R-squared:  0.1664
F-statistic: 10.33 on 7 and 320 DF,  p-value: 1.102e-11
```

Model 38:

```
Call:
lm(formula = At_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Health + Health * Veg_Dummy + Health * Cli_Dummy, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.55423 -0.89822 -0.00511  0.81400  2.50557

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      3.52953    0.56532   6.243 1.36e-09 ***
Veg_Dummy       -0.38155    0.57558  -0.663  0.50787
Cli_Dummy       -0.80120    0.57724  -1.388  0.16610
Fr_Min          -0.20242    0.06822  -2.967  0.00323 **
Ex_Min           1.02723    0.12394   8.288 3.21e-15 ***
Health          -0.02583    0.01888  -1.368  0.17221
Veg_Dummy:Health  0.01983    0.02128   0.932  0.35221
Cli_Dummy:Health  0.02433    0.02134   1.140  0.25499
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.08 on 320 degrees of freedom
Multiple R-squared:  0.2259,    Adjusted R-squared:  0.209
F-statistic: 13.34 on 7 and 320 DF,  p-value: 4.119e-15
```

Model 39:

```
Call:
lm(formula = At_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Health + Health * Veg_Dummy + Health * Cli_Dummy, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.31837 -1.09657  0.09339  0.86382  2.68654

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)       2.224168   0.629357   3.534  0.00047 ***
Veg_Dummy         0.213200   0.639794   0.333  0.73918
Cli_Dummy        -0.623541   0.643041  -0.970  0.33294
Fr_Co             0.083630   0.070158   1.192  0.23413
Ex_Co             0.562499   0.136280   4.128 4.68e-05 ***
Health            0.005975   0.021065   0.284  0.77685
Veg_Dummy:Health -0.012407   0.023648  -0.525  0.60018
Cli_Dummy:Health  0.014109   0.023794   0.593  0.55362
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.199 on 320 degrees of freedom
Multiple R-squared:  0.07678,   Adjusted R-squared:  0.05659
F-statistic: 3.802 on 7 and 320 DF,  p-value: 0.0005551
```

Model 40:

```
Call:
lm(formula = In_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Health + Health * Veg_Dummy + Health * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.0872 -0.5912 -0.2305  0.5957  3.5630

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)       0.444278   0.513537   0.865    0.388
Veg_Dummy        -0.365991   0.536363  -0.682    0.496
Cli_Dummy         0.036621   0.536407   0.068    0.946
Fr_Piz            0.772541   0.080958   9.543   <2e-16 ***
Ex_Piz            0.181972   0.121361   1.499    0.135
Health            0.001908   0.017680   0.108    0.914
Veg_Dummy:Health  0.023631   0.019813   1.193    0.234
Cli_Dummy:Health -0.001903   0.019809  -0.096    0.924
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.004 on 320 degrees of freedom
Multiple R-squared:  0.2557,    Adjusted R-squared:  0.2394
F-statistic:  15.7 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 41:

```
Call:
lm(formula = In_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Health + Health * Veg_Dummy + Health * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3467 -0.8124 -0.1702  0.9342  3.4334

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)       2.122991   0.614585   3.454 0.000626 ***
Veg_Dummy         0.409662   0.625737   0.655 0.513140
Cli_Dummy        -0.933080   0.627541  -1.487 0.138031
Fr_Min           -0.178582   0.074164  -2.408 0.016609 *
Ex_Min            1.322533   0.134743   9.815  < 2e-16 ***
Health            0.002848   0.020525   0.139 0.889731
Veg_Dummy:Health -0.016789   0.023135  -0.726 0.468550
Cli_Dummy:Health  0.034774   0.023196   1.499 0.134819
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.174 on 320 degrees of freedom
Multiple R-squared:  0.2768,    Adjusted R-squared:  0.261
F-statistic:  17.5 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 42:

```
Call:
lm(formula = In_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Health + Health * Veg_Dummy + Health * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.2395 -0.9731 -0.1811  1.0179  3.0125

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)       1.080195   0.667838   1.617 0.106766
Veg_Dummy         0.083041   0.678913   0.122 0.902727
Cli_Dummy        -0.556163   0.682358  -0.815 0.415644
Fr_Co             0.249938   0.074448   3.357 0.000882 ***
Ex_Co             0.949823   0.144613   6.568 2.06e-10 ***
Health            0.006356   0.022353   0.284 0.776321
Veg_Dummy:Health -0.007602   0.025094  -0.303 0.762144
Cli_Dummy:Health  0.013143   0.025249   0.521 0.603060
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.272 on 320 degrees of freedom
Multiple R-squared:  0.1688,    Adjusted R-squared:  0.1506
F-statistic: 9.284 on 7 and 320 DF,  p-value: 1.798e-10
```

Model 43:

```
Call:
lm(formula = At_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Veg + Veg * Veg_Dummy + Veg * Cli_Dummy, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-2.63907 -0.71515  0.07445  0.66594  2.76105

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)      1.221261   0.460107   2.654  0.00834 **
Veg_Dummy        0.103290   0.485832   0.213  0.83177
Cli_Dummy       -0.135705   0.489751  -0.277  0.78189
Fr_Piz           0.592008   0.076942   7.694 1.78e-13 ***
Ex_Piz          -0.175654   0.122151  -1.438  0.15141
Veg              0.023649   0.020673   1.144  0.25351
Veg_Dummy:Veg    0.006064   0.023757   0.255  0.79868
Cli_Dummy:Veg    0.020278   0.023931   0.847  0.39743
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.008 on 320 degrees of freedom
Multiple R-squared:  0.2019,    Adjusted R-squared:  0.1844
F-statistic: 11.56 on 7 and 320 DF,  p-value: 4.161e-13
```

Model 44:

```
Call:
lm(formula = At_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Veg + Veg * Veg_Dummy + Veg * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.6450 -0.8068  0.1139  0.7248  2.5348

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     0.994743   0.538465   1.847 0.065617 .
Veg_Dummy       0.163323   0.487551   0.335 0.737855
Cli_Dummy      -0.687905   0.488665  -1.408 0.160184
Fr_Min         -0.055255   0.067091  -0.824 0.410794
Ex_Min          0.748390   0.121475   6.161 2.17e-09 ***
Veg             0.078303   0.021740   3.602 0.000366 ***
Veg_Dummy:Veg  -0.001151   0.023797  -0.048 0.961445
Cli_Dummy:Veg   0.027679   0.023895   1.158 0.247581
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.008 on 320 degrees of freedom
Multiple R-squared:  0.3261,    Adjusted R-squared:  0.3113
F-statistic: 22.12 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 45:

```
Call:
lm(formula = At_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Veg + Veg * Veg_Dummy + Veg * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.5297 -0.9698  0.1141  0.8854  2.5114

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)   1.74719    0.58582   2.982 0.003079 **
Veg_Dummy    -0.56885    0.56887  -1.000 0.318089
Cli_Dummy    -0.86494    0.56959  -1.519 0.129870
Fr_Co         0.16757    0.07171   2.337 0.020066 *
Ex_Co         0.50245    0.13447   3.737 0.000221 ***
Veg           0.01948    0.02453   0.794 0.427577
Veg_Dummy:Veg 0.02282    0.02779   0.821 0.412158
Cli_Dummy:Veg 0.03068    0.02785   1.101 0.271537
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.177 on 320 degrees of freedom
Multiple R-squared:  0.1089,    Adjusted R-squared:  0.08945
F-statistic: 5.589 on 7 and 320 DF,  p-value: 4.31e-06
```

Model 46:

```
Call:
lm(formula = In_Piz ~ Veg_Dummy + Cli_Dummy + Fr_Piz + Ex_Piz +
    Veg + Veg * Veg_Dummy + Veg * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.1266 -0.5589 -0.2127  0.6660  3.5578

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)   0.479937   0.446498   1.075  0.28323
Veg_Dummy    -1.027853   0.471463  -2.180  0.02998 *
Cli_Dummy    -0.129681   0.475266  -0.273  0.78514
Fr_Piz        0.748420   0.074667  10.023  < 2e-16 ***
Ex_Piz        0.185842   0.118538   1.568  0.11792
Veg           0.002336   0.020062   0.116  0.90737
Veg_Dummy:Veg 0.065053   0.023054   2.822  0.00508 **
Cli_Dummy:Veg 0.006460   0.023224   0.278  0.78106
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9785 on 320 degrees of freedom
Multiple R-squared:  0.2931,    Adjusted R-squared:  0.2776
F-statistic: 18.95 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 47:

```
Call:
lm(formula = In_Min ~ Veg_Dummy + Cli_Dummy + Fr_Min + Ex_Min +
    Veg + Veg * Veg_Dummy + Veg * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.5541 -0.8062 -0.1652  0.7802  3.9514

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)   0.39512    0.60074   0.658   0.5112
Veg_Dummy    -0.14765    0.54394  -0.271   0.7862
Cli_Dummy    -0.21760    0.54518  -0.399   0.6901
Fr_Min       -0.04321    0.07485  -0.577   0.5642
Ex_Min        1.08432    0.13552   8.001 2.29e-14 ***
Veg           0.07596    0.02425   3.132   0.0019 **
Veg_Dummy:Veg 0.00649    0.02655   0.244   0.8070
Cli_Dummy:Veg 0.01103    0.02666   0.414   0.6795
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.125 on 320 degrees of freedom
Multiple R-squared:  0.3369,    Adjusted R-squared:  0.3224
F-statistic: 23.23 on 7 and 320 DF,  p-value: < 2.2e-16
```

Model 48:

```
Call:
lm(formula = In_Co ~ Veg_Dummy + Cli_Dummy + Fr_Co + Ex_Co +
    Veg + Veg * Veg_Dummy + Veg * Cli_Dummy, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-2.3906 -0.9680 -0.2401  0.9768  3.0440

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.60196    0.62537   0.963    0.336
Veg_Dummy     -0.32626    0.60728  -0.537    0.591
Cli_Dummy     -0.77230    0.60805  -1.270    0.205
Fr_Co          0.31993    0.07655   4.179 3.78e-05 ***
Ex_Co          0.90159    0.14355   6.281 1.10e-09 ***
Veg            0.02190    0.02618   0.836    0.404
Veg_Dummy:Veg  0.01059    0.02967   0.357    0.721
Cli_Dummy:Veg  0.02843    0.02974   0.956    0.340
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.257 on 320 degrees of freedom
Multiple R-squared:  0.1881,    Adjusted R-squared:  0.1703
F-statistic: 10.59 on 7 and 320 DF,  p-value: 5.459e-12
```

Appendix 7: Confidence Intervals

Perception of healthiness:

```
> confint(my_lm.He.Piz, level=0.90)
                              5 %      95 %
(Intercept)           1.40046428 1.8657002
Veg_Dummy            -0.08714953 0.3280873
Cli_Dummy            -0.06305654 0.3570837
Fr_Piz                0.12996005 0.3330208
Ex_Piz               -0.16862209 0.1520924
Veg_Dummy:Cli_Dummy  -0.35826290 0.2328874
```

```
> confint(my_lm.He.Min, level=0.90)
                              5 %       95 %
(Intercept)           2.91722460 3.60148142
Veg_Dummy            -0.18140994 0.26125970
Cli_Dummy            -0.35792196 0.08906598
Fr_Min               -0.02074472 0.15767311
Ex_Min                0.11054636 0.43421558
Veg_Dummy:Cli_Dummy  -0.18380289 0.44419941
```

```
> confint(my_lm.He.Co, level=0.90)
                              5 %       95 %
(Intercept)           2.92514877 3.50879157
Veg_Dummy            -0.13411442 0.28698944
Cli_Dummy            -0.28516653 0.14048354
Fr_Co                -0.01225407 0.14218566
Ex_Co                -0.21810227 0.08628597
Veg_Dummy:Cli_Dummy  -0.35652555 0.24033981
```

Perception of taste:

```
> confint(my_lm.Ta.Piz, level=0.90)
                              5 %      95 %
(Intercept)           1.729278002 2.2995650
Veg_Dummy            -0.009798775 0.4991992
Cli_Dummy            -0.197863710 0.3171449
Fr_Piz                0.213944631 0.4628569
Ex_Piz               -0.221843294 0.1712891
Veg_Dummy:Cli_Dummy  -0.443718895 0.2809142
```

```
> confint(my_lm.Ta.Min, level=0.90)
                              5 %        95 %
(Intercept)            2.3777226  3.15479124
Veg_Dummy             -0.1905912  0.31212162
Cli_Dummy             -0.2281412  0.27947570
Fr_Min                -0.2152731 -0.01265485
Ex_Min                 0.3146774  0.68224874
Veg_Dummy:Cli_Dummy   -0.5978476  0.11533617
```

```
> confint(my_lm.Ta.Co, level=0.90)
                              5 %       95 %
(Intercept)           2.22236771 3.00203130
Veg_Dummy            -0.34317502 0.21935972
Cli_Dummy            -0.55698738 0.01162043
Fr_Co                -0.05250619 0.15380328
Ex_Co                 0.04672614 0.45334543
Veg_Dummy:Cli_Dummy  -0.32253898 0.47478805
```

Perception of price:

```
> confint(my_lm.Pr.Piz, level=0.90)
                              5 %       95 %
(Intercept)           2.67165611  3.1930146
Veg_Dummy            -0.02333145  0.4419964
Cli_Dummy            -0.07875063  0.3920721
Fr_Piz               -0.13417895  0.0933775
Ex_Piz               -0.46894206 -0.1095390
Veg_Dummy:Cli_Dummy  -0.35050966  0.3119525
```

```
> confint(my_lm.Pr.Min, level=0.90)
                              5 %        95 %
(Intercept)            3.22079840  3.8498990
Veg_Dummy              0.04475583  0.4517430
Cli_Dummy             -0.09960926  0.3113481
Fr_Min                -0.07875211  0.0852839
Ex_Min                -0.40496206 -0.1073830
Veg_Dummy:Cli_Dummy   -0.39362650  0.1837541
```

```
> confint(my_lm.Pr.Co, level=0.90)
                              5 %       95 %
(Intercept)           3.03294182 3.57889590
Veg_Dummy            -0.11977756 0.27413352
Cli_Dummy            -0.22525071 0.17291301
Fr_Co                -0.04183361 0.10263317
Ex_Co                -0.26347432 0.02125805
Veg_Dummy:Cli_Dummy -0.32735510 0.23096768
```

Perception of climate friendliness:

```
> confint(my_lm.Cl.Piz, level=0.90)
                              5 %       95 %
(Intercept)           2.144303716  2.67700531
Veg_Dummy            -0.003309311  0.47214259
Cli_Dummy             0.363647894  0.84471430
Fr_Piz                0.073672845  0.30618022
Ex_Piz               -0.402879382 -0.03565685
Veg_Dummy:Cli_Dummy -0.445041887  0.23183342
```

```
> confint(my_lm.Cl.Min, level=0.90)
                              5 %       95 %
(Intercept)           3.5201278 4.23528694
Veg_Dummy            -0.4136478 0.04901365
Cli_Dummy            -0.3268388 0.14033600
Fr_Min               -0.1317986 0.05467691
Ex_Min                0.1745110 0.51279770
Veg_Dummy:Cli_Dummy -0.1599180 0.49644605
```

```
> confint(my_lm.Cl.Co, level=0.90)
                              5 %       95 %
(Intercept)           3.5385740 4.12415256
Veg_Dummy            -0.2199600 0.20254051
Cli_Dummy            -0.1029444 0.32411746
Fr_Co                -0.1416938 0.01325811
Ex_Co                -0.2183021 0.08709573
Veg_Dummy:Cli_Dummy -0.3971955 0.20164948
```

Attitude:

```
> confint(my.lm.At.Piz, level=0.90)
                              5 %       95 %
(Intercept)           1.3755239 1.96626044
Veg_Dummy             0.0663612 0.59361100
Cli_Dummy             0.1049882 0.63846419
Fr_Piz                0.4412225 0.69906034
Ex_Piz               -0.3682618 0.03896763
Veg_Dummy:Cli_Dummy -0.5872849 0.16333233
```

```
> confint(my.lm.At.Min, level=0.90)
                              5 %         95 %
(Intercept)           2.4646756  3.321890091
Veg_Dummy            -0.2587230  0.295839003
Cli_Dummy            -0.5671071 -0.007135256
Fr_Min               -0.3085543 -0.085038283
Ex_Min                0.8280766  1.233558746
Veg_Dummy:Cli_Dummy -0.1311883  0.655552313
```

```
> confint(my.lm.At.Co, level=0.90)
                              5 %        95 %
(Intercept)           1.98096822  2.83428248
Veg_Dummy            -0.49464344  0.12103096
Cli_Dummy            -0.64402839 -0.02170721
Fr_Co                -0.02630442  0.19949400
Ex_Co                 0.34128644  0.78631690
Veg_Dummy:Cli_Dummy -0.27397319  0.59867309
```

Purchase intention:

```
> confint(my.lm.In.Piz, level=0.90)
                              5 %       95 %
(Intercept)           0.23279756 0.8143504
Veg_Dummy             0.06549960 0.5845527
Cli_Dummy            -0.19558608 0.3295964
Fr_Piz                0.60227932 0.8561087
Ex_Piz               -0.01200058 0.3888980
Veg_Dummy:Cli_Dummy  -0.48982634 0.2491216
```

```
> confint(my.lm.In.Min, level=0.90)
                              5 %         95 %
(Intercept)           1.7566584  2.69174855
Veg_Dummy            -0.4305266  0.17441583
Cli_Dummy            -0.4349501  0.17589370
Fr_Min               -0.2967980 -0.05297619
Ex_Min                1.1210983  1.56341744
Veg_Dummy:Cli_Dummy  -0.1990296  0.65918437
```

```
> confint(my.lm.In.Co, level=0.90)
                              5 %       95 %
(Intercept)           0.8219291 1.72750150
Veg_Dummy            -0.4982280 0.15515112
Cli_Dummy            -0.6001709 0.06026203
Fr_Co                 0.1290388 0.36866541
Ex_Co                 0.7196464 1.19193116
Veg_Dummy:Cli_Dummy  -0.3351847 0.59090363
```

Table 19

t-test comparing attitude and purchase intention, α = 0.1

	Pizza Margherita		Minced meat substitute		Vegetarian cold cuts	
Sample	Mean of the differences	Sig.	Mean of the differences	Sig.	Mean of the differences	Sig.
The whole sample	0.7713	<0.001 ***	0.4268	<0.001 ***	0.4085	<0.001 ***
Control group	0.6429	<0.001 ***	0.4167	<0.001 ***	0.4286	<0.001 ***
Vegetarian treatment group	0.6420	<0.001 ***	0.5802	<0.001 ***	0.4074	<0.001 ***
Climate friendly group	0.8974	<0.001 ***	0.2436	0.046 *	0.3846	<0.001 ***
Vegetarian and climate friendly treatment group	0.9059	<0.001 ***	0.4588	<0.001 ***	0.4118	<0.001 ***

Significance codes: '***' = 0.001, '**' = 0.01, '*' = 0.05, '.' = 0.1