

Plant-based or meat alternative? How the naming and packaging of plant-based meat alternatives
influence consumers' product perceptions

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Abstract

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There has been a rise in the marketplace of newer generation plant-based meat alternative products that cater to flexitarian and meat eating consumers, as they try to resemble real meat as much as possible. However, there is little research on these ambiguous food products. The goal of this thesis was to better understand how marketing and packaging elements influence consumers' perceptions of plant-based meat alternatives (e.g., taste, health, and environmentally friendly perceptions, predicted consumption, etc.). Online experiments manipulating product names and packaging colors were used to test the hypotheses. Study 1 found that a product named plant-based was viewed as more environmentally friendly and healthier, and had a higher trial likelihood than the product named meat alternative. Mediation analyses revealed that perceived product health and environmental friendliness mediated the relationship between product name and predicted quantity consumed, such that the plant-based name resulted in more positive perceptions but decreased predicted consumption. Study 2 found an interaction effect between product name and package color on trial likelihood, predicted satiety, and environmental goals, with marginal effects of perceived environmental friendliness. The product named meat alternative paired with a red product package resulted in higher ratings of trial likelihood, perceived environmental friendliness, and environmental goals, while the product named plant-based with a red product package was rated as being more satisfying. A moderated-mediation revealed an interaction effect of product name and packaging color on predicted consumption through environmental goals. Theoretical and practical implications are discussed, as well as directions for future research.

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Introduction

Even if vegetarian (i.e., do not eat meat but consume other animal products) or vegan (i.e., do not consume any animal product) diets, which people follow for reasons related to environmental, health, and/or animal welfare concerns, seem to have been surging in popularity, they have only been adopted by 5% and 3% of consumers worldwide respectively (Bailey, 2018). The flexitarian diet, where consumers commit to eating less animal protein but do not completely eliminate them from their diet (Dagevos & Voordouw, 2013), has however been adopted by 14% of consumers worldwide (Bailey, 2018) and has thus been a more popular approach to limiting one's meat consumption. The flexibility of the flexitarian diet helps explain its greater popularity, as it allows consumers to balance their consumption across meals (e.g. having a vegetarian curry for lunch and a beef burger for dinner) and/or days (e.g. Meatless Monday).

The food industry has responded to the rising needs of flexitarian (as well as vegetarian and vegan) consumers by developing alternatives to animal-based proteins (e.g., Beyond Meat, Impossible Foods) that are more similar to their original counterparts than more traditional plant-based proteins, such as tofu, legumes, and seitan. These products, which tend to resemble animal-based food, but contain no animal products, are called plant-based meat alternatives and can take many forms, such as ground meat, burgers, sausages, chicken strips, shrimps, and tuna, among others. Acknowledging the difficulties of removing meat from one's diet, other product innovations targeted specifically to flexitarian consumers (e.g., Maple Leaf 50/50) instead contain 50% of animal-based protein and 50% of plant-based protein (e.g., a burger patty made with half ground beef, half plant-based ground product).

Consumers often choose to eat plant-based meat alternative products for various reasons related to their benefits as compared to animal products. First, the meat industry is notorious for being detrimental to the environment, as raising animals for meat consumption plays a massive role in the emission of greenhouse gases (Food and Agriculture Organization of the United Nations, 2006). The meat industry has also led to several other negative environmental consequences, such as the destruction of forests and the overuse and contamination of water, among others (Food and Agriculture Organization of the United Nations, 2006). Second, plant-based meat alternative products appeal to people who are against the mistreatment of animals, as

these products do not require raising and killing animals for human consumption. Third, consumers may be attracted to plant-based meat alternative products for health-related reasons, as they may appear as being healthier options compared to animal products (Piper, 2020). However, the healthiness of such products has been questioned. For instance, the Impossible Burger and Beyond Meat burger patties have comparable amounts of fat and calories, but even more sodium than a regular burger at McDonald's (Todd, 2019). Plant-based burgers however generally have less cholesterol, more fiber, and a similar amount of protein than a regular burger (Todd, 2019).

Finally, a potentially overlooked benefit of plant-based meat alternative products is during times of emergency. This thesis was written during the COVID-19 pandemic, where many Canadians reported being faced with animal protein shortages (Lombardo, 2020). Consequently, companies offering plant-based meat alternative products have seen a significant increase in the sales of their products (Terazono & Meyer, 2020). Plant-based meat alternative products may flourish at a time where animal protein is not readily available but, beyond that, facing a pandemic can act as an opportunity for consumers to realize the broader implications that what they eat can have an impact on their health. Raising animals for human consumption has been having important negative health-related impacts by spreading diseases such as the bird flu, swine flu, and mad cow disease, among others (United Nations Environment Programme, 2016; Cumbers, 2020). In order to minimize future virus outbreaks stemming from the consumption of animal products, experts recommend more closely monitoring and improving the meat industry while also decreasing our meat consumption, which can be eased through plant-based meat alternative products (Cumbers, 2020; Dutkiewicz, Taylor, & Vettese, 2020). Plant-based meat alternative products should thus keep seeing an increase in popularity given these increasingly prevalent public health related concerns, especially if meat shortages become more common in the future.

While plant-based meat alternative products have existed for some time, the more recent versions of these products are quite different. What sets these newer plant-based meat alternative products apart is the extent to which they resemble meat in all sensorial aspects (Wellesley, 2019). For instance, producers of plant-based burger patties have gone to great lengths to make consumers feel as if they are eating a regular beef burger by adding pieces of coconut oil to

mimic meat fat, and infusing them with beet juice to give the impression that the product “bleeds” (Judkis, 2019). The main goal of these newer plant-based meat alternative products thus seems to be to convince consumers that they are eating meat, even if in reality they are not. Interesting questions emerge from plant-based meat alternative products that try to resemble meat as much as possible, given that the product may become ambiguous for consumers. Do consumers consider these products more as meat or as a plant-based food? How do consumers perceive and evaluate such products?

Understanding how consumers perceive and evaluate these ambiguous plant-based meat alternative products is relevant for both researchers and marketers, as it has important implications in terms of consumer decision-making, branding, packaging, and marketing communications, among others. For example, large players in the plant-based meat alternative industry, such as Beyond Meat and Impossible Foods, have stated that the overwhelming majority of their clients are meat eaters (Todd, 2019). These companies have tried to keep the visual, textural, and taste components of their products as similar to meat as possible, to help ease meat-eating consumers’ transition from consuming meat to plant-based meat (Todd, 2019). However, these companies’ marketing is often inconsistent with the association they are trying to create for their products. While the branding, packaging, and/or marketing communications for some plant-based meat alternative products seem to try to reinforce their associations with meat (e.g., red color, using meat-related words and/or pictures), others instead seem to try to be associated with plants (e.g., green color, plant-related words and/or pictures) in consumers’ minds, or ambiguously use both types of cues.

Considering the growing popularity of plant-based meat alternative products, it is surprising that there is little research in marketing on them. My thesis thus aims to better understand how associating these products more closely to meat or to plants impacts, for instance, their perceived health, tastiness, and environmental friendliness. Specifically, my thesis will manipulate the terms and colors used on product packaging to examine which approach is most effective for marketing these products. In addition, my thesis will investigate the potential behavioral implications of these associations on predicted consumption. Examining meat eating and flexitarian consumers specifically will be the focus of my thesis, because they are the main target market of plant-based meat alternative products on the market (Todd, 2019), and I will

exclude vegetarian and vegan consumers, who may have prior experience with such products and thus may already hold stronger product perceptions.

The implications of this thesis project are important to better understand the role of marketing cues, including product names and packaging colors, and how these have an impact on consumer perceptions of plant-based meat alternative products, in order to help marketers develop more effective marketing strategies in terms of branding, packaging, and marketing communications.

Theoretical Background

In order to better understand consumer's perceptions of plant-based meat alternatives, the ambiguity of such products should first be addressed. For instance, Plant-Based Foods of Canada conducted research in order to find out where plant-based food products should be sold within grocery stores (Lombardo, 2019). Their findings hint at the ambiguity of these products, as consumers reported wanting to see plant-based meat alternatives in the produce aisle of grocery stores, while plant-based meat alternative companies argue that they should be sold in the meat section of grocery stores (Lombardo, 2019). Relatedly, past research has shown that consumers categorize meat and meat alternative products in different ways, depending on the category of reference. Specifically, Hoek, van Boekel, Voordouw, and Luning (2011) presented participants with photographs of both meat products (e.g., ground beef, chicken filet) and meat alternative products (e.g., vegetarian burgers and nuggets, tofu), for which they had to create different categories, and place the photographs into whichever category participants believed they corresponded to. The authors found that consumers either grouped meat products and meat alternative products into the same, or different category, depending on the food product's characteristics or ingredients. For instance, under the categories "meat" or "beef", in which the ingredients are animal proteins, participants placed real meat products, but not meat alternative products, in these categories. Conversely, under the category "burger", participants placed both meat and meat alternative products into this category, including chicken burgers and veggie burgers, as they both have similar product characteristics to a regular beef burger (Hoek et al., 2011).

These results reveal that consumers' perceptions of plant-based meat alternative products

can be impacted by their category of reference for such products, thus suggesting that marketers have the ability to influence consumers' product perceptions. My thesis specifically focuses on the cues provided on product packaging, including the name of the product, and their impact on consumers' perceptions, evaluations, and predicted consumption of plant-based meat alternative products.

Product Naming and Packaging Influence Consumer Perceptions

The impact of how a product is named is illustrated throughout the consumer behavior literature. For instance, the addition of descriptive and indulgent adjectives to the names of vegetable dishes can increase their appeal for consumers (Turnwald, Boles, & Crum, 2017). Specifically, Turnwald and colleagues (2017) found that when a plate of food containing vegetables in a cafeteria was labeled in an indulgent way (e.g. rich buttery roasted sweet corn), rather than a plain label (e.g. corn), it was purchased more often. Further, research has also examined the effects of adding adjectives to food labels (e.g., satin chocolate pudding vs. chocolate pudding) and has shown that consumers assume that the descriptive version of the product name has more calories, and is tastier (Wansink, van Ittersum, & Painter, 2005). These findings reveal that consumers' product perceptions and behaviors can be influenced based on a product's name.

Similar studies have been carried out with emerging products such as in-vitro meat, described as meat that is produced using the cells of an animal without having to kill it (Bryant & Barnett, 2019). Bryant and Barnett (2019) noted that different terms were used to describe this form of meat and wondered how consumers would respond to this food product depending on how it was named. Participants were all given the same definition of in-vitro meat, but were told that the name of the product was one of four options: "cultured meat," "clean meat," "lab grown meat," or "animal free meat." Participant's attitudes (e.g., expected taste of the product, social benefits, disgust) and behaviors (e.g., willingness to buy and try the product) were then measured. The authors found that the term "clean meat" was associated with more positive attitudes and behavioral outcomes than "lab grown meat." Participants also showed more favorable attitude towards the product if it was termed "animal free meat" rather than "lab grown meat" (Bryant & Barnett, 2019). This article highlights the importance of properly naming

products, as it can impact consumers' response towards the product. Marketers thus need to be careful about how they name their products, and this is especially true for plant-based meat alternatives, since they are a newer product that are considered ambiguous by consumers.

Given the importance of selecting the proper name when marketing a product, and specifically the implications of Bryant and Barnett's (2019) findings about selecting the best name for ambiguous meat alternative products, my thesis will explore which name for plant-based meat alternative products is most effective to use on product packaging and other marketing communications. In the plant-based meat alternative market, the terms "plant-based product" and "meat alternative product" are currently used interchangeably amongst different products. My thesis will examine the strength of the associations that each term holds in consumer's minds. For example, a pilot study I conducted (see Pilot Study) showed that the term plant-based was strongly associated with plants (vs. meat) for participants, while the term meat alternative was also associated to plants (vs. meat), but to a lesser extent than the term plant-based. These products' strength of associations with plants or meat is important, as they may influence product perceptions in terms of health and environmental friendliness, among others. For instance, a stronger association with plants may come with associations of environmental friendliness, while stronger associations with meat may have the opposite effect. The pilot study I conducted further found that vegetables were rated as being more environmentally friendly and were perceived as healthier than meat. This perception of healthiness, or lack thereof, can have important implications, as past research has shown that people tend to believe that if they are consuming a food product that is healthy, that must mean that it is a less enjoyable and tasty item (Raghunathan, Naylor, & Hoyer, 2006). Given that the name plant-based is more strongly associated to plants than the name meat alternative, and that meat is perceived as less healthy and less environmentally friendly as opposed to plants, the following hypothesis is proposed:

H1: The name plant-based (vs. meat alternative) will decrease (increase) consumers' perceptions of enjoyment, but increase (decrease) their perceptions of health, ethicality, and environmental friendliness of the product.

As previously mentioned, companies such as Beyond Meat and Impossible Foods cater to mainly meat eating consumers, as they have been trying to replicate as closely as possible the

eating experience of animal-based foods (Todd, 2019). It thus seems that keeping product associations strongly tied to meat, through the naming of such products, may be more effective to persuade meat eaters to try plant-based meat alternative products. Consequently, I propose the following hypothesis:

H2: The name plant-based (vs. meat alternative) will decrease (increase) consumers' willingness to try the product.

A product package's color is considered a "critical marketing cue" that can influence consumers' perceptions of the product the food package contains (Huang & Lu, 2015, p.82). Looking at different plant-based meat alternative products on the market, Beyond Meat predominantly uses green colors for its packaging, while Lightlife mostly uses red, for example (see Appendix A). Given that many plant-based meat alternative brands use either green or red for their product packaging, I will test the effectiveness of these colors in my thesis. A pilot study I conducted (see Pilot Study) showed that these two colors are differently associated in participants' minds, as red is strongly associated with meat (vs. plants), while green is associated more strongly to plants (vs. meat). My thesis will further examine the effects of (mis)matching the colors used on product packaging on consumers' perceptions of such products. For example, since both the color red and the name "meat alternative" are more strongly associated to meat, to different extent, having them both on the product's package will be considered a match between the name and package color. Another match between package color and product name will be a green package with the name plant-based, as they are both strongly associated with plants. Conversely, package color and product name mismatches will be, for instance, a package that is green (red) but has the name meat alternative (plant-based).

I want to test the effects of package color and product name (mis)matching because prior research has shown that consumers tend to prefer a packaging color that matches the product (Ketron & Spears, 2020). For instance, Ketron and Spears (2020) found that participants evaluated an iced coffee product more positively if its packaging was blue (vs. red), and hot coffee product more positively if its packaging was red (vs. blue). Therefore, pairing each product (i.e., iced vs. hot coffee) with the color that represented its temperature (i.e., blue vs. red) generated the most positive evaluations (Ketron & Spears, 2020). The colors red and green have

also been examined in prior research, and there is evidence that the color green is associated with health, while it is the opposite for the color red. In one study, participants examined food products packaged in a variety of colors, and they rated green packaging as being healthier in comparison to red packaging (Huang & Lu, 2015). Other than health, sweetness was assessed between green and red packages, with participants rating red packaging as containing foods that were sweeter than foods in green packaging (Huang & Lu, 2015). The color green has also been linked to sustainability in prior research. For instance, when reviewing an advertisement that stated an involvement with an environmental organization, participants indicated that green packaging was the most environmentally friendly as compared to the other colors tested, including blue, yellow, red, and gray (Seo & Scammon, 2017). Seo & Scammon (2017) also showed that a match between package color and environmental statement was important, such that green packaging that also had an environmental claim was perceived more positively by participants, as opposed to red packaging paired with an environmental claim. Building on this line of work, the following hypothesis is proposed:

H3A: Product name and packaging color will interact, such that the plant-based and green packaging (meat alternative and red packaging) condition will decrease (increase) consumers' perceptions of enjoyment, as well as likelihood to try the product, but increase (decrease) their perceptions of health, ethicality, and environmental friendliness of the product.

H3B: Mismatching product name and packaging color will generate evaluations that will fall in between the two matching conditions.

Product names and colors used on product packaging may not only impact consumers' perceptions of plant-based meat alternative products, but may also have behavioral consequences. Since my thesis focuses specifically on a food product, it is of interest to consider potential effects on predicted consumption.

Health Perceptions Impact Consumption

One aim of my thesis is to better understand the healthiness perceptions of plant-based meat alternative products, as well as whether these health-related perceptions also have an effect

on consumption behavior. Prior research found conflicting effects of healthiness perceptions on consumption. On the one hand, research by Finkelstein and Fishbach (2010) found that consumption levels can increase when framing food products as healthy. Specifically, the authors presented participants with the same chocolate protein bar, and told participants in the healthy condition that they would be sampling a healthy protein bar, while they told the rest of their participants that they would be eating a tasty chocolate bar (Finkelstein & Fishbach, 2010). After sampling the chocolate protein bar, participants rated their level of hunger. The authors found that participants presented with a healthy food option felt hungrier after the taste test than those who were presented with the unhealthy option. This finding was not only limited to participants' perceived hunger, but also had an impact on subsequent consumption. In a second study, participants were again asked to taste test a snack presented as either healthy or tasty, and were later given a bowl of pretzels without relation to the original taste test. The authors found that the amount of pretzels consumed was higher for participants who tried the healthy (vs. tasty) snack beforehand (Finkelstein & Fishbach, 2010).

On the other hand, research by Raghunathan and colleagues (2006) suggests that food consumption levels may decrease when framing food products as healthy. Specifically, the authors identified the *unhealthy = tasty intuition*, which states that people tend to believe that consuming a food product that is unhealthy (healthy), is more (less) enjoyable and tasty. The researchers found evidence for this association through the use of an Implicit Association Test, where they asked participants to match images of healthy or unhealthy foods with positive terms, such as tasty, or negative terms, such as flavorless. Participants took more time making mental connections between healthy foods and terms related to tastiness and enjoyment, but paired unhealthy foods with the positive taste-related terms much faster. The authors thus concluded that healthy foods are thought to be less tasty, while unhealthy foods are thought to be tastier. This finding was further supported in a second study where participants were presented with crackers framed as being unhealthy (healthy) and rated them as more (less) tasty, without even having tried them (Raghunathan et al., 2006). The consumption amount of healthy versus unhealthy food was not assessed in this article, but if consumers believe that healthier foods are less tasty, this could lead to a lower level of consumption of healthy (vs. unhealthy) foods due to the perception that they will not taste good.

My thesis will examine whether predicted consumption levels of plant-based meat alternative products differ depending on their perceived (un)healthiness. As discussed in the previous section, I expect different product names and packaging colors to convey different levels of health-related associations. Specifically, the name plant-based (meat alternative) paired with the green (red) product package should be perceived as the more (least) healthy combination, as both the name and color are associated with plants (meat), which are viewed as healthy (unhealthy) by consumers. These product cues and corresponding associations could result in higher (lower) predicted consumption if the plant-based meat alternative product is perceived as healthy (unhealthy), based on Finkelstein and Fishbach's (2010) findings, as consumers may believe that they will (will not) feel hungry after eating the healthy (unhealthy) product. Alternatively, predicted consumption could instead be lower (higher) if the plant-based meat alternative product is perceived as healthy (unhealthy), based on Raghunathan and colleagues' (2006) findings, because of the *unhealthy=tasty intuition* where consumers will perceive the product as being less (more) tasty, and thus predict to eat less (more) of it. I therefore propose the following conflicting hypotheses:

H4A: Perceiving a plant-based meat alternative product as healthy (unhealthy) will result in higher (lower) predicted consumption, due to the perception that healthy (unhealthy) food is not (is) filling.

H4B: Perceiving a plant-based meat alternative product as healthy (unhealthy) will result in lower (higher) predicted consumption, due to the perception that healthy (unhealthy) food is not (is) tasty.

In addition, I predict that the effect of healthiness perceptions will interact with packaging color in a manner similar to the effects hypothesized in H3.

Environmentally Friendly Perceptions Impact Consumption

Another aim of my thesis is to better understand the environmentally friendly-related perceptions of plant-based meat alternative products, as well as whether these perceptions also have an effect on consumption behavior. Prior research has found conflicting effects of environmental friendliness perceptions on consumption. On the one hand, past research suggests

that consumption levels may increase when framing products as sustainable. For instance, Luchs, Naylor, Irwin, and Raghunathan (2010) identified the *sustainability liability effect*, where a product's sustainable characteristics makes it so that consumers view the product as being weaker. Through an Implicit Association Test, the authors first found that participants responded faster when matching words related to gentleness with terms that described sustainable practices, suggesting that they mentally linked sustainability with weakness or gentleness. To further test this association, Luchs and colleagues (2010) used two types of shampoos that participants associated with either gentleness (i.e., baby shampoo) or strength (i.e., car shampoo). Pairs of each type of shampoo were presented to participants, where one shampoo was rated as more sustainable and the other as less sustainable. The results revealed that participants were less (more) likely to choose the sustainable shampoo when they were evaluating pairs of car (baby) shampoos, demonstrating that consumers trust sustainable products less (more) when strength (gentleness) is sought (Luchs et al., 2010). Relatedly, Lin and Chang (2012) also found that when comparing a sustainable mouthwash versus a regular mouthwash, participants rated the sustainable product as being less effective. As a result, participants used more of the product if they were told it was a sustainable mouthwash (vs. not; Lin & Chang, 2012). While this line of work has not investigated whether these findings also apply to environmentally friendly food products specifically, environmentally friendly-related associations could prompt greater consumption levels if consumers perceive environmentally friendly food products as being “weaker” in the sense that they may be less filling or less indulgent.

On the other hand, research by Farmer, Breazeale, Stevens, and Waites (2017) found that consumption levels decrease when framing a food product as sustainable. The authors conducted a study with potato chips that were framed as a sustainable (vs. control) product. Participants were asked to taste the potato chips and give their opinion of the product. The researchers found that participants consumed less (more) potato chips when the product was framed as a sustainable (vs. control) product. The authors further found that participants' prosocial focus mediated the effect on potato chip consumption, and that such focus was associated with consuming less food (Farmer et al., 2017). However, one limitation of Farmer and colleagues' (2017) research was the stimuli used in their study. Although the researchers wanted to examine sustainable food products, they did not select a food product that was inherently good for the environment (e.g., potato chips made from locally grown or organic potatoes). Instead, they

manipulated other aspects of the food product, such as its manufacturing and packaging (e.g., biodegradable packaging, smaller production carbon footprint). Conversely, the food products examined in my thesis – plant-based meat alternatives – are inherently environmentally friendly products. For example, upon comparing a regular beef burger to the plant-based Beyond Burger, an analysis found that the Beyond Burger can be made by using fewer resources including water, energy, and land (Heller & Keoleian, 2018). My thesis thus aims to build on Farmer and colleagues' (2017) article by testing whether a similar decrease in predicted consumption levels will be observed with a food product that is inherently environmentally friendly, rather than one that is associated with sustainable business practices.

My thesis will examine whether predicted consumption levels of plant-based meat alternative products differ depending on their perceived level of environmental friendliness. As previously discussed, I expect different product names and packaging colors to convey different strengths of environmentally friendly-related associations. Specifically, the name plant-based (meat alternative) paired with the green (red) product package should be perceived as the most (least) environmentally friendly combination, as both the name and color are associated with plants (meat), which are viewed as more (less) environmentally friendly by consumers. These product cues and corresponding associations could result in higher (lower) predicted consumption if the plant-based meat alternative product is perceived as more (less) environmentally friendly, based on Luchs and colleagues' (2010) and Lin and Chang's (2012) findings, as consumers may believe they will (will not) feel hungry after eating the more (less) sustainable product, due to its weaker (stronger) performance in terms of satiety and/or nutrition. Alternatively, predicted consumption could instead be lower (higher) if the plant-based meat alternative product is perceived as more (less) environmentally friendly, based on Farmer and colleagues' (2017) findings, due to a greater (lower) prosocial focus associated with consuming less (more). I therefore propose the following conflicting hypotheses:

H5A: Perceiving a plant-based meat alternative product as more (less) environmentally friendly will result in higher (lower) predicted consumption, due to a perceived weaker (stronger) performance (e.g. in terms of satiety and/or nutrition).

H5B: Perceiving a plant-based meat alternative product as more (less) environmentally friendly will result in lower (higher) predicted consumption, due to their association with environmentally friendly-related behaviors (e.g. decreased consumption).

In addition, I predict that the effect of environmentally friendly perceptions will interact with packaging color in a manner similar to the effects hypothesized in H3.

Overview of Experiments

I tested my hypotheses across two studies, in addition to running a pilot study that was part of Study 1. The pilot study assessed participant's strength of associations of different food products, names, and colors, and helped support assumptions made in the theoretical background and the hypotheses. Study 1 manipulated product name (i.e., plant-based vs. meat alternative) and assessed participants' health, enjoyment, environmental friendliness, and ethical perceptions of the product, as well as trial likelihood and predicted consumption. Study 1 thus tested hypotheses H1, H2, H4A/B, and H5A/B. Study 2 manipulated packaging color (i.e., green vs. red) in addition to product name, such that names and colors were either matched (e.g., plant-based and green) or mismatched (e.g., meat alternative with green). Participants' health, enjoyment, environmental friendliness, and other perceptions of the product were again assessed, as well as trial likelihood and predicted consumption. In addition, participants' health and environmental goals were also measured. Study 2 mostly tested hypotheses H3A/B, H4A/B, and H5A/B, even if it also addressed H1 and H2.

Pilot Study

The first goal of the pilot study was to assess the extent to which the product names plant-based and meat alternative are associated with healthiness and environmental friendliness in consumers' minds. Another goal of the pilot study was to explore whether these two names are more strongly associated with plants or meat. Finally, the pilot study also aimed to assess the strength of associations of the colors red and green in consumers' minds.

Method

The sample consisted of a total of one hundred and eighty-two participants, but vegans

and vegetarians, as well as people who have previously tried Lightlife's products, were excluded from the analyses, based on the fact that plant-based meat alternative products aim to resemble meat as much as possible, and prior research showing that some vegetarians reported a sense of disgust when thinking about consuming meat (Jabs, Devine, & Sobal, 1998). Furthermore, I wanted to exclude consumers who have already tried Lightlife products because they may have perceptions of the product based on their experience with it that may not be impacted by the manipulation. There were a total of one hundred and fifty-one participants after data exclusions ($M_{age} = 33.5$; $SD = 11.3$; 53.6% female) from the online platform Prolific who were compensated £0.50 (CAD\$ 0.86) for a 5-minute study. The pilot study took place at the end of the same data collection conducted for Study 1. The manipulation used in Study 1 had no effect on the measures presented next.

Participants were told that they were taking part in a product associations study and were presented with three successive blocks of questions presented on separate pages. The first block presented participants with the statement "The following terms make me think of..." and asked them to rate the terms "plant-based," "meat alternative," "the color green," and "the color red" on a scale anchored from definitely meat (1) to definitely plants (7). The other two blocks presented participants with the statement "In my opinion, eating ____ is" and were asked to rate "meat," "animal-based foods (e.g., eggs, dairy, etc.)," "vegetables," and "plant-based foods (e.g., beans, tofu, etc.)" on a scale anchored from very healthy (1) to very unhealthy (7) in one block, and a scale anchored from very bad for the environment (1), to very good for the environment (7) in the other block. All scales also had a neutral point (4), and the terms within each block were randomly presented to participants.

Results and Discussion

A one-sample T-test was conducted to determine whether the product names plant-based and meat alternative were more strongly associated with plants or meat. Results revealed that the term plant-based was associated strongly with plants in participants' minds ($M = 6.48$, $SD = 0.93$), a rating significantly above the neutral point of the scale, $t(150) = 32.74$, $p < .01$. The term meat alternative ($M = 5.44$ $SD = 1.51$) was also associated with plants above the midpoint of the scale, $t(150) = 11.73$, $p < .01$. While I expected the term meat alternative to be more strongly

associated with meat than with plants, this finding should have been expected in hindsight, as the term meat alternative has been used to describe plant-based products on the market. Given that the name meat alternative has been paired with plant-based meat alternative products in advertisements and product packaging, I should have expected that consumers have already paired the two in their mind, and therefore think of plants and vegetables upon hearing the name meat alternative. A repeated-measures ANOVA was conducted in order to determine if the ratings of plant-based differed significantly from meat alternative in terms of being associated to plants. Results revealed that there was indeed a significant difference between the two terms, such that the name plant-based was more strongly associated with plants in participants' minds than the name meat alternative (averages reported above), $F(1, 150) = 66.26, p < .01$. This finding is important because, even if both names are associated with plants in consumers' minds, the name plant-based has a stronger association than meat alternative.

Another one-sample t-test was conducted to determine whether the colors red and green were more strongly associated with plants or meat. Results revealed that the color red ($M = 2.11, SD = 1.06$) was strongly associated with meat, significantly below the midpoint of the scale, $t(150) = -21.98, p < .01$, while the color green ($M = 6.35, SD = 1.01$) was strongly associated with plants, significantly above the midpoint of the scale, $t(150) = 28.66, p < .01$. A repeated-measure ANOVA further revealed that the difference between the ratings of the colors red and green were significantly different from one another, $F(1, 150) = 863.12, p < .01$.

A one-sample T-test was also used to assess participant's health and environmentally friendly perceptions of different food products, including "meat," "animal-based foods (e.g., eggs, dairy, etc.)," "vegetables," and "plant-based foods (e.g., beans, tofu, etc.)." For health perceptions, all food products were significantly different from the midpoint of the scale (all $ps < .01$). A repeated-measure ANOVA showed that meat, animal-based foods, plant-based foods, and vegetables were respectively rated from least to most healthy, $F(3,450) = 142.19, p < .01$. All within-subject contrasts were significant. Perceptions of environmental friendliness were also assessed between all food products and were all significantly different from the midpoint of the scale (all $ps < .01$). A repeated-measure ANOVA revealed that meat, animal-based foods, plant-based foods, and vegetables were respectively rated from least to most environmentally friendly, $F(3, 450) = 202.32, p < .01$. All within-subject contrasts were significant. See Table 1 for all

mean ratings and within-subject contrasts.

Table 1. Health and Environmentally Friendly Associations of Various Food Products, Pilot Study

Healthiness	Difference from the midpoint of the scale			Within-subject contrast with meat		Within-subject contrast with vegetables	
	Mean (SD)	<i>t</i> (df)	<i>p</i>	<i>F</i> (df)	<i>p</i>	<i>F</i> (df)	<i>p</i>
Meat	4.64 (1.31)	6.01 (150)	< .01	-	-	308.16 (1,150)	< .01
Animal-based foods	5.03 (1.19)	10.71 (150)	< .01	28.83 (1,150)	< .01	240.45 (1,150)	< .01
Plant-based foods	5.89 (1.08)	21.59 (150)	< .01	90.42 (1,150)	< .01	76.21 (1,150)	< .01
Vegetables	6.64 (0.75)	43.21 (150)	< .01	308.16 (1,150)	< .01	-	-

Environmental Friendliness	Difference from the midpoint of the scale			Within-subject contrast with meat		Within-subject contrast with vegetables	
	Mean (SD)	<i>t</i> (df)	<i>p</i>	<i>F</i> (df)	<i>p</i>	<i>F</i> (df)	<i>p</i>
Meat	3.17 (1.36)	-7.52 (150)	< .01	-	-	287.69 (1,150)	< .01
Animal-based foods	3.73 (1.36)	-2.46 (150)	< .01	51.58 (1,150)	< .01	203.14 (1,150)	< .01
Plant-based foods	5.36 (1.13)	14.78 (150)	< .01	246.59 (1,150)	< .01	28.09 (1,150)	< .01
Vegetables	5.73 (1.17)	18.13 (150)	< .01	287.69 (1,150)	< .01	-	-

This pilot test was conducted to gain a better understanding of the strength of the associations consumers have for different product names, colors, and food products. The strength of the associations were assessed to help build the hypotheses proposed in my thesis. For instance, the fact that participants rated meat as being less healthy and worse for the environment as compared to vegetables, and that the product names are associated with plants, to different extent, aided formulating H1. In addition, understanding the strength of the color associations was important, as H3 hypothesized an interaction effect between packaging colors and product

names. For this reason, I needed to confirm that red was associated with meat and green was associated with vegetables. Finally, the pilot study showed that participants felt that vegetables and plant-based foods were seen as healthier and more environmentally friendly than animal-based foods and meat, thus helping with the formulation of H4 and H5.

Study 1

The goal of Study 1 was to provide evidence for H1, by testing whether a product named meat alternative is perceived differently than the same product named plant-based. The dependent variables were thus related to the perceived tastiness, healthiness, and environmental friendliness, of the product. Study 1 also aimed to provide evidence for H2, by testing whether changing the product's name impacts consumers' willingness to try the product. Finally, Study 1 also looked for evidence in support of H4 and H5 by testing whether predicted consumption levels of plant-based meat alternatives differed depending on the product's name and its associations (or lack thereof) with health and environmental friendliness. The stimuli used in Study 1 (and Study 2) was an image of a product package of the Lightlife brand, as it was expected that participants would be less familiar with it, rather than more popular brands, such as Beyond Meat, for example. Using a less popular brand would allow for testing of the effects of various marketing cues, including product name and package color, without participants having prior experience with it, which would not influence their evaluations of the product.

Method

There was a total of one hundred and eighty-two participants who took part in the study, but vegans and vegetarians, as well as people who have previously tried Lightlife's products, were excluded from the analyses. These exclusions were first based on the fact that plant-based meat alternative products aim to resemble meat as much as possible, and prior research showing that some vegetarians reported a sense of disgust when thinking about consuming meat (Jabs et al., 1998). Further, consumers who have previously tried Lightlife products probably already have perceptions of the product based on their experience with it that may not be impacted by the manipulation. While data exclusions should be consistent across studies, using stricter data exclusions as in Study 2 did not change results. This left a total of one hundred and fifty-one participants ($M_{age} = 33.5$; $SD = 11.3$; 53.6% female) from the online platform Prolific who were

compensated £0.50 (CAD\$ 0.86) for a 5-minute study. As a cover story, participants were told that they were taking part in a marketing research study conducted by Lightlife to better understand consumer's perceptions of their products. An actual image of Lightlife's plant-based meat alternative ground product package was used, but with a modified label. A neutral color (brown) was selected for the package and label's color (rather than Lightlife's usual red), in order to avoid eliciting color-related associations. Participants were randomly assigned to one of two experimental conditions.

Half of the participants were shown the product with the name "Plant-Based Ground" and a front-of-package label that read "Made from plants," while the remainder of participants saw the exact same product package but with the name "Meat Alternative Ground" and a front-of-package label that read "Meat made from plants." The front-of-package labels were used to further reinforce either the plant or meat associations in each condition. Labels are an important part of a product's packaging, as research has shown that consumers can gain sufficient information from a front-of-package label, such as a health or nutrition claim, that can stop them from acquiring other product information, such as reading the nutrition information at the back of the package (Roe, Levy, & Derby, 1999). The name change between conditions may not have been a strong enough cue on its own, which is why the addition of the front-of-package label can further reinforce either the plant or meat elements of the product. Apart from the front-of-package label and product name, all other product information remained the same. See Appendix B for the stimuli. Participants were then asked to rate the product on the following bipolar scales (from 1 to 7): unhealthy-healthy, tasteless-tasty, flavorless-flavorful, unenjoyable-enjoyable, unpleasant-pleasant, bad for the environment-good for the environment, and unethical-ethical. Participants were also asked how likely they were to try Lightlife's product on a scale from extremely unlikely (1) to extremely likely (7).

Next, participants were asked to imagine they could try burger sliders (mini burgers) each made using 2 ounces of Lightlife's ground product. The instructions were accompanied by an image of a plate of burger sliders, which included a small picture of the product package in the top left corner as a reminder (see Appendix B for images of the stimuli used). Participants were asked how full and how satisfied they would feel after eating one 2-ounce slider on two items anchored from very hungry/unsatisfied (1) to very full/satisfied (7). They were also asked how

many sliders they would eat as a full meal (lunch or dinner; scale: 0 = None to 7 = More than 6). Finally, participants were presented with standard demographic questions, as well as questions about when they last ate (as a proxy for hunger), their diet, their prior experience with the Lightlife brand, and their familiarity with plant-based meat alternative products.

Results and Discussion

Before conducting the analyses, the items related to perceived enjoyment (i.e., tasty, flavorful, enjoyable, and pleasant) were combined into a perceived enjoyment variable ($\alpha = .94$). The two items related to perceived satiety (i.e., how full and how satisfied participants would feel after consuming one slider) were also combined into predicted satiety variable ($r = .74, p < .01$).

One-way ANOVAs were conducted with product name as the independent variable and each product evaluation variable as the dependent variables. There was a significant effect of product name on perceptions of health, $F(1,150) = 6.04, p = .02$, environmental friendliness, $F(1,150) = 6.35, p = .01$, likelihood to try the product, $F(1,150) = 7.15, p = .01$, and how many sliders they would consume as a full meal, $F(1,150) = 4.03, p = .05$. Specifically, the plant-based product was viewed as healthier ($M = 5.77, SD = 1.31$) than the meat alternative product ($M = 5.18, SD = 1.61$), and more environmentally friendly ($M_{PB} = 5.88, SD = 1.20; M_{MA} = 5.31, SD = 1.53$). Participants' likelihood of trying the product was also higher for the plant-based product ($M = 4.42, SD = 1.74$) as compared to the meat alternative product ($M = 3.68, SD = 1.68$). Finally, participants' number of predicted sliders consumed for the meat alternative product ($M = 2.73, SD = 1.26$) was higher when compared to the plant-based slider ($M = 2.34, SD = 1.11$). No significant differences were found for the other evaluation variables (i.e., perceived enjoyment, ethical, and predicted satiety; all $ps > .10$). Note that the same analyses were run without data exclusions and the results remained similar (see Appendix C for analyses). Also, when including previous experience of plant-based meat alternative products, familiarity with plant-based meat alternative products, and/or when participants last ate (in hours) as covariates in the analyses did not change the findings. These results provide partial support for H1, H4, and H5, but contradict H2.

A mediation analysis was performed using PROCESS model 4 (Hayes, 2017) to test whether the effect of product name (coded as 0 = plant-based and 1 = meat alternative) on

predicted quantity consumed (i.e. how many sliders a participant would eat as a meal; scale 0 = None to 7 = More than 6), was mediated by healthiness perceptions (scale: 1 = Unhealthy to 7 = Healthy). The results, based on 5,000 bootstrapped samples, revealed that product name had a significant negative effect on perceived healthiness ($\beta = -.59$; $SE = .24$; $t = -2.46$; $p = .02$), such that the product named meat alternative had lower perceptions of healthiness than the one named plant-based. Perceived healthiness had a significant positive effect on predicted quantity consumed ($\beta = .20$; $SE = .06$; $t = 3.05$; $p < .01$), such that an increase in perception of healthiness was related to an increased predicted number of sliders. Furthermore, the main effect of product name on predicted quantity consumed was significant ($\beta = .39$; $SE = .19$; $t = 2.01$; $p = .05$), and the direct effect remained significant ($\beta = .51$; $SE = .19$; $t = 2.62$; $p < .01$). The 95% bias corrected confidence interval for the indirect effect did not include 0 (95% CI = [-.26; -.01]), therefore the mediation was significant (Hayes, 2017). These results provide evidence in support of H4B over H4A. See Figure 1 for the mediation analysis depicted.

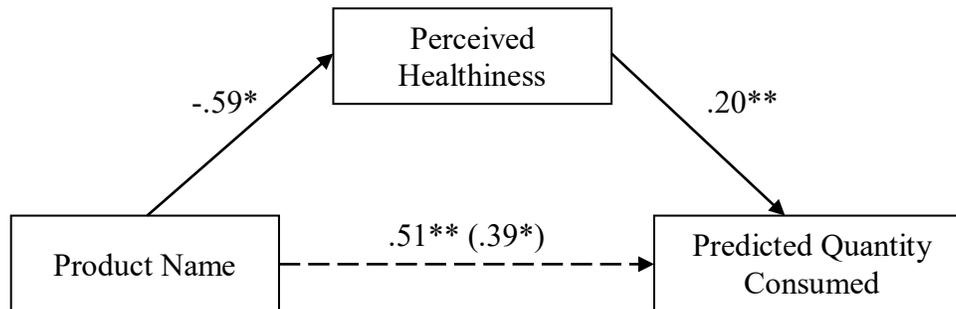


Figure 1. Perceived healthiness mediates the effect of product name on predicted quantity consumed, Study 1

Note. * indicates $p < .05$; ** indicates $p < .01$.

Another mediation analysis was performed using PROCESS model 4 (Hayes, 2017) to test whether the effect of product name on predicted quantity consumed was mediated by environmental friendliness perceptions (scale: 1 = Bad for the environment to 7 = Good for the environment). The results, based on 5,000 bootstrapped samples, revealed that product name had a significant negative effect on perceived environmental friendliness ($\beta = -.57$; $SE = .22$; $t = -2.52$; $p = .01$), such that the product named meat alternative was perceived as less

environmentally friendly than the one named plant-based. Perceived environmental friendliness had a significant positive effect on predicted quantity consumed ($\beta = .24$; $SE = .07$; $t = 3.54$; $p < .01$), such that increases in perceived environmental friendliness lead to higher predicted number of sliders. Furthermore, the main effect of product name on predicted quantity consumed was significant ($\beta = .39$; $SE = .19$; $t = 2.01$; $p = .05$), and the direct effect remained significant ($\beta = .53$; $SE = .19$; $t = 2.76$; $p < .01$) when the mediator was added to the model. The 95% bias corrected confidence interval for the indirect effect did not include 0 (95% CI = [-.30; -.02]), therefore the mediation was significant (Hayes, 2017). These results provide evidence in support of H5B over H5A. Note that including previous experience of plant-based meat alternative products, familiarity with plant-based meat alternative products, and/or when participants last ate (in hours) as covariates in both mediation analyses did not change the findings. See Figure 2 for the mediation analysis depicted.

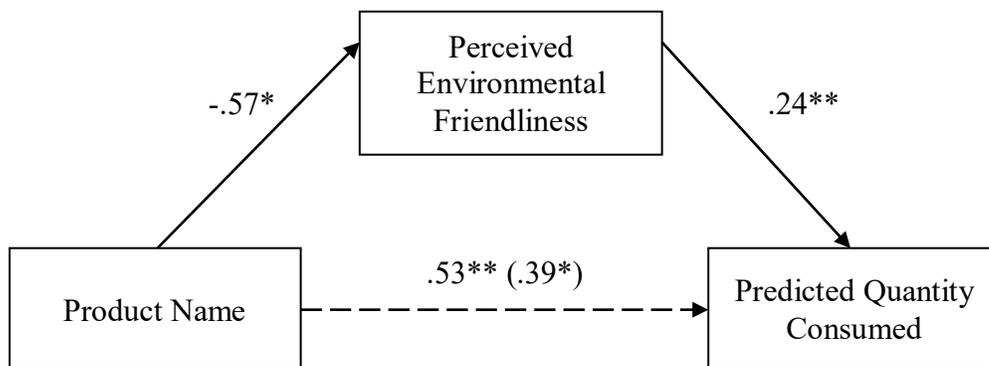


Figure 2. Perceived environmental friendliness mediates the effect of product name on predicted quantity consumed, Study 1.

Note. * indicates $p < .05$; ** indicates $p < .01$.

In sum, the results of Study 1 first provided partial support for H1. While the findings revealed that the product with the name plant-based was rated more positively in terms of perceived healthiness and environmental friendliness than the product named meat alternative, there was no evidence that product name influenced perceived enjoyment and ethicality. These results thus partially support the notion that the name of a product influences consumer perception, since showing participants the exact same product with different names resulted in different perceptions of the product, at least on certain dimensions. Study 1 also found a

significant effect between product name and likelihood to try the product, but contrary to the prediction in H2, participants were more likely to try the product under the name plant-based (vs. meat alternative). Therefore, H2 was not supported. Finally, Study 1 found support for H4B and H5B, as these hypotheses predicted that the product perceived as healthier and more environmentally friendly (i.e., plant-based) would lead to a decrease (vs. increase in H4A and H5A) in predicted consumption of the product. Furthermore, the mediation analyses revealed that perceived healthiness and environmental friendliness both mediated the effect of product name on predicted consumption.

Study 2

The goal of Study 2 was to provide support for H3A, by testing whether there is an interaction between product name and packaging color, such that a match between the name plant-based and color green (vs. meat alternative and red) will result in increased (decreased) perceptions of product health, ethicality, and environmental friendliness, but decreased (increased) perceptions of taste, flavor, and enjoyment, as well as likelihood to try the product. It also predicted in H3B that the mismatched conditions would fall between the levels of the matched conditions. Study 2 also tested whether similar interaction effects would be observed for H4 and H5.

Method

Three hundred and sixty-two participants took part in the study, but the sample was reduced to two hundred and seventy-four participants ($M_{age} = 33.5$; $SD = 11.62$; 43.4% female) after data exclusions. As in Study 1, vegetarian and vegan participants were excluded, as well as those who have tried Lightlife products in the past. Furthermore, participants who failed the attention check and those who left comments in poor English were removed, as these indicated potential data quality problems. Participants were recruited from the online platform Prolific, and were compensated £0.50 (CAD\$0.85) for a 5-minute study. As a cover story, participants were told that they were taking part in a marketing research study conducted by Lightlife to better understand consumer's perceptions of their products. An actual image of Lightlife's plant-based meat alternative ground product packaging was used, but with a modified label. The colors red and green were selected for the packaging color to elicit color-related associations (i.e. green

representing plants and red representing meat). Participants were randomly assigned to one of four experimental conditions.

The first matching condition showed participants the product with the name “Plant-Based Ground” and a front-of-package label that read “Made from plants” matched with a green product packaging, as both the color green and the name plant-based are related to plants. The second matching condition presented participants the product with the name “Meat Alternative Ground” and a front-of-package label that read “Meat made from plants,” matched with a red product packaging, as both the color red and the name meat alternative are related to meat. The first mismatching condition showed the product with the name “Plant-Based Ground” and a front-of-package label that read “Made from plants,” but with a red product packaging. The second mismatching condition presented participants with the product named “Meat Alternative Ground,” a front-of-package label that read “Meat made from plants,” and a green product packaging. Apart from the front-of-package label, product name, and color, all other product information remained constant. See Appendix D for the stimuli.

After being presented with the product packaging, participants were asked to rate the product on the following bipolar scales (from 1 to 7): unhealthy-healthy, tasteless-tasty, flavorless-flavorful, unenjoyable-enjoyable, unpleasant-pleasant, bad for the environment-good for the environment, unethical-ethical, processed-natural, and non-nutritious-nutritious. Participants were also asked their likelihood of trying Lightlife’s product on a scale from extremely unlikely (1) to extremely likely (7).

Next, participants were asked to imagine they could try burger sliders (mini burgers) each made using 2 ounces of Lightlife’s ground product. The instructions were accompanied by an image of a plate of burger sliders, which included a small picture of the product packaging in the top left corner as a reminder (see Appendix D for the stimuli). Participants were asked how full and how satisfied they would feel after eating one 2-ounce slider using two items anchored from very hungry/unsatisfied (1) to very full/satisfied (7). They were also asked how many sliders they would eat as a full meal (lunch or dinner; scale 0 = None to 7 = More than 6).

In Study 2, questions were added related to goal activation. Building on the mediation effects of perceived healthiness and environmental friendliness found in Study 1, I wanted to test

if these product evaluations also activated goals related to eating healthy and/or environmental friendliness, to provide additional evidence for H4 and H5. To do so, participants were presented with the following prompt: “To what extent does Lightlife’s plant-based/meat alternative ground makes you think about...” They were asked to rate their responses on the following variables (scale: 1 = Not at all to 7 = Extremely): eating healthy, having a healthy lifestyle, taking care of your health, eating sustainable foods, having a sustainable lifestyle, and taking care of the environment. Finally, participants were presented with standard demographic questions, as well as question about when they last ate (as a proxy for hunger), their diet, their prior experience with the Lightlife brand and plant-based meat alternative products, and their familiarity with plant-based meat alternative products.

Results and Discussion

Before conducting the analyses, the items related to perceived enjoyment (i.e., tasty, flavorful, enjoyable, and pleasant) were combined into a perceived enjoyment variable ($\alpha = .93$). The two items related to perceived satiety (i.e., how full and how satisfied participants would feel after consuming one slider) were also combined into a predicted satiety variable ($r = .79, p < .01$). Further, the health and environmental goals were combined into separate variables. Specifically, the items eating healthy, having a healthy lifestyle, and taking care of your health were averaged into “health goal” ($\alpha = .95$), and the items eating sustainable food, having a sustainable lifestyle, and taking care of the environment were averaged into “environmental goal” ($\alpha = .93$).

Two-way ANOVAs were conducted with product name and package color as the independent variables and each product evaluation variable as the dependent variables. Overall, there were significant interaction effects of product name and package color on likelihood to try the product, predicted satiety, and environmental goal, as well as a marginal interaction effect on perceptions of environmental friendliness. No significant interaction effects were found for the other evaluation variables (i.e., health perceptions, perceived enjoyment, ethical, natural, nutritious, predicted quantity consumed, and health goal; all $ps > .10$). Note that the same analyses were run without data exclusions and the results remained similar (see Appendix E for analyses). Also note that including previous experience of plant-based meat alternative products,

familiarity with plant-based meat alternative products, and/or when participants last ate (in hours) as covariates in the analyses did not change the findings.

Specifically, a two-way ANOVA was first conducted to test the effects of product name and package color on perceived environmental friendliness. No significant main effects of product name, $F(1,270) = 0.22, p = .64$, or package color, $F(1, 270) = 0.96, p = .33$, were found. The results however revealed a marginal interaction effect between product name and package color on perceived environmental friendliness, $F(1, 270) = 3.64, p = .06$. To break down this interaction, pairwise comparisons were conducted comparing the effects of product name on perceived environmental friendliness across different package color conditions. This analysis revealed a significant effect of package color in the meat alternative condition, $F(1, 270) = 4.54, p = .03$, but no significant relationship in the plant-based condition, $F(1, 270) = 0.40, p = .53$. Specifically, for the meat alternative product, the matched condition was rated as being better for the environment ($M = 5.95, SD = 1.05$) than the mismatched condition ($M = 5.52, SD = 1.37$).

Another two-way ANOVA was conducted to test the effects of product name and package color on likelihood of trying the product. No significant main effects of product name, $F(1,270) = 0.32, p = .57$, or package color, $F(1, 270) = 0.67, p = .41$, were found. The results however revealed a significant interaction effect between product name and package color on likelihood to try, $F(1, 270) = 4.68, p = .03$. To break down this interaction, pairwise comparisons were conducted comparing product name to trial likelihood across package color conditions. This analysis revealed a significant effect in the meat alternative condition, $F(1, 270) = 4.84, p = .03$, but no significant relationship in the plant-based condition, $F(1, 270) = 0.83, p = .36$. Specifically, for the meat alternative product, participants expressed higher likelihood of trying the product in the matched condition ($M = 4.65, SD = 1.85$) than the mismatched condition ($M = 3.99, SD = 1.98$).

A two-way ANOVA was also conducted to test the effects of product name and package color on predicted satiety. No significant main effects of product name, $F(1,270) = 0.28, p = .60$, or package color, $F(1, 270) = 0.30, p = .59$, were found. The results however revealed a significant interaction effect between product name and package color on predicted satiety, $F(1, 270) = 6.19, p = .01$. To break down this interaction, pairwise comparisons were conducted

comparing product name to predicted satiety across package color conditions. This analysis revealed a significant effect in the plant-based condition, $F(1, 270) = 4.25, p = .04$, but no significant relationship in the meat alternative condition, $F(1, 270) = 2.06, p = .15$. Specifically, for the plant-based product, participants rated the mismatched condition as being more satisfying ($M = 4.29, SD = 1.44$) than the matched condition ($M = 3.75, SD = 1.51$).

A final two-way ANOVA was conducted to test the effects of product name and package color on participant's environmental goal. While there was a marginal main effect of product name, $F(1,270) = 3.44, p = .07$, there was no significant main effect of package color, $F(1, 270) = .99, p = .32$. The results also revealed a significant interaction effect between product name and package color on environmental goal, $F(1, 270) = 3.89, p = .05$. To break down this interaction, pairwise comparisons were conducted comparing product name to environmental goal across package color conditions. This analysis revealed a significant effect in the meat alternative condition, $F(1, 270) = 4.78, p = .03$, but no significant relationship in the plant-based condition, $F(1, 270) = .44, p = .51$. Specifically, for the meat alternative product, participants rated the matched condition as making them think more about environmental friendliness ($M = 5.36, SD = 1.45$) than the mismatched condition ($M = 4.82, SD = 1.72$). See Figure 3 for interaction effects of product name and package color on environmental friendliness, trial likelihood, predicted satiety, and environmental goal.

Next, to provide further evidence for H5, a moderated-mediation analysis was conducted with product name (coded as 0 = plant-based and 1 = meat alternative) and package color (coded as 0 = mismatch and 1 = match) as independent variables, predicted satiety as the dependent variable, and environmental goal as the mediator. Predicted satiety was selected as the dependent variable as it is the closest proxy for predicted consumption, since there was no interaction effect on predicted quantity consumed in this study. Environmental goal was selected as the mediator as it provides further evidence for H5 through goal activation resulting from product evaluation, as perceptions of environmentally friendliness were related to environmental goal based on a linear regression ($\beta = .66; SE = .06; t = 10.33; p < .01$).

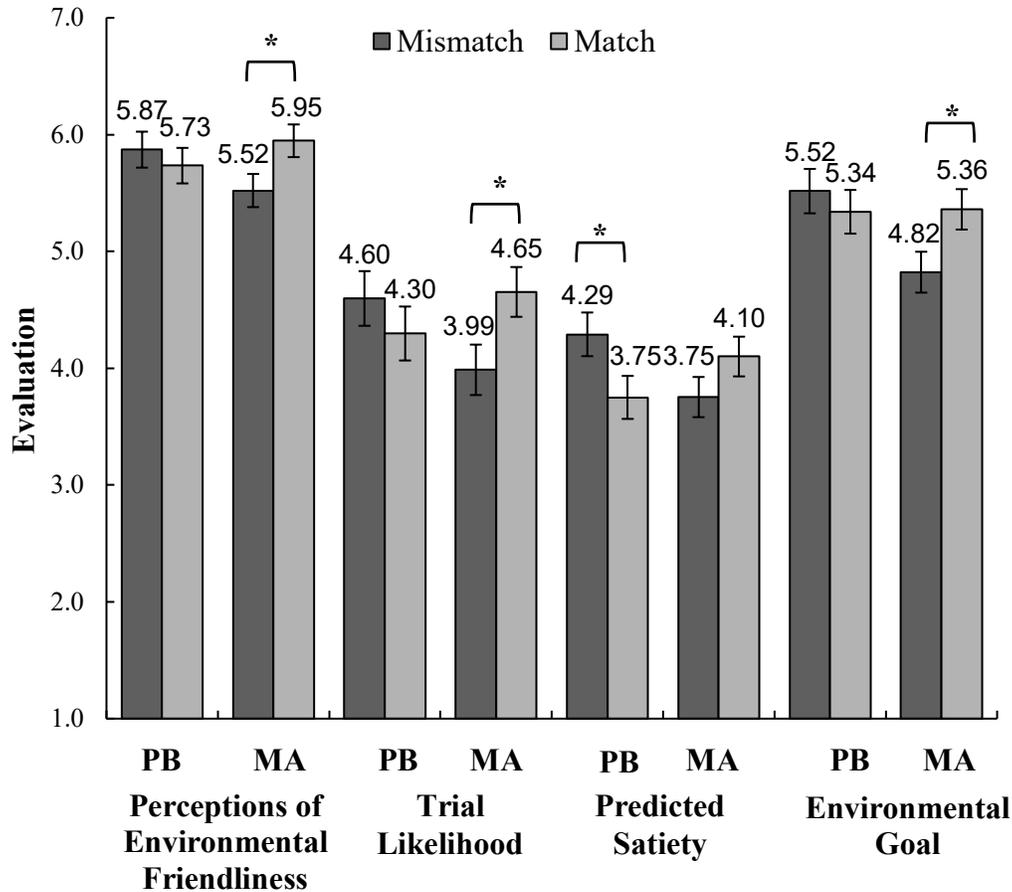


Figure 3. Marginal or significant interaction effects of product name and package color, Study 2.

Notes. PB indicated plant-based and MA indicates meat alternative. Error bars represent +/- 1 standard error. *indicates significant pairwise comparisons ($p < .05$).

I ran the moderated-mediation analysis using PROCESS Model 8 (Hayes, 2017). The results, based on 5,000 bootstrapped samples, first indicated a significant interaction between product name and package color on environmental goal ($\beta = .72$; $SE = .36$; $t = 1.97$; $p = .05$), as well as a significant main effect of product name ($\beta = -.69$; $SE = .26$; $t = -2.69$; $p < .01$), but no main effect of package color ($\beta = -.18$; $SE = .27$; $t = -.67$; $p = .51$). The interaction between product name and package color on predicted satiety remained significant when the mediator was added to the model ($\beta = .66$; $SE = .34$; $t = 1.94$; $p = .05$). There also was a significant main effect of package color ($\beta = -.48$; $SE = .25$; $t = -1.95$; $p = .05$), but no main effect of product name ($\beta = -.32$; $SE = .24$; $t = -1.31$; $p = .19$), on predicted satiety. Further, there was a main

effect of environmental goal on predicted satiety ($\beta = .31$; $SE = .06$; $t = 5.53$; $p < .01$). Because the 95% bias corrected confidence interval for the index of moderation-mediation did not include 0 (95% CI = [.01; .48]), the moderated-mediation was significant (Hayes, 2017). Note that including previous experience of plant-based meat alternative products, familiarity with plant-based meat alternative products, and/or when participants last ate (in hours) as covariates in the analyses did not change the findings. Environmental goal therefore mediated the relationship between product name and package color on predicted satiety, thus providing further evidence for the proposed effect of environmental friendliness in H5. See Figure 4 for the moderated-mediation model.

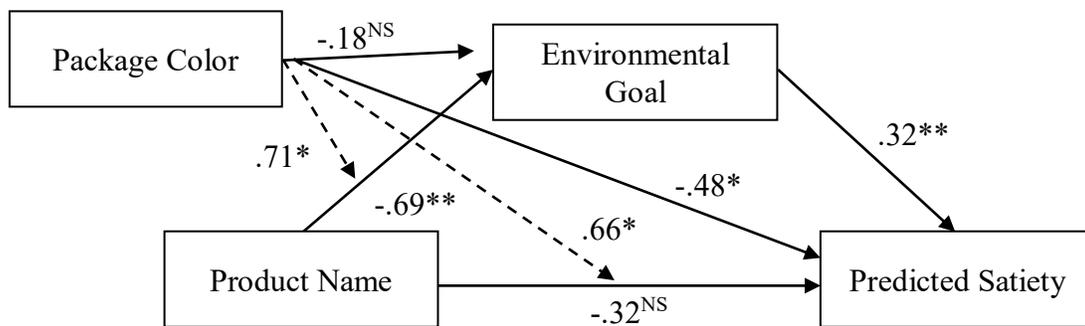


Figure 4. Environmental goal mediates the interaction effect of product name and package color on predicted satiety, Study 2.

Note. * indicates $p < .05$; ** indicates $p < .01$; NS indicates not significant. Straight lines indicate main effects, dashed line indicates interaction effect.

In sum, Study 2 demonstrates that color (mis)match moderates the effect of product name on consumers' environmental friendliness perceptions, trial likelihood, predicted satiety, and environmental goal. However, the effect on trial likelihood was the only one that was consistent with the predicted interaction effects in H3. Study 2 also did not manage to replicate the partial support for H1, and the support for H2 and H4B, found in study 1, as there was no main effect of product name on health and environmentally friendly perceptions, trial likelihood, or predicted quantity consumed. In addition, Study 2 provided support for the hypothesized effect of environmental friendliness in H5, but it is unclear whether it lends further support for H5B, as in Study 1, or if it instead provides support for H5A (and predicted satiety should be negatively correlated with predicted quantity consumed). The interaction effect of product name and

packaging color on predicted consumption through environmental goals thus seems more complex than originally predicted.

General Discussion

The goal of my thesis was to examine plant-based meat alternative products' marketing cues, and to better understand how consumers perceive these products in terms of taste, health, and environmental friendliness, among others. I also wanted to explore which product packaging approach would be most effective for plant-based meat alternative products in terms of their naming and the colors used on their packaging. Finally, I wanted to determine if predicted consumption would change depending on the health and environmentally friendly perceptions of these products. Overall, I wanted to study plant-based meat alternative products' marketing cues, and related consumer perceptions and predicted behaviors, because of these products' ambiguity, the lack of academic research in marketing on them, and their growing popularity in the marketplace.

Plant-based meat alternative products have been gaining much attention, as they have been increasingly present on grocery store shelves, and are becoming popular menu items in big restaurant franchises (e.g., Burger King; Piper, 2020). Although plant-based meat alternative products have become more well-known and accessible, it is surprising to know that little research has been conducted on the best marketing strategies for such products. This may explain why plant-based meat alternative companies use such different marketing and packaging strategies, from different product names (e.g., plant-based vs. meat alternative) to different colors on their packaging (e.g., red vs. green). It is for this reason that I wanted to better understand how consumers view these new products and which marketing strategies would work best to promote them.

Summary of Studies

The pilot study aimed to gain a better understanding of the strength of associations of different food products, names, and colors in consumers' minds. The goal of the pilot study was to provide support for the hypotheses presented in this thesis. The findings of the pilot study revealed that the name plant-based made participants think of plants (vs. meat) to a greater extent

than the name meat alternative. Furthermore, vegetables were seen as the most environmentally friendly and healthy food, as compared to plant-based foods, animal-based foods, and meat (which was rated the worst on both aspects). In terms of color associations, the color red was more strongly associated with meat (vs. plants), while the color green was more strongly associated with plants (vs. meat).

Study 1 found partial support for H1, as the product named plant-based was perceived as healthier and more environmentally friendly, compared to the product named meat alternative. Although H1 also hypothesized that the meat alternative (vs. plant-based) product would perform better in terms of enjoyment (e.g., taste, etc.) and worse in terms of ethical perceptions, no support was found. Study 1 also did not support H2 as, contrary to what I hypothesized, the plant-based product had a higher trial likelihood than the one named meat alternative. Study 1 also showed that the plant-based product (higher health perceptions) had lower predicted quantity consumed than the meat alternative product (lower health perceptions), providing support for H4B over H4A. Furthermore, Study 1 revealed that the plant-based product (higher environmentally friendly perceptions) had lower quantity consumed than the meat alternative condition (lower environmentally friendly perceptions), providing support for H5B over H5A. Mediation analyses further revealed that health and environmentally friendly perceptions respectively mediated the relationship between product name and predicted consumption. The greater perceived healthiness and environmental friendliness of the name plant-based (vs. meat alternative) thus negatively impact predicted consumption, in line with related prior findings (Farmer et al., 2017; Raghunathan et al., 2006).

Study 2 mostly focused on testing H3, H4, and H5. Hypothesis 3A predicted that a match between the name meat alternative and color red (vs. plant-based and green) would lead to increased (decreased) perceptions of product enjoyment, but a decreased (increased) perception of health, ethicality, and environmental friendliness. This hypothesis was not supported. An interaction effect between packaging color and product name was found for perceptions of environmental friendliness, such that a match between the name meat alternative and the color red resulted in higher ratings of perceived environmental friendliness. Relatedly, the meat alternative matching condition generated higher activation of participants' environmental goal. No other significant relationships were found for the other variables, including enjoyment,

ethicality, and health. The fact that the matched meat alternative condition resulted in higher perceptions of environmental friendliness was surprising, as the pilot study revealed that meat was less associated with environmental friendliness, and because Study 1 found that the plant-based (vs. meat alternative) product was viewed as more environmentally friendly. Further, H3A predicted that the meat alternative matching condition would result in the highest trial likelihood, which was supported by the results of Study 2, and is in line with the business strategies of plant-based meat alternative companies. Conversely, Study 1 found that the plant-based product had the highest trial likelihood among participants, which indicates that once color was added as another independent variable, the relationship between product name and package color became more complex than what was originally expected. Potential explanations for these effects are discussed in the Limitations and Future Research section.

Study 2 also aimed to find support for H4 and H5, related to health and environmentally friendly perceptions of plant-based meat alternative products and their potential effect on predicted consumption. First, while there was no effect on predicted quantity consumed, there was an interaction effect of product name and packaging color on predicted satiety. Although satiety is not a direct measure of predicted consumption, greater predicted satiety should result in lower predicted consumption, and thus can act as an indirect proxy. Specifically, for the plant-based product, the mismatched (red) packaging increased perceptions of satiety compared to the matched (green) package. Relatedly, Study 1 found lower predicted consumption for the plant-based (vs. meat alternative) product. Even if the results are consistent across the two studies, the fact that the mismatched plant-based condition was predicted as most filling and satisfying was not expected. Furthermore, because there was no interaction effect of product name and package color on health perceptions and participants' health goal, nor main effects of either variable, no support for H4 was found in Study 2, contrary to Study 1. Conversely, interaction effects of product name and packaging colors were found for environmentally friendly perceptions and participants' environmental goal. In addition, participants' environmental goal mediated the interaction effect of product name and packaging color on predicted satiety. While the complexity of the moderated-mediation effect made it difficult to rule in favor of either H5A or H5B, it at least seemed to provide support H5 and the role of environmental friendliness.

Note that a series of calibration studies were ran before Study 1 and 2 with different

samples, namely marketing research practicum participant pool. See Appendix F for the stimuli, description, and results of the studies.

Theoretical and Practical Contributions

My thesis findings are relevant to both marketing academics and professionals. First, my thesis contributes to the scarce marketing literature on plant-based meat alternative products. Although these products are becoming increasingly prevalent in stores and in restaurants, little academic research has been conducted on how to effectively market them. My thesis thus helps build our understanding of consumers' perceptions of ambiguous food products. For instance, the pilot study revealed important information about how consumers perceive different marketing cues like product names and colors, as well as health and environmentally friendly associations of different food products. Studying these associations will ultimately aid in gaining a better understanding of consumers' perceptions of plant-based meat alternative products.

Further, my thesis contributes to the literature on product naming, which had important practical implications. Past research has pointed out the effects of using different names for a product (Wansink et al., 2005; Turnwald et al., 2017; Bryant & Barnett, 2019), and different product names also influenced participants' perceptions of plant-based meat alternatives in my thesis (e.g., health, environmental friendliness). My findings suggest that the names plant-based and meat alternative generate different associations for consumers. Better understanding these associations is important for marketers as, for example, plant-based meat alternative products' healthiness has been questioned by consumers (Todd, 2019). Therefore, if the name plant-based lead to greater perceptions of healthiness, this name may help counteract some consumers' negative perceptions (assuming the product is indeed healthy).

In addition, my thesis builds on the literature of the effects of color on product packaging to contribute to our understanding of the effects of color (mis)matching. Past work has shown that consumers prefer the colors on a product package to match the contents of that package, rather than a mismatch between product and package color (Ketrón & Spears, 2020). Relatedly, my thesis found that a matched package color and product name produced a higher willingness to try a meat alternative (vs. plant-based) product. However, the interaction effects of product name and packaging colors turned out to be more complex than hypothesized, and should be

further unpacked in future research. These findings suggest that marketers of plant-based meat alternatives should put more care into their color choice for their product packages, and whether those colors match the product name. As previously mentioned, plant-based meat alternative brands use a combination of names and colors for their product packaging, and they are not always consistent in terms of matching colors and names based on their associations, which could have important unexpected consequences on consumers' perceptions and behaviors.

The choice of product name and package color could also have implications in terms of the placement of plant-based meat alternative products within grocery stores. As mentioned in the introduction, the placement of plant-based products within grocery stores has been a debated topic, with some arguing that plant-based meat alternatives should be featured beside animal-based proteins, while others believe that they should be in separate sections of the store (Lombardo, 2019). If plant-based meat alternative products are to be sold alongside animal-based protein, perhaps they would benefit from using meat-related cues (i.e., meat alternative name and red product package), while if they were in their own plant-based product category in stores, perhaps they would benefit from using plant-related cues (i.e., plant-based name and green product package) in order to fit into these product categories respectively. On the other hand, perhaps using the opposite cues would aid in standing out amongst the other products within the category they are being sold in. Further research could continue to explore the impacts of product name and package color in the retail environment.

Finally, my thesis contributes to the literature on the effects of health and environmental friendliness on consumption. The different product names used in this research resulted in different, though inconsistent across studies, health- and environmentally friendly-related perceptions, which in turn impacted participants' predicted consumption of a plant-based meat alternative product. The effect of healthiness perceptions found in Study 1 (but not Study 2) seemed more consistent with prior findings showing that health-related associations negatively impact consumer preferences (Raghunathan et al., 2006), as opposed to other past research showing that health-related associations increase food consumption (Finkelstein & Fishbach, 2010). Similarly, the effect of participants' environmentally friendly perceptions (Study 1) or goal (Study 2) seemed more consistent with prior findings showing that environmentally friendly-related associations decrease food consumption (Farmer et al., 2017), as opposed to

other past research showing that environmentally friendly-related associations increase product consumption (Lin & Chang, 2012). Marketers should thus be mindful of consumers' associations with different product names and packaging colors they may use, as they can have important consequences on consumption and, consequently, sales. For instance, I found that the name plant-based (vs. meat alternative) resulted in lower predicted quantity consumed (Study 1) and greater predicted satiety (Study 2), even if the results were inconsistent across studies. As another example, I also found that mismatching the packaging color of a meat alternative product negatively impacted some of the participants' evaluations of the product.

Limitations and Future Research

As previously mentioned, this thesis was produced during the COVID-19 pandemic. Because in-person research in the lab was prohibited at the time, this restriction posed a limitation to my thesis. Originally, one of the goals of my thesis was to collect actual consumption data of plant-based meat alternative products in a lab setting. Given that this was no longer possible and research had to be moved online, I had to rely on the measure of predicted consumption instead. Although my findings still provide a good basis for predicting how consumption may differ based on product name, it would have been interesting to see whether and how actual consumption would have also been impacted.

Another limitation of my thesis is related to sampling. In both my studies, participants were asked whether they were meat eaters, flexitarian, vegetarian, or vegan. Although my thesis focused on flexitarian and meat eating participants, which was in line with the main target market of newer plant-based meat alternative products (Todd, 2019), it would have been interesting to also study vegetarian and vegan consumers' perceptions. Both my studies unfortunately had only a small number of vegetarian and vegan participants, which prevented me from being able to make comparisons with meat eaters and flexitarians. Such comparisons may be an interesting avenue for future research, as different marketing strategies may work better for different types of consumers, depending on their diets. For example, past research has shown that some vegetarians reported a sense of disgust when thinking about consuming meat (Jabs et al., 1998). In addition to the fact that newer plant-based meat alternative products are made to imitate meat as much as possible (Wellesley, 2019), my pilot study showed that the color red and

the name meat alternative were more strongly associated to meat, to different extent. Using the combination of a red product packaging and the product name meat alternative may thus be an ineffective or unappealing marketing strategy to use with vegetarian or vegan consumers (as opposed to the color green and the name plant-based). Relatedly, the lack of effect on perceived enjoyment (e.g., taste, flavor, etc.) could be due to the fact that flexitarian and meat eating consumers generally have more negative taste-related perceptions of plant-based meat alternative products, as compared to vegans and vegetarians. Comparing taste- and enjoyment- related perceptions across vegan/vegetarians and flexitarian/meat eating consumers could also help better understand whether and how the *unhealthy = tasty intuition* (and vice versa) identified by Raghunathan and colleagues (2006) impact (some) consumers' perceptions of plant-based meat alternative products.

An additional limitation was related to the mediation analyses conducted in Study 1 and 2. Traditional views on mediation analyses (e.g., Baron & Kenny, 1986) stated that a mediation analysis begins with a significant relationship between the independent and dependent variable, but once the mediator is introduced, this relationship should no longer be significant. However, in both Studies 1 and 2, the relationship between the independent variable(s) and the dependent variable remained significant after the addition of the mediator(s) in the model. This effect that remained significant could be due to a competitive mediation, meaning that the chosen mediator, even if theoretically consistent, is not the only potential mediating variable that could play a role in the effect (i.e., omitted mediator; Zhao, Lynch Jr., & Chen, 2010). This offers another avenue for future research, as researchers can explore which variables, other than health or environmentally friendly perceptions, could have an effect on predicted consumption.

The conflicting effect of environmental friendliness on predicted consumption across my studies also offer interesting opportunities for future research. Indeed, they could be due to additional, untested product associations with plant-based meat alternatives in general, and different product names and packaging colors in particular. Specifically, I did not test whether plant-based meat alternative products are more strongly associated with strength (e.g., due to the fact that they are proteins) or gentleness (e.g., due to their health and environmental friendliness associations). Given that prior work has shown that sustainable products associated with strength (gentleness) are evaluated more negatively (positively) by consumers (Luchs et al., 2010), and

that consumers use greater quantities of sustainable products when they have product performance-related concerns (e.g., mouthwash; Lin & Chang, 2012), it seems important to determine whether these elements could also impact consumers' perceptions and consumption of plant-based meat alternative products.

Similarly, the unexpected moderating effects of packaging color (i.e., green vs. red) in Study 2 call for better unpacking them in future research. Perhaps when the product name and packaging color interact, different results than expected were found because certain products currently on the market have conflicting color and name combinations. For instance, Beyond Meat's packaging is mainly green, but it also has a silhouette of a cow, which mixes the green color related to plants with the cow image associated with meat. Some of Lightlife's plant-based products, on the other hand, use the color red on their packaging with the product name "plant-based burger," which mixes both plant and meat elements. Given that there is no consistency between color cues and naming cues for many plant-based meat alternative products on the market, consumers may have weaker or conflicting associations with commonly used product names and packaging colors in that product category. In addition, the conflicting findings between Study 1, where a neutral packaging color was used (i.e., brown), and Study 2 also offer opportunities for future research. I however did not pretest whether brown was perceived as more neutral than red or green, which is another limitation of this research. Assuming that it is the case, perhaps when a neutral packaging color is used, the product name becomes more salient (and thus more impactful) to consumers, whereas when packaging colors with stronger associations are used (e.g., red, green), product names and colors "compete" for consumers' attention. Future research could test whether this is the case.

A final avenue for future research would be to expand upon the packaging cues that I studied in my thesis. I chose to analyze product name and packaging color, but it would be interesting to examine other product packaging and marketing communication elements. For example, Beyond Meat uses the image of a silhouette of a cow on their product packaging. Assuming that the image of a cow conveys meat-related associations, I wonder if images such as these are effective imagery to use on product packaging for plant-based meat alternative products. Future research could also expand on front-of-package labels. For instance, Beyond Meat burger packages feature front-of-package labels that read "now even meatier" and

“marbled juiciness,” which are terms that are typically used to describe traditional beef burgers. Future research could determine whether such statements incite meat eating consumers to try the product, and dissuade vegetarian and vegans from trying the product.

In sum, plant-based meat alternatives have increasingly risen in popularity, especially during the COVID-19 pandemic (Terazono & Meyer, 2020). If society continues to move away from meat consumption and towards more plant-based foods, marketers should be better informed as to how to more effectively improve consumer perceptions, in order to support the trial and consumption of such products. Better understanding how various marketing cues may impact how consumers perceive, evaluate, and consume these products is crucial to help improve how they are marketed, and to keep growing this product category to support a more environmentally friendly form of eating. My thesis is a good starting point, but more research is needed to fully understand the complexity of plant-based meat alternative products’ marketing.

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Appendix A: Examples of Actual Product Packaging



Figure A1. Product packages for Beyond Meat and Impossible Foods plant-based meat alternative products. The color green can be seen as the predominant color on both product packages.



Figure A2. Product packages for Lightlife and Tofurky plant-based meat alternative product. The color red can be seen as the predominant color on both product packages.



Figure A3. Product packages for Lightlife plant-based meat alternative products. The colors red and green can both be seen as the predominant colors on the product packages.

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Appendix B: Stimuli Used in Study 1



Figure B1. Neutral (brown) packaging used as stimuli for Study 1 in the “meat alternative” condition. Front-of-package label reads “Meat made from plants.” All other product package information remains constant between conditions.



Figure B2. Neutral (brown) product packaging used as stimuli for Study 1 in the “plant-based” condition. Front-of-package label reads “Made from plants.” All other product package information remains constant between conditions.



Figure B3. Stimuli used in Study 1 to assess consumption levels of 2-ounce sliders (mini burgers). Image of “meat alternative” product packaging visible in upper left corner.



Figure B4. Stimuli used in Study 1 to assess consumption levels of 2-ounce sliders (mini burgers). Image of “plant-based” product packaging visible in upper left corner.

Reference

[Image of Burger Sliders]. The Cheesecake Factory. <https://www.thecheesecakefactory.com/menu/small-plates-snacks-appetizers/appetizers/roadside-sliders/>

Appendix C: Main Effects Without Data Exclusions - Study 1

Measure	Plant-Based		Meat Alternative		<i>F</i> (1, 181)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Healthy	5.85	1.24	5.29	1.58	7.10**
Tasty	4.35	1.48	4.02	1.46	2.29
Flavorful	4.34	1.50	4.21	1.57	0.34
Enjoyable	4.60	1.57	4.36	1.57	1.08
Pleasant	4.71	1.46	4.38	1.50	2.25
Perceived Enjoyment	4.50	1.39	4.24	1.42	1.53
Good For Environment	6.00	1.17	5.46	1.50	7.27**
Ethical	5.99	1.13	5.68	1.43	2.60
Likely To Try	4.54	1.83	3.93	1.78	5.09*
How Full	4.11	1.50	3.77	1.43	2.46
How Satisfied	4.21	1.36	3.73	1.26	6.19*
Predicted Satiety	4.16	1.34	3.75	1.27	4.55*
How Many Sliders	2.52	1.40	2.59	1.33	0.60

Note. * indicates $p < .05$, ** indicates $p < .01$

Appendix D: Stimuli Used in Study 2



Figure D1. Product packaging used in Study 2 as part of the matched condition. The color green and product name “plant-based” matched.



Figure D2. Product packaging used in Study 2 as part of the mismatched condition. The color green and product name “meat alternative” do not match.



Figure D3. Product packaging used in Study 2 as part of the matched condition. The color red and product name “meat alternative” match.



Figure D4. Product packaging used in Study 2 as part of the mismatched condition. The color red and product name “plant-based” do not match.



Figure D5. Stimuli used in Study 2 as part of the matched condition, to assess predicted levels of consumption of 2-ounce sliders (mini burgers). Image of “plant-based” green product packaging visible in upper left corner.



Figure D6. Stimuli used in Study 2 as part of the mismatched condition, to assess predicted levels of consumption of 2-ounce sliders (mini burgers). Image of “meat alternative” green product packaging visible in upper left corner.



Figure D7. Stimuli used in Study 2 as part of the matched condition, to assess predicted levels of consumption of 2-ounce sliders (mini burgers). Image of “meat alternative” red product packaging visible in upper left corner.



Figure D8. Stimuli used in Study 2 as part of the mismatched condition, to assess predicted levels of consumption of 2-ounce sliders (mini burgers). Image of “plant-based” red product packaging visible in upper left corner.

Appendix E: Interaction Effects Without Data Exclusions- Study 2

Measure	Plant-Based Matched		Plant-Based Mismatched		Meat Alternative Matched		Meat Alternative Mismatched		<i>F</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Environmentally Friendly Product Name x Package Color	5.92	.12	5.92	.12	5.97	.12	5.66	.12	1.65	1	.20
Trial Likelihood Product Name x Package Color	4.83	.19	4.88	.19	4.90	.19	4.30	.19	2.88	1	.09
Predicted Satiety Product Name x Package Color	4.17	.16	4.48	.16	4.27	.16	4.03	.16	3.08	1	.08
Environmental Goal Product Name x Package Color	4.17	.16	4.84	.16	4.27	.16	4.03	.16	1.39	1	.24

Appendix F: Summary of all Studies Ran for this Project

#1

Participant pool: Marketing Research Practicum
Stimuli:



Vs.

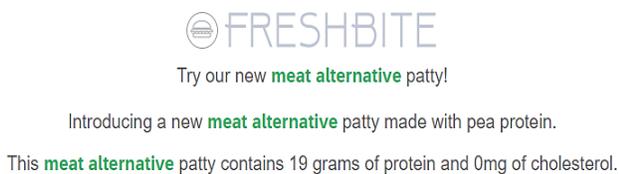


Measures: perceptions of health, environmentally friendliness, ethicality, and taste, likelihood to try the product, and willingness to pay

Results: no significant main effect of product name on perceptions of health, environmentally friendliness, ethicality, and taste, likelihood to try the product, and willingness to pay. When excluding vegan and vegetarian participants, there was a main effect of having tried plant-based meat alternative products on all dependent variables except willingness to pay.

#2

Participant pool: Marketing Research Practicum
Stimuli:



Vs.



Vs.



Measures: perceptions of health, environmental friendliness, ethicality, and taste, likelihood to try the product, and willingness to pay

Results: no interaction was found between product name and color matching. Main effects were found between having tried plant-based meat alternative products before and ethicality, taste, and likelihood of trying the product.

#3

Participant pool: Marketing Research Practicum
Stimuli:



Try our new **plant-based** patty!

Introducing our new **plant-based** patty made with pea protein.

This **plant-based** patty contains 19 grams of protein and 0mg of cholesterol.

Vs.



Try our new **meat alternative** patty!

Introducing our new **meat alternative** patty made with pea protein.

This **meat alternative** patty contains 19 grams of protein and 0mg of cholesterol.

Measures: perceptions of health, environmental friendliness, ethicality, and taste, likelihood to try the product, and willingness to pay.

Results: No main effects were found of product name on the dependent variables. A main effect of having tried a plant-based meat alternative before did have an effect on some dependent variables.

#4

Participant pool: Marketing Research Practicum
Stimuli:



Vs.



Measures: perceptions of health, environmental friendliness, ethicality, and taste, likelihood to try the product, and willingness to pay

Results: main effects were found of having tried a plant-based meat alternative before on all dependent variables. When vegan and vegetarian participants, and those who never tried Lightlife products before were removed from the dataset, a main effect of product name on mean taste variable and willingness to pay.

#5

Participant pool: Marketing Research Practicum
Stimuli:



Vs.



Vs.

Measures: perceptions of health, environmental friendliness, ethicality, and taste, likelihood to replace real meat with plant-based meat, predicted amount consumed, and feelings of fullness and satisfaction of eating the product.

Results: when vegan and vegetarian participants, and those who have never tried Lightlife products before were removed from the dataset, marginal main effects were found between product name and health, enjoyable, and feeling satisfied after eating one slider. Marginal interactions were also found between having tried a plant-based meat alternative before on healthy, tasty, enjoyable, mean enjoyment, feeling satisfied after eating one slider.

#6

Participant pool: Marketing Research Practicum
Stimuli:



Vs.



Measures: perceptions of health, environmental friendliness, ethicality, and taste, likelihood to try the product, predicted amount consumed, and feelings of fullness and satisfaction of eating the product. Also, product associations including color, product name, and associations of health and environmental friendliness of different food products were assessed.

Results: Vegan and vegetarian participants, and those who have never tried Lightlife products and last ate over 8 hours ago were removed from the dataset. Marginal main effects were found on healthy and significant. Main effects were found on how many sliders participants would consume as a full meal. All associations were significantly different from the scale's midpoint.

#7

Refer to Study 1 and Appendix B for stimuli used.

#8

Refer to Study 2 and Appendix D for stimuli used.

References

[Image of Burger with Grey Background]. Chatelaine. <https://www.chatelaine.com/food/plant-based-burgers-review-canada/>

[Image of Lightlife Package Blue Label]. Walmart. <https://www.walmart.ca/en/ip/lightlife-plant-based-burger/6000200373845>

[Image of Lightlife Package Red and Brown Label]. Vegan Essentials. <https://store.veganesentials.com/lightlife-plant-based-ground-beef-p5977.aspx>