The Impact of Packaging: How Color Saturation and Imagery Affect Purchase Intentions and Perceptions of Plant-Based Meat

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Abstract

As vegan and plant-based diets become increasingly popular, especially among younger generations, understanding how packaging design influences consumers' perceptions and purchase intentions is essential. Although previous research indicates that packaging affects consumers' purchase decisions and product perceptions, these effects remain underexplored in the context of plant-based meat. This knowledge is vital because some consumers still view plant-based meat as unhealthy and unappetizing, which may hinder its adoption. Overcoming these barriers could promote healthier, more sustainable food choices. This study examined how two packaging design elements, color saturation and front-of-pack imagery, affect perceptions of healthiness, tastiness, purchase intent, and brand image of plant-based meat. A 2 (color saturation: high vs. low) by 2 (imagery type: realistic image of a prepared meal vs. plant symbol) between-subjects design was used with 199 participants. Results showed that while color saturation did not significantly influence any of the outcomes, the presence of a realistic image of a prepared meal significantly impacted perceived healthiness and tastiness. These findings suggest that realistic food imagery may be more effective than color saturation in shaping consumer perceptions of plant-based meat. Therefore, marketers seeking to enhance the appeal of plant-based meat should consider using realistic images of prepared meals. Future research should address limitations such as static online images, using only one product, a homogeneous sample, and the lack of realistic consumption settings.

Introduction

Plant-based diets, such as the vegan diet, have recently gained popularity, especially among younger generations like Gen Z and Millennials (Marlen, 2020; Craig, 2009; Chaugule, 2023). People choose plant-based diets for various reasons, including health and environmental benefits. Compared to non-vegan diets, vegan diets lower cholesterol and blood pressure, and reduce the risk of type 2 diabetes (Graham et al., 2023). They also decrease greenhouse gas emissions by 21-70%, land use by 50-86%, and water use by 22-70% (Kustar & Patino-Echeverri, 2021). This growing interest in plant-based diets has prompted the food industry to develop alternatives to animal-based products (Stępień et al., 2023). Plant-based meat, for example, resembles animal-based meat in appearance, texture, and flavor but is entirely made from plants (Sucapane et al., 2021).

Despite these advantages, meat-based diets still dominate in Western countries (Modlinska et al., 2020). Several barriers make people hesitant to choose plant-based meat. Some may find it less tasty than animal meat (Begho et al., 2022). Additionally, some doubt the healthiness of plant-based meat because it is processed, and animal meat is still viewed as healthier (Michel et al., 2021; Hartmann et al., 2022). Packaging greatly influences perceptions of the product and brand image, ultimately affecting purchasing decisions.

This is especially important because consumers often have limited cognitive resources when shopping due to stress or time pressure, which can reduce the amount of packaging information they process (van Velzen, 2021). For example, nutrition labels or symbols on packaging can influence purchase intentions. However, this effect depends on how interested, knowledgeable, or motivated consumers are to examine and process that information (Bublitz et al., 2013). Visual design elements may be more effective in such cases than textual information. However, visual design choices can also have adverse effects. For instance, marketers might use metaphors on packaging, which use many cognitive resources, to trigger specific brand associations. These metaphors could be misunderstood and cause irritation or

frustration (van Rompay & Veltkamp, 2014). This can lead to an unclear or negative brand image, which may weaken brand credibility, trust, and sales (Gaur et al., 2024; Wang et al., 2024). Therefore, it is crucial to identify which packaging design elements are most effective and do not demand excessive cognitive effort.

While previous research has explored how visual packaging elements influence consumer perceptions of food in general, little research exists on how specific packaging design features interact to shape these perceptions in the context of plant-based meat. Much research, for example, has focused on visual packaging elements like color and imagery because they require less cognitive effort to process, allowing consumers to form expectations about the product more quickly (Gil-Pérez & Lidó, 2019). These studies found that color saturation and imagery have an impact on the product's perceived healthiness, tastiness, purchase intentions, and brand image (Chan & Zhang, 2022; Goukens & Klesse, 2022; Mead & Richerson, 2018; Wang et al., 2024; Spence & Velasco, 2018). For instance, da Fonseca et al. (2023) examined how the packaging color for plant-based burgers influenced consumer perceptions. They discovered that green is the primary color associated with plant-based burgers and also led participants to perceive the product as having better nutritional value. However, since plant-based meat is a relatively new food category, there is limited research on how specific color dimensions, such as saturation, impact consumer perceptions. Another commonly used visual packaging element is imagery. Imagery on the front of the packaging can affect how healthy a product appears (Dixon et al., 2025). Various types of imagery exist; however, research indicates that realistic food imagery is preferred and most effective at enhancing perceptions, such as perceived healthiness (Dixon et al., 2025; Huang et al., 2024).

Despite these findings, little research has examined how these two visual elements, color saturation and imagery, work together to influence perceptions of products and brands, as well as purchase intention, specifically in the context of plant-based meat. Since plant-based meat is a relatively new food category and faces some scepticism and barriers, it is

important to understand how visual packaging elements can foster positive consumer perceptions of the product and the brand. This understanding can encourage increased consumption of plant-based foods, benefiting both public health and environmental sustainability. Moreover, this knowledge can help the food industry make better marketing and branding decisions, as each decision can influence consumer expectations of the product (Rebollar et al., 2017).

This study used consumer psychology and communication theories to examine how packaging design influences consumer expectations. Accordingly, the present study aimed to contribute to the existing literature and fill the identified gap by specifically focusing on plant-based meat. The study sought to answer the question of how a combination of visual packaging elements, specifically color saturation and imagery, affects perceived healthiness, perceived tastiness, purchase intention, and perceived brand image.

The rest of this paper is organized as follows. The next section presents the theoretical framework, defining key variables and reviewing relevant literature. The methodology section then outlines the study design, measures, and procedure. Results are then presented, followed by a discussion of the implications, limitations, and future research directions.

Packaging Design and Consumer Perception

Color Saturation and Its Effects

Purchase Intention

Consumers often rely on System 1 thinking when grocery shopping to make quick decisions. System 1 thinking is fast and relies on intuition or heuristics (O'brien, 2012). Visual cues, such as packaging color, serve as shortcuts that generate quick expectations and associations that influence purchase intentions (Mead & Richerson, 2018). Purchase intention

encompasses all the feelings, thoughts, and situational cues customers consider before buying a product (Khuong & Tran, 2018).

Packaging color is a powerful visual cue that greatly influences both consumer behavior and purchase intention (Yu et al., 2021; Sucapane et al., 2021; da Fonseca et al., 2023). Research indicates that warm packaging colors boost purchase intention for less healthy foods, while cool colors enhance it for healthier options (Su & Wang, 2024). This phenomenon is explained by perceptual fluency, which refers to how easily consumers can process information (Su & Wang, 2024). Perceptual fluency increases when the packaging color aligns with the product, such as cool colors signaling freshness and healthfulness, making them most effective for healthier foods (Huang & Lu, 2015; Su & Wang, 2024). Selecting an inappropriate packaging color can misrepresent products and deter consumers from making a purchase (Su & Wang, 2024).

Besides hue, color saturation also influences purchase intention. Li et al. (2023) examined how saturation affects package choices for probabilistic goods like blind boxes or lucky bags, finding that highly saturated packaging significantly impacts purchase intention. They also identified a linear relationship between color saturation and purchase intention, meaning higher saturation leads to greater purchase intention. This is because more saturated colors attract more attention (Liang et al., 2024). However, there is limited research on how saturation influences purchase intention in the context of plant-based meats. Based on the aforementioned findings, this study suggests that it might be best for a vegan brand to choose cool colors, such as green, along with highly saturated packaging to appeal to consumers.

Brand Image

Packaging color plays a crucial role in branding because it communicates brand meanings and benefits, ultimately helping to build a strong brand image (Ghorbani & Westermann, 2025; Kauppinen-Räisänen, 2014). Brand image is defined as the combination

of consumers' beliefs and perceptions about a brand (Campbell, 1993). Aaker (1991) further describes brand image as a “set of brand associations that are anything linked in memory to a brand, usually in some meaningful way.” Packaging color is important in shaping these associations and perceptions.

Different colors convey different meanings and evoke various perceptions. A brand might choose warm colors to stimulate excitement and a sense of urgency, or opt for cool colors to foster associations with trust and competence (Kauppinen-Räisänen, 2014). Based on this, a vegan brand that wants to associate its image with trustworthiness might select cool colors like green. Additionally, green can signal healthiness and environmental friendliness (da Fonseca et al., 2023; Sun & Kim, 2023). Therefore, a vegan brand aiming to connect its image to health and environmental friendliness should choose green. Another important association for many brands is perceived brand quality (Vera, 2015). While no single color universally indicates quality, using colors aligned with category norms can improve both brand trust and perceived quality (Garaus & Halkias, 2019). For example, Beyond Meat, a well-known brand in the vegan food category, uses the color green (Sucapane et al., 2021). New vegan brands may also benefit from adopting this color. However, most research focuses on color hue rather than saturation. It remains unclear whether increasing saturation enhances perceived brand trustworthiness, healthiness, environmental friendliness, or quality.

Perceived Tastiness

Packaging color also influences taste perceptions. Color vision, an evolutionary trait, helps determine how tasty food seems. For example, color is used to judge whether an apple is fresh, ripe, and therefore tasty (Kunz et al., 2019). Likewise, packaging color acts as a cue for taste. For example, cool colors are associated with sour or salty flavors, while warm colors are linked to sweeter tastes (Spence et al., 2015). Hallez et al. (2022) found that beverages in cool-toned colors were perceived as less tasty than those in warm-toned colors. However, this

effect did not apply to snacks. This is because warm colors are associated with sweetness, leading to higher tastiness perceptions for beverages, but this association is less relevant for snacks like nuts and chips. Therefore, participants did not perceive snacks in cool-toned packaging as less tasty. This shows that product type matters when choosing a color.

Color saturation also influences taste perceptions. A study by Kunz et al. (2019) found that packaging with high color saturation was perceived as tastier than less saturated packaging because highly saturated colors appeared fresher. Consistent with these findings, Tijssen et al. (2017) discovered that products like dairy and sausages in highly saturated packaging colors are expected to taste better than those in less saturated packaging colors. This is because increased saturation is linked to higher expectations of sweetness for dairy and greater flavor intensity for sausages. Once again, this highlights how the product type influences color choice. Based on these findings, the current study suggests that it might be best for a vegan brand selling plant-based meat products to choose a highly saturated green for their packaging, as it is associated with freshness and saltiness, which suits the product.

Perceived Healthiness as a Mediator

Packaging not only conveys sensory or brand image cues but also signals information about the product's healthiness. For example, green is often used when marketers want to associate plant-based meat with nature or plants, which can cause people to perceive the product as healthier (Sucapane et al., 2021; Ribeiro et al., 2023; Theben et al., 2020). Additionally, a study by da Fonseca et al. (2023) found that green is the primary color linked to plant-based hamburgers. They found that green made participants perceive the product as having better nutritional value because of its connection to nature and health.

Beyond hue, color saturation also influences perceptions of healthiness, although research results are mixed. According to Mead and Richerson (2018), highly saturated colors on food packaging decrease perceived healthiness because such colors are associated with

indulgent and unhealthy foods. However, Kunz et al. (2019) found that beverages in more saturated packaging led participants to perceive the product as healthier. This may be because highly saturated colors enhance the perception of freshness (Wei et al., 2014). These conflicting findings highlight the need for further research, especially concerning plant-based meat. Since plant-based meat is a relatively new food category, visual packaging cues like color saturation could have an even greater impact on shaping consumers' perceptions. Therefore, the current study sets out to examine the effect of color saturation in the context of plant-based meat and hypothesizes that:

H1. The saturation of green in the packaging will enhance the perceived healthiness of the plant-based chicken.

Given that packaging color influences product perceptions, these perceptions could be transferred to the brand associated with the product. For example, one study found that the perceived healthiness of a product also correlates with the brand's health image (Chrysochou, 2010). For exploratory purposes, this study also examines whether perceived healthiness, affected by packaging color saturation, will influence other brand image aspects such as perceived brand trust, quality, and environmental friendliness. Therefore, this study hypothesizes that:

H2. Perceived healthiness will positively mediate the relationship between packaging color saturation (high vs. low) and perceived brand quality, trust, healthiness, and environmental friendliness.

Additionally, Huang & Lu (2015) analyzed how packaging color influences perceived healthiness and purchase intention. They found that perceived healthiness mediates the effect of color on purchase intention, especially among consumers concerned with food healthiness. Products, particularly utilitarian foods, in cool-toned packaging are perceived as healthier, which increases the likelihood of purchase. Based on this research, the present study aims to

determine whether these findings also apply when varying the saturation of a cool-toned color like green, and therefore proposes the following hypothesis:

H3. Perceived healthiness will positively mediate the relationship between color saturation (high vs. low) and purchase intention.

However, whether perceived healthiness leads to better perceived taste remains controversial. On the one hand, literature states that consumers often associate unhealthy food with better taste and view healthy food as less tasty (Liem et al., 2012). On the other hand, more recent studies indicate that people associate healthier foods with better taste (Haasova & Florack, 2019). Since the effect of a product's healthiness on taste appears uncertain, this study aims to analyze this effect in the context of plant-based chicken. Additionally, it seeks to examine whether perceived healthiness, which the packaging color saturation can influence, impacts perceived tastiness, leading to the hypothesis that:

H4. Perceived healthiness will positively mediate the relationship between packaging color saturation (high vs. low) and perceived taste.

The Moderating Role of Imagery on Packaging

In addition to color, marketers often include imagery on the front of packaging as another visual cue in packaging design (Lidón et al., 2018). Although textual cues on packaging seem sufficient to convey necessary information, images on the front of the packaging play a significant role in communicating details about the product's attributes (Bone & Russo, 2001). Furthermore, visual cues like imagery require less cognitive effort, allowing consumers to form expectations about the product more quickly (Gil-Pérez & Lidó, 2019). Therefore, imagery on the front of packaging can influence various perceptions of food, such as perceived healthiness (Baptista et al., 2022).

The contents of this imagery vary depending on the product, sometimes depicting the product inside the packaging, something more loosely related, or a combination of both

(Lidón et al., 2018). Therefore, it is common to see packaging with images depicting food not inside the package alongside the actual product. This is typically done to depict a serving suggestion (Gil-Pérez & Lidó, 2019).

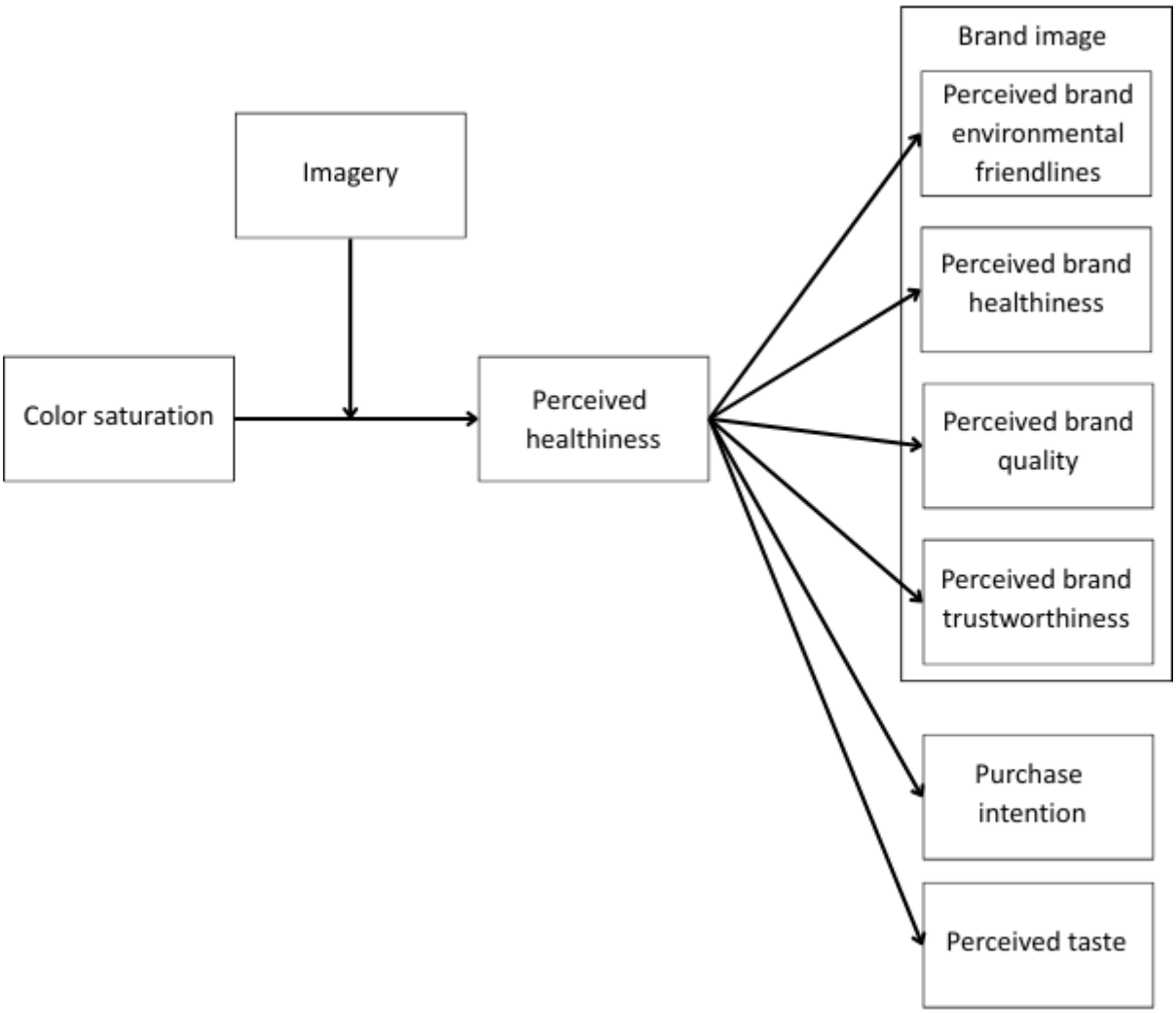
These different types of imagery influence consumer perceptions in various ways. For example, a study by Dixon et al. (2025) examined how different food imagery on packaging affects parents' perceptions of snacks for children. They tested three image conditions: a realistic food photo, a cartoonish illustration of food, and an image of children gardening. They found that parents perceived foods with realistic imagery as healthier. Dixon et al. (2025) explained that this happens because realistic food images attract attention and improve product evaluations. Additionally, Huang et al. (2024) studied the impact of images of ingredients versus finished products. They discovered that images showing the final product are preferred for ready-to-heat foods as they help consumers imagine what the cooked meal will look like. Furthermore, imagery can enhance the effects of packaging color. Luo et al. (2019) investigated how packaging colors and imagery influence perceptions and found that green packaging makes food appear healthier, and that including an image strengthens this effect. This is because images serve as more direct cues, helping consumers form clearer ideas or beliefs about the product (Thomas & Capelli, 2028).

Based on this research, it seems that realistic food imagery positively affects perceived healthiness. The current study aims to determine if this also applies to plant-based chicken. Therefore, the final hypothesis states:

H5. Adding realistic imagery of the prepared meal will positively moderate the relationship between color saturation and perceived healthiness, making the relationship stronger when realistic imagery is included.

Figure 1

Conceptual Model



Methodology

Pretest

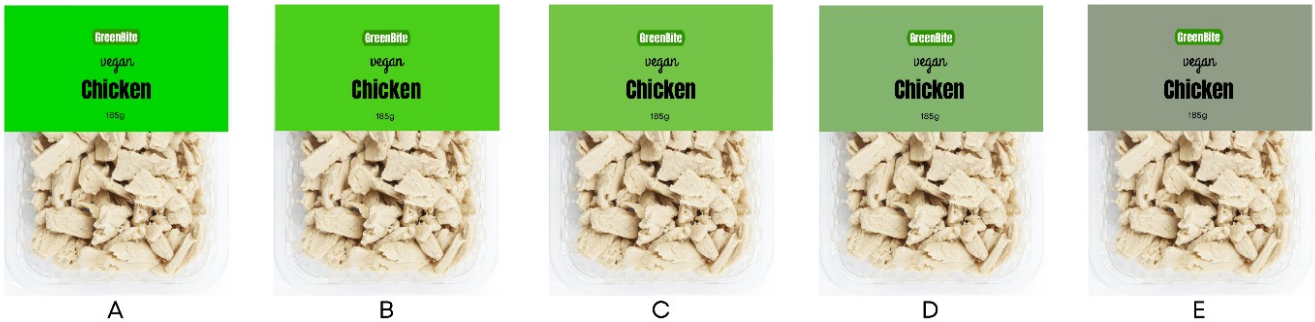
A pretest was conducted to identify which saturation level of green was perceived as the healthiest and most realistic. Since the current study focused on plant-based meat, plant-based chicken was chosen as the product on the packaging because participants who have never tried or cooked plant-based meat before might feel most familiar with a chicken-like appearance. Twenty participants evaluated five packaging designs with different saturation levels. Additionally, each package included the description ‘vegan Chicken’ and the product's

weight to enhance realism. Each package also featured the fictional brand ‘GreenBite’ to prevent participants from using prior knowledge about the product's healthiness (see Figure 2). Participants rated each packaging design’s perceived healthiness on a 5-point Likert scale ranging from “not at all healthy” to “extremely healthy.” They also rated the perceived realism of each design on a 5-point Likert scale ranging from “not at all realistic” to “extremely realistic.”

Based on the results, the packaging design with 80% color saturation (Packaging B) scored highest for perceived healthiness and performed well in perceived realism (see Table 1 for full mean ratings). Therefore, Packaging B was selected as the high-saturation condition for the subsequent study. The packaging design with 30% color saturation (Packaging D) was chosen for the low-saturation condition, as it scores low on perceived healthiness but was still considered sufficiently realistic (see Table 1 for full mean ratings).

Figure 2

Different Color Saturations for Packaging



Note. Packaging A: 100% saturation; Packaging B: 80% saturation; Packaging C: 50% saturation; Packaging D: 30% saturation; Packaging E: 10% saturation

Table 1

Mean Ratings of Perceived Healthiness and Realism for each Packaging Design

Packaging	Saturation Level	Perceived Healthiness (*M*)	Perceived Realism (*M*)
A	100%	3.21	2.22
B	80%	3.42	3.16
C	50%	3.32	3.63
D	30%	2.58	2.68
E	10%	1.89	1.79

Note: Ratings were provided on a 5-point Likert scale (1 = not at all, 5 = extremely).

A second pretest was conducted to examine the effect of combining packaging color saturation with imagery. Two imagery conditions were used: a realistic image of the prepared meal (positive imagery) and an image of a plant symbol (neutral imagery). These were combined with the selected high (Packaging B) and low (Packaging D) saturation conditions from the first pretest. This resulted in four final packaging designs, which were also used in the main study (see Figure 3). A total of 22 participants completed the second survey.

Color saturation manipulation was checked by comparing a packaging design from the high saturation condition (Packaging A) and one from the low saturation condition (Packaging B). A paired-samples t-test showed that participants rated Packaging A ($M = 4.00$, $SD = 1.11$) as significantly more saturated than Packaging B ($M = 2.45$, $SD = 0.86$), $t(21) = 4.72$, $p < .001$, 95% CI [0.87, 2.23], $d = 1.01$, confirming the manipulation was successful. Imagery manipulation was verified by comparing a packaging design with a realistic image of the prepared meal (Packaging A) and one with the plant symbol (Packaging C). For Packaging A, 19 out of 22 participants correctly identified the image as an abstract image or symbol, while 3 misidentified it as realistic. For Packaging C, 19 out of 22 participants correctly identified the image as realistic, while 3 chose the abstract option. This indicated that the manipulation was effective.

Then, participants were shown the four packaging designs simultaneously and asked to rate their perceived healthiness and realism again, just like in the first pre-test. The packaging design that combined high saturation with a realistic image of the prepared meal (Package C)

scored the highest on both perceived healthiness and realism (see Table 2 for detailed statistical results). Based on these findings, Packaging C was identified as the most effective design for conveying healthiness and realism.

Figure 3

Packaging Designs of Plant-Based Chicken

Note. Packaging A (high saturation and plant symbol), Packaging B (low saturation and plant symbol), Packaging C (high saturation and image of prepared meal), and Packaging D (low saturation and image of prepared meal).

Table 2

Perceived Healthiness and Realism by Packaging Design

Packaging	Saturation	Imagery Type	Perceived Healthiness (*M, SD*)	Perceived Realism (*M, SD*)
A	High	Plant Symbol	3.05 (0.72)	2.59 (1.30)
B	Low	Plant Symbol	2.68 (0.78)	2.27 (0.88)
C	High	Meal Image	3.86 (1.08)	3.86 (0.89)
D	Low	Meal Image	3.36 (1.05)	3.41 (1.05)

Note: Ratings were provided on a 5-point Likert scale (1 = not at all, 5 = extremely).

Main Study

Participants and Procedure

A total of 199 participants took part in this study (55 male, 142 female, two non-binary; average age = 26.36 years). Regarding their diet types, 128 (64.3%) identified as omnivores, 17 (8.5%) as vegetarians, three (1.5%) as vegans, 39 (19.6%) as flexitarians, and 12 (6.0%) as following another diet. Participants were randomly assigned to four groups based on a 2 (color saturation: high vs. low) by 2 (imagery type: realistic image of a prepared meal vs. plant symbol) between-subjects design (see Table 3 for complete demographics of each packaging design).

Table 3

Descriptive Statistics by Packaging Design

Condition	*n*	Male	Female	Non-binary	Mean Age (*SD*)
Low saturation + No imagery	48	9	39	0	25.8 (9.02)
Low saturation + Real imagery	49	23	26	0	26.3 (9.02)
High saturation + No imagery	53	11	41	1	26.2 (8.93)

High saturation + Real imagery	49	12	36	1	27.2 (11.4)

Note. n = number of participants

The current study employed snowball convenience and self-selection sampling by posting the survey link on Instagram and websites such as SurveyCircle to recruit participants. Participants completed an online survey in Qualtrics. They were randomly assigned to one of four packaging designs. Then, they were briefly informed about the study, but some details regarding the overall purpose were withheld. Participants were told that the study examined the impact of packaging design elements on purchase intention and perceptions, but not which specific design features or perceptions were being analyzed. After reading this, participants were asked to give informed consent. Additionally, participants who were color blind were excluded from the study because their color blindness might affect how they would see the color green and thus influence their perception of its healthiness.

Then, participants were asked to answer demographic questions about their age, gender, nationality, and diet. On the next screen, participants viewed a picture of the plant-based chicken in one of the four packaging designs. After seeing one of the four packaging options, the following screen required participants to answer questions regarding perceived healthiness, perceived tastiness, purchase intention, and perceived brand image dimensions. After completing the questionnaire, the final screen thanked participants for taking part in the study and provided a debrief about the study's full purpose.

The collected data were cleaned by removing incomplete answers, duplicate responses, and participants who did not agree to participate. Out of 232 responses, 199 were deemed usable after cleaning.

Measures

Purchase Intentions. To measure purchase intention, a 7-point semantic differential scale by Spears and Singh (2004) was converted into a 7-point Likert scale ranging from "strongly disagree" to "strongly agree" and included the following four statements: "I would consider buying this product", "I intend to buy this product", "I am interested in purchasing this product", and "I would probably buy this product" ($\alpha = .96$). Responses to the individual items were summed and averaged to arrive at a general purchase intention measure.

Perceived Tastiness. To measure perceived tastiness, a 7-point semantic differential scale that included two items by Mai and Hoffmann (2015) was converted to a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". The items were: "This product looks tasty" and "I would enjoy eating this product" ($\alpha = .89$). Responses to the individual items were summed and averaged to arrive at a general perceived taste measure.

Brand Image. To measure how participants view the brand image of 'GreenBite,' perceived brand quality, perceived brand trustworthiness, perceived brand healthiness, and perceived brand environmental friendliness have been chosen. The measures use a 7-point Likert scale.

Perceived Brand Quality. A scale by Anselmsson et al. (2014) was adapted to measure perceived brand quality. The adapted scale measures the following three items: "Products of this brand are well made", "Products of this brand have a high standard of quality", and "Products of this brand have a consistent quality" ($\alpha = .90$). Responses to the individual items were summed and averaged to arrive at a general perceived brand quality measure.

Perceived Brand Trustworthiness. A scale from García-Salirrosas et al. (2024) was adopted to measure perceived brand trustworthiness. The scale included the following items: "Personally, I think this brand is safe", "Personally, I think this brand is honest", and

"Personally, I believe this brand is trustworthy" (α = .90). Responses were summed and averaged to arrive at a general perceived brand trust measure.

Perceived Brand Healthiness. To measure whether the brand is perceived as healthy, a scale by van Doorn and Verhoef (2011) was adapted and measures the following items: "This brand is healthy", "This brand is very much suited as part of a healthy lifestyle", "This brand would deliver an important contribution to my health" (α = .91). Responses were summed and averaged to arrive at a general perceived brand healthiness measure.

Perceived Brand Environmental Friendliness. To assess the brand's perceived environmental friendliness, a scale adapted from Madrigal and Boush (2008) was used, including the following three items: "This brand is environmentally friendly", "This brand is more environmentally friendly than other brands selling similar products", "This brand is good for the earth" (α = .88). Responses were combined and averaged to create an overall perceived brand environmental friendliness score.

Perceived Healthiness. For participants to indicate their healthiness perceptions, a 7-point semantic differential scale from Scott et al. (2008) was adapted and converted into a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". It included the following four statements: "This product seems healthy", "This product seems nutritious", "This product seems low in calories", and "This product seems like diet-friendly food". The "tastes bad/tastes good" item was excluded, as there will be a separate scale for analyzing perceived tastiness. Responses on the individual healthiness perception items were summed and averaged (α = .79) to arrive at a general 'perceived taste measure'.

Results

Data were analyzed using a 2 (color saturation: high vs. low) by 2 (image type: realistic image of prepared meal vs. symbol of plant) between-subjects design.

Purchase Intention

A two-way ANOVA examined the effects of packaging color saturation (low vs. high) and imagery type (symbolic vs. realistic) on purchase intention. No significant main effects were found for color saturation, $F(1, 194) = 1.44$, $p = .232$, $\eta^2 = .007$, or imagery, $F(1, 194) = 0.01$, $p = .923$, $\eta^2 < .001$. The interaction between color saturation and imagery type was also not significant, $F(1, 194) = 0.31$, $p = .581$, $\eta^2 = .002$. These findings suggest that neither saturation nor imagery type significantly influenced participants' purchase intention.

Perceived Tastiness

The ANOVA revealed no significant main effect of color saturation on perceived tastiness, $F(1, 194) = 0.007$, $p = .933$, $\eta^2 < .001$. However, imagery had a significant main effect, $F(1, 194) = 4.01$, $p = .047$, $\eta^2 = .020$. Participants exposed to the realistic image of the prepared meal ($M = 3.71$, $SD = 1.59$, $n = 98$) rated the product as significantly tastier than those exposed to the plant symbol ($M = 3.26$, $SD = 1.59$, $n = 100$), $t(195.94) = -2.01$, $p = .046$, 95% CI [-0.90, -0.01]. The interaction between color saturation and imagery type was not significant, $F(1, 194) = 0.48$, $p = .490$, $\eta^2 = .002$. These results suggest that while saturation did not affect perceived tastiness, the type of imagery used on the packaging played a role.

Perceived Brand Quality

There was no significant main effect of color saturation for perceived brand quality, $F(1, 185) = 0.65$, $p = .420$, $\eta^2 = .004$. The effect of imagery was also not statistically significant, $F(1, 185) = 3.29$, $p = .071$, $\eta^2 = .017$. The interaction between color saturation and imagery type was not significant, $F(1, 185) = 0.01$, $p = .92$, $\eta^2 < .001$. These results indicate that neither saturation nor imagery significantly influenced participants' perceptions of brand quality.

Perceived Brand Trustworthiness

The main effect of packaging color saturation and imagery type on perceived brand trustworthiness did not reach significance (both F's < 1). Furthermore, the interaction between color saturation and imagery type was not significant, $F(1, 184) = 0.70$, $p = .406$, $\eta^2 = .004$. These findings suggest that neither packaging color saturation nor imagery type significantly influenced participants' perceived brand trustworthiness.

Perceived Brand Healthiness

No significant main effects of color saturation and imagery type on perceived brand healthiness were found (both F's < 1). The interaction between color saturation also did not reach significance, $F(1, 180) = 2.49$, $p = .117$, $\eta^2 = .014$. These findings indicate that neither saturation nor imagery type significantly influenced participants' perceptions of brand healthiness.

Perceived Brand Environmental Friendliness

The two-way ANOVA revealed no significant main effects of color saturation on brand environmental friendliness, $F(1, 180) = 1.37$, $p = .243$, $\eta^2 = .008$, or imagery type, $F(1, 180) = 0.05$, $p = .831$, $\eta^2 < .001$. The interaction between saturation and imagery type was also non-significant, $F(1, 180) = 0.66$, $p = .417$, $\eta^2 = .004$. These results suggest that neither color saturation nor the imagery type significantly influenced perceptions of brand environmental friendliness.

Perceived Healthiness

The results of the two-way ANOVA showed no significant main effect of color saturation on perceived healthiness, $F(1, 195) = 0.015$, $p = .903$, $\eta^2 < .001$. Thus, Hypothesis 1

was not supported. There was, however, a significant main effect of imagery type, $F(1, 195) = 4.08$, $p = .045$, $\eta^2 = .020$. Participants exposed to the realistic image of the prepared meal ($M = 4.69$, $SD = 1.10$, $n = 98$) rated the product as significantly more healthy than those exposed to the plant symbol ($M = 4.37$, $SD = 1.09$, $n = 101$), $t(196.60) = -2.03$, $p = .044$, 95% CI [-0.62, -0.01]. The interaction between color saturation and imagery type was not significant, $F(1, 195) = 0.89$, $p = .347$, $\eta^2 = .005$, indicating no moderation effect of imagery on the relationship between color saturation and perceived healthiness. Therefore, Hypothesis 5 was not supported. These findings suggest that while saturation alone did not affect perceived healthiness, the type of imagery used on the packaging played a role.

Since there was no significant relationship between color saturation and the proposed mediator, perceived healthiness, the key prerequisite for mediation was not met. Therefore, no further mediation analyses were conducted, which indicated that Hypotheses 2-4 were not supported.

Discussion

This study aimed to examine how packaging design elements of plant-based meat influence consumer perceptions and purchase intention. More specifically, the study investigated how color saturation and imagery impacted perceived healthiness, perceived tastiness, purchase intention, perceived brand quality, perceived brand trustworthiness, perceived brand healthiness, and perceived brand environmental friendliness.

The Effect of Color Saturation

The results showed that color saturation did not significantly impact the measured outcomes. Therefore, Hypothesis 1, which predicted that color saturation would affect perceived healthiness, was not supported. Similarly, there was no evidence that color

saturation influenced purchase intentions, perceived tastiness, or any of the brand image dimensions. These findings addressed part of the main research question by demonstrating that color saturation, as a single packaging cue, did not significantly influence consumer perceptions of plant-based meat. Additionally, these findings suggest that increasing the color saturation of the packaging might not be a strong enough cue to affect consumer perceptions in the context of plant-based meat. This challenges earlier studies that reported significant effects of color saturation. For example, Kunz et al. (2019) found that very saturated packaging made participants perceive the product as healthier. The results also contradict Mead and Richerson (2018), who stated that packaging in less saturated colors is perceived as healthier.

One possible explanation is the product type. While previous studies have focused on beverages or snacks when analyzing the effect of packaging color saturation, this study focused on plant-based meat, a relatively new and unfamiliar food category to some consumers. The findings of this study suggest that context matters and that visual cues might be interpreted differently depending on the product category. Consumers unfamiliar with plant-based meat could benefit from cues, such as nutritious labels, that provide clearer information, helping them make inferences about the product. Another reason color saturation might not have had a significant effect was the color green. Associations with green are not universal, as colors can be interpreted in many ways (Slack & Hristova, 2016). For example, not everyone associates green with increased tastiness for plant-based meat. For some, warm colors might be linked to increased tastiness for plant-based meat.

Color saturation also did not significantly affect any of the brand image dimensions. One possible explanation is that multiple consistent communication and marketing strategies are needed to build a strong brand image (Maisaroh et al., 2025). However, in this study, participants only had one contact point with the fictional brand ‘GreenBite’. Consumers may

need multiple contact points with the brand and its color scheme to develop perceptions and associations with the brand.

The Effect of Imagery

In contrast to color saturation, imagery had a significant main effect on perceived healthiness and tastiness. Packaging with a realistic image of the prepared meal resulted in higher ratings of perceived healthiness and tastiness. These findings addressed part of the main research question by demonstrating that imagery, as a single cue, did influence some consumer perceptions. Imagery positively influenced consumers' perception of the healthiness and tastiness of plant-based meat. These results somewhat align with the literature previously discussed. For example, Dixon et al. (2025) found that realistic food imagery led participants to rate the product as healthier, which our study confirmed. One reason why realistic images of the prepared meal were perceived as tastier might be that food imagery facilitated mental simulation. Mental simulation refers to mentally imagining or recreating sensory, motor, or emotional experiences related to a product without interacting with it (Elders & Krishna, 2012). Realistic food imagery helped consumers to mentally imagine the taste of the product. This vivid mental simulation could have increased expectations of flavor. However, imagery did not affect purchase intention or brand image dimensions. One explanation might be that some consumers base their purchase intentions on other factors, such as price, brand familiarity, or product desirability, rather than solely on the visual design of the product's packaging (Fisher, 2023).

The Mediation Effect of Perceived Healthiness

This study initially intended to test whether perceived healthiness would mediate the relationship between color saturation and the dependent variables. However, since color saturation had no significant effect on perceived healthiness, the necessary condition for

mediation was not met, and therefore, no mediation analysis was conducted. As a result, there was no support for Hypotheses 2-4, which proposed that perceived healthiness would mediate the relationship between color saturation and the dependent variables, such as perceived tastiness, purchase intention, perceived brand quality, or any brand image dimensions. These findings contradict some of the previous literature, such as Huang and Lu (2015), who found that perceived healthiness mediated the effect of color saturation on purchase intention, especially for people interested in food healthiness. A low level of interest in food healthiness might have reduced the effectiveness of the color green as a health cue. It is also worth considering that other factors, such as people's attitudes towards plant-based meat, could have been more influential mediators than perceived healthiness.

Furthermore, the results of this study also somewhat contrast with previously discussed research. Liem et al. (2012) stated that consumers often associate foods perceived as unhealthy with better taste, while Haasova and Florack (2019) noted that people associate foods perceived as healthier with better taste. The present study found that neither high nor low perceived healthiness affected the relationship between color saturation and perceived tastiness. The results also showed that the perceived healthiness of a product did not significantly influence any of the brand image dimensions.

The Moderating Role of Imagery

Lastly, although realistic imagery significantly influenced perceived healthiness, the results did not support Hypothesis 5, which suggested that adding imagery to the front of the packaging would influence the relationship between color saturation and perceived healthiness. These findings provided partial insight into the main research question. It showed that imagery mattered, but not necessarily in combination with color saturation. Additionally, these results contradict Luo et al. (2019), who found that green packaging led people to perceive the food as healthier and that adding an image enhanced these effects. One possible

explanation is that imagery, especially the realistic image of the prepared meal, may have attracted more attention than color saturation. Food imagery is generally less ambiguous than packaging color when conveying specific product information, allowing participants to infer attributes about the product, like tastiness, more readily. Images provide direct visual representations, while color often relies on cultural and historical contexts, leading to it being interpreted in various ways (Togawa et al., 2019; Slack & Hristova, 2016). This might have caused the effect of imagery to overshadow the effect of color saturation, explaining the results of this study.

Limitations and Directions for Future Research

The present study faced several limitations. One limitation is that it used static images in the online questionnaire. While this provided experimental control, it prevented participants from interacting with or seeing the packaging in a real-life shopping setting. This could have affected how they perceived the product. Additionally, one of the methods used to recruit participants was snowball convenience sampling, which may have introduced bias since people tend to recruit others who are similar to themselves. This is reflected in the sample, as most participants identified as omnivores. Only a few were vegetarian or vegan, which could have influenced their responses.

Another limitation is that the color saturation manipulation might not have been strong enough to produce noticeable differences in all outcome variables. Additionally, this study focused solely on one product, specifically plant-based chicken. This could limit the generalizability of the findings, as consumers' perceptions and associations with packaging design may differ across various vegan products. Consequently, the results may not fully apply to all plant-based meat products. A final limitation to consider is that participants viewed all packaging designs simultaneously in the pretest, enabling them to compare the designs. In contrast, each participant only saw one design in the main study. This

inconsistency might have influenced how participants perceived the packaging in the main study.

Future research could address these limitations by testing packaging design in a more immersive and realistic environment. They could, for example, conduct real-life shelf studies, which also allow for observing other factors that might influence consumers' perceptions of the product, their brand image, and purchase intention. It would also be helpful to explore whether the effects of packaging design differ across various types of plant-based products. Including a broader range of products helps determine whether the impact of packaging design is specific to certain products or more broadly applicable. Additionally, future studies should incorporate a more diverse sample, ensuring sufficient participation from vegans and vegetarians. It is also important that the methods used in the pretest to expose participants to packaging designs are consistent with those used in the main study.

Lastly, packaging design is not the only factor influencing consumer perceptions and purchase intentions. Advertisements also play a significant role in shaping perceptions, providing information about the product and increasing sales (Wang et al., 2024). Advertisements promoting food have long used realistic food imagery as they are compelling, increasing taste perceptions and purchase intention (Septianto et al., 2019; Lee & Lim, 2020; Detta et al., 2024). Future research could build on the current study’s findings by exploring how realistic food imagery works in advertising for plant-based meat and whether imagery can help consumers better imagine the taste and use of plant-based meat. This may reduce the unfamiliarity some consumers have with plant-based meat. Additionally, communication about the product is not only done through advertising, but with the rise of social media, it has also become common to see products being marketed through these platforms (Li et al., 2022). Consumers not only rely on traditional advertising but also look at advertising on social media to acquire knowledge of plant-based meat and thus be influenced by it (Li et al., 2022). Influencer marketing on social media has become more relevant in recent years, and it

has proven to be a successful strategy in marketing food to a larger audience (Ki & Kim, 2019). Future studies could build on this study's findings by investigating how realistic food imagery of plant-based meat functions in influencer marketing. Influencers promoting plant-based meat can help more consumers become familiar with it and ultimately improve the overall image of vegan food.

Practical Implications

The results of this study offer practical insights for marketers and packaging designers. It emphasizes the importance of using realistic images of prepared meals on packaging for plant-based meat products. Realistic food imagery boosts perceived tastiness and healthiness of the product. Therefore, incorporating realistic images can help address acceptance barriers for plant-based meat, such as concerns about flavor, as these images can give consumers an idea of what the taste might be. Additionally, to make the product seem healthier, marketers should use realistic images showing the plant-based meat alongside vegetables and grains. While color remains significant, its impact may vary depending on the product, so marketers should carefully consider how well the color matches the product.

Conclusion

In conclusion, the current study analyzed how two packaging design factors, color saturation and imagery, influence consumers' purchase intentions, perceptions of the product, and brand image dimensions. Although the study did not find a significant effect of color saturation on perceived healthiness, perceived tastiness, purchase intention, or any brand image dimensions, it still emphasizes the power of visual design in shaping how consumers perceive plant-based meat, especially plant-based chicken. Realistic images of the prepared meal have been shown to boost the product's perceived tastiness and healthiness, providing valuable insights for brands. When it comes to plant-based food packaging, brands should

ensure that the visual representation aligns with the actual product, and using imagery to communicate this can make all the difference.

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Appendix

Appendix A

AI Usage Statement

During the preparation of this bachelor's thesis, the author made use of ChatGPT 4.0 to shorten the introduction, structure and improve the writing in the theoretical framework, methods, and discussion section to make it more understandable and concise. Furthermore, ChatGPT 4.0 was also used to come up with the name of the fictional brand ‘GreenBite’. ChatGPT was also used to assist with writing code for data analysis in RStudio. After this, ChatGPT was also used to assist in interpreting these codes' outputs and reporting them correctly in APA 7 format. The author also used Grammarly to improve their writing and avoid grammatical mistakes. After using these two AI tools, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.

Appendix B

Survey of Pretest 1

Color saturation

Survey Flow

Block: Default Question Block (2 Questions)
Standard: Block 1 (10 Questions)
Standard: Block 2 (10 Questions)

Page Break

Start of Block Default Question Block

Q1 Dear participant,
You are invited to take part in a short pre-test. The purpose of this pre-test is to examine whether the stimulus materials have the intended effect. The following pre-test will focus on the effect of packaging color saturation. This study is conducted by Dana Gordon, a third-year communication science student from the University of Twente, and is part of her Bachelor's Thesis. It will take approximately 2 minutes to participate and complete the online questionnaire, and your data will be used exclusively for academic research and educational purposes. To be able to participate in this study, you need to be at least 18 years old, understand English, and not have any color blindness. Participation in this study is entirely voluntary, and you can withdraw at any time without giving a reason. Your participation is completely anonymous, meaning you will not be asked for any identifiable information. Additionally, your answers are only visible and accessible to the researcher and the supervisor for the given timeframe. The data will be used for the completion of a bachelor's thesis report and will be deleted on the 1st August 2025. The researcher believes that there are no known risks associated with this study; however, as with any online activity, a breach is always possible. To the best of our ability, your answers in this study will remain confidential. Risks will be minimized by storing answers on a secure laptop that only the researcher has access to and by deleting the answers within the given timeframe. If you have any questions or would like to know more about this study, you can send an email to the below mentioned contact details. Thank you for your time.

Kind regards,
Dana Gordon
d.gordon@student.utwente.nl

Q2 After reading this information above, do you understand and agree to participate in this study?

- ○ Yes, I agree. (1)
- ○ No, I do not agree. (2)

End of Block: Default Question Block

Start of Block: Block 1

Q3 This pre-test aims to examine how packaging color saturation influences perceptions of healthiness. Below are five packaging designs for plant-based chicken meat with varying saturations of the color green. Please review the five packaging designs and indicate, for each one, the extent to which the color saturation makes you think the product inside is healthy.

Packaging A

Q4 How healthy does this packaging design look to you?

	Not at all healthy (1)	Slightly healthy (2)	Moderately healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging A (1)	○	○	○	○	○

Q7 Packaging B

Q8 How healthy does this packaging design look to you?

	Not at all healthy (1)	Slightly healthy (2)	Moderately healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging B (1)	○	○	○	○	○

Q9 Packaging C

Q10 How healthy does this packaging design look to you?

	Not at all healthy (1)	Slightly healthy (2)	Moderately healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging C (1)	○	○	○	○	○

Q12 Packaging D

Q14 How healthy does this packaging design look to you?

	Not at all healthy (1)	Slightly healthy (2)	Moderately healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging D (1)	○	○	○	○	○

Q15 Packaging E

Q16 How healthy does this packaging design look to you?

	Not at all healthy (1)	Slightly healthy (2)	Moderately healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging E (1)	○	○	○	○	○

End of Block: Block 1

Start of Block: Block 2

Q17 Please take a look at the same five packaging designs again and indicate to what extent each packaging looks realistic to you. Consider whether it looks like something you would see in a supermarket.

Packaging A

Q18 How realistic does this packaging look to you?

	Not at all realistic (1)	Slightly realistic (2)	Moderately realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging A (1)	○	○	○	○	○

Q19 Packaging B

Q20 How realistic does this packaging look to you?

	Not at all realistic (1)	Slightly realistic (2)	Moderately realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging B (1)	○	○	○	○	○

Q21 Packaging C

Q22 How realistic does this packaging look to you?

	Not at all realistic (1)	Slightly realistic (2)	Moderately realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging C (1)	○	○	○	○	○

Q23 Packaging D

Q24 How realistic does this packaging look to you?

	Not at all realistic (1)	Slightly realistic (2)	Moderately realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging D (1)	○	○	○	○	○

Q25 Packaging E

Q26 How realistic does this packaging look to you?

	Not at all realistic (1)	Slightly realistic (2)	Moderately realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging E (1)	○	○	○	○	○

End of Block: Block 2

Appendix C

Survey of Pretest 2

pretest

Survey Flow

Block: Default Question Block (2 Questions)
Standard: Block 1 (3 Questions)
Standard: Block 2 (28 Questions)

Page Break

Start of Block: Default Question Block

Q1 Dear participant,
You are invited to take part in a short pre-test. The purpose of this pre-test is to examine whether the stimulus materials have the intended effect. The following pre-test will examine the effect of packaging color saturation and imagery. This study is conducted by Dana Gordon, a third-year communication science student from the University of Twente, and is part of her Bachelor's Thesis. It will take approximately 2 minutes to participate and complete the online questionnaire, and your data will be used exclusively for academic research and educational purposes. To be able to participate in this study, you need to be at least 18 years old, understand English, and not have any color blindness. Participation in this study is entirely voluntary, and you can withdraw at any time without giving a reason. Your participation is completely anonymous, meaning you will not be asked for any identifiable information. Additionally, your answers are only visible and accessible to the researcher and the supervisor for the given timeframe. The data will be used for the completion of a bachelor's thesis report and will be deleted on the 1st August 2025. The researcher believes that there are no known risks associated with this study; however, as with online-related activity, the breach is always possible. To the best of our ability, your answers in this study will remain confidential. Risks will be minimized by storing answers on a secure laptop that only the researcher has access to and by deleting the answers within the given timeframe. If you have any questions or would like to know more about this study, you can send an email to the below mentioned contact details.
Thank you for your time.

Kind regards,
Dana Gordon
d.gordon@student.utwente.nl

Q2 After reading the information above, do you understand and agree to participate in this study?

- ○ Yes, I agree (1)
- ○ No, I do not agree (2)

Skip To: End of Survey If After reading the information above, do you understand and agree to participate in this study? = No, I do not agree

End of Block: Default Question Block

Start of Block: Block 1

Q3 The first set of questions is related to who you are as a person. Please note that this information cannot be used to identify you.

Q4 What is your age? Please write your age in numbers.

_____

Q5 What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Other (please specify) (4)

_____

End of Block: Block 1

Start of Block: Block 2

Q6 The following set of questions is related to how you perceive and interpret different packaging design factors. First, we want to analyse how you perceive packaging color saturation. Color saturation is the absence or presence of grey light in the color, which means that the more grey light is present in the color, the less saturated the color will be. You can look at the example below.

Page Break

Q7 Now we want to know how you perceive the color of Packaging A.

Q8 To what extent do you consider the green packaging color as saturated?

	Not at all saturated (1)	Slightly saturated (2)	Somewhat saturated (3)	Very saturated (4)	Extremely saturated (5)
Packaging 1 (1)	○	○	○	○	○

Q9 Packaging B

Q10 To what extent do you consider the green packaging color as saturated?

	Not at all saturated (1)	Slightly saturated (2)	Somewhat saturated (3)	Very saturated (4)	Extremely saturated (5)
Packaging 2 (1)	○	○	○	○	○

Page Break

Q11 Now we want to know how you interpret the imagery on the front of the packaging.

Q12 Packaging A

Q13 What type of imagery is shown on the packaging?

- realistic image (1)
- abstract image or symbol (2)
- other (please specify) (3) _____

Q14 Packaging C

Q15 What type of imagery is shown on the packaging?

- realistic image (1)
- abstract image or symbol (2)
- other (please specify) (3) _____

Page Break

Q16 Now we want to know how you perceive the following packaging designs in terms of healthiness.

Q17 Packaging A

Q18 How healthy does the packaging look to you?

	Not at all healthy (1)	Slightly healthy (2)	Somewhat healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging A (1)	○	○	○	○	○

Q19 Packaging B

Q20 How healthy does the packaging look to you?

	Not at all healthy (1)	Slightly healthy (2)	Somewhat healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging B (1)	○	○	○	○	○

Q21 Packaging C

Q22 How healthy does the packaging look to you?

	Not at all healthy (1)	Slightly healthy (2)	Somewhat healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging C (1)	○	○	○	○	○

Q23 Packaging D

Q24 How healthy does the packaging look to you?

	Not at all healthy (1)	Slightly healthy (2)	Somewhat healthy (3)	Very healthy (4)	Extremely healthy (5)
Packaging D (1)	○	○	○	○	○

Page Break

Q25 Finally, we want to understand how you perceive the packaging in terms of realism. Consider whether the packaging designs would be something you would see in supermarkets.

Q26 Packaging A

Q27 How realistic does the packaging look to you?

	Not at all realistic (1)	Slightly realitic (2)	Somewhat realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging A (1)	○	○	○	○	○

Q28 Packaging B

Q29 How realistic does the packaging look to you?

	Not at all realistic (1)	Slightly realitic (2)	Somewhat realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging B (1)	○	○	○	○	○

Q30 Packaging C

Q31 How realistic does the packaging look to you?

	Not at all realistic (1)	Slightly realitic (2)	Somewhat realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging C (1)	○	○	○	○	○

Q32 Packaging D

Q33 How realistic does the packaging look to you?

	Not at all realistic (1)	Slightly realitic (2)	Somewhat realistic (3)	Very realistic (4)	Extremely realistic (5)
Packaging D (1)	○	○	○	○	○

End of Block: Block 2

Appendix D

Survey of Main Study

Packaging design factors of plant-based meat

Survey Flow

Standard: (2 Questions)
Standard: Demographics (4 Questions)

BlockRandomizer: 1 - Evenly Present Elements

Standard: Control group block (15 Questions)
Standard: high saturation group (15 Questions)
Standard: low saturation food imagery group (15 Questions)
Standard: High saturation food imagery group (15 Questions)

Page Break

Start of block

Q1 Dear participant,
You are invited to take part in the study titled: "Consumers' perceptions and purchase intention of plant-based meat packaging designs." This study aims to examine how the packaging design factors of plant-based meat influence your purchase intention and perceptions. This study is conducted by Dana Gordon, a third-year communication science student from the University of Twente, and is part of her Bachelor's Thesis. It will take approximately 5 minutes to participate and complete the online questionnaire, and your data will be used exclusively for academic research and educational purposes. To be able to participate in this study, you need to be at least 18 years old, understand English, and not have any color blindness. The participation in this study is entirely voluntary, and you can withdraw, without giving a reason, at any time. Your participation is completely anonymous, meaning you will not be asked for any identifiable information. Additionally, your answers are only visible and accessible to the researcher and the supervisor for the given timeframe. The data will be used for the completion of a bachelor's thesis report and will be deleted on the 1st August 2025. The researcher believes that there are no known risks associated with this study; however, as with online-related activity, the breach is always possible. To the best of our ability, your answers in this study will remain confidential. Risks will be minimized by storing answers on a secure laptop that only the researcher has access to and by deleting the answers within the given timeframe. If you have any questions or would like to know more about this study, you can send an email to the below mentioned contact details. Thank you for your time.

Kind regards,
Dana Gordon
d.gordon@student.utwente.nl

Q2 After reading the information above, do you understand and agree to participate in this study?

- ○ Yes, i agree (1)
- ○ No, I do not agree (2)

Skip To: End of Survey If After reading the information above, do you understand and agree to participate in this study? = No, I do not agree

End of Block:

Start of Block: Demographics

Q3 First, we would like to ask you to answer some demographic questions. Please note that the answers to these questions cannot be used to identify you.

Q4 What is your age? Please write your age in numbers.

_____

Q5 What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary (3)
- ○ Other (please specify) (4)

_____

Q6 What diet do you currently follow?

- ○ Omnivore (1)
- ○ Vegetarian (2)
- ○ Vegan (3)
- ○ Flexitarian (4)
- ○ Other (please specify) (5) _____

End of Block: Demographics

Start of Block: Control group block

Q8 We would like to understand how healthy this plant-based chicken product from the vegan brand "GreenBite" appears to you based on its packaging. Please indicate how much you agree with the following statement about the product.

Q9 Perceived healthiness

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
This product is healthy (1)	○	○	○	○	○	○	○
This product is nutritious (2)	○	○	○	○	○	○	○
This product is low in calories (3)	○	○	○	○	○	○	○
This product fits into a healthy, balanced diet (4)	○	○	○	○	○	○	○

Page Break

Q10 Now we want to understand how tasty the product appears to you based on its packaging. Please indicate how much you agree with the following statement about the product.

Q11 Perceived tastiness

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
This product looks tasty (1)	○	○	○	○	○	○	○
I would enjoy eating this product (2)	○	○	○	○	○	○	○

Page Break

Q12 We would like to understand how likely you are to purchase this product. Please indicate how much you agree with the following statement about the product.

Q13 Purchase intentions

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I would consider buying this product (1)	○	○	○	○	○	○	○
I intend to buy this product (2)	○	○	○	○	○	○	○
I am interested in purchasing this product (3)	○	○	○	○	○	○	○
I would probably buy this product (4)	○	○	○	○	○	○	○

Page Break

Q14 In the following section, we would like to understand how you perceive the brand image of 'GreenBite'. Brand image is all the beliefs or perceptions you have about a brand. In this case, the following relevant dimensions for this vegan brand have been chosen: quality, trust, healthiness, and environmental friendliness. So, please rate this brand based on these brand image dimensions.

Page Break

Q15 Brand quality

Q16 Perceived brand quality

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
Products of this brand are well made (1)	○	○	○	○	○	○	○
Products of this brand have a high standard of quality (2)	○	○	○	○	○	○	○
Products of this brand have a consistent quality (3)	○	○	○	○	○	○	○

Page Break

Q17 Brand trust

Q18 Perceived brand trust

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
Personally, I think this brand is safe (1)	○	○	○	○	○	○	○
Personally, I think this brand is honest (2)	○	○	○	○	○	○	○
Personally, I believe this brand is trustworthy (3)	○	○	○	○	○	○	○

Page Break

Q19 Brand healthiness

Q20 Perceived brand healthiness

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
This brand is healthy (1)	○	○	○	○	○	○	○
This brand is very much suited as part of a healthy lifestyle (2)	○	○	○	○	○	○	○
This brand would deliver an important contribution to my health (3)	○	○	○	○	○	○	○

Page Break

Q21 Brand environmental friendliness

Q22 Perceived brand environmentally friendliness

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
This brand is environmentally friendly (1)	○	○	○	○	○	○	○
This brand is more environmentally friendly than other brands selling similar products (2)	○	○	○	○	○	○	○
This brand is good for the earth (3)	○	○	○	○	○	○	○