

**A Tale of Two Cookies:  
The Influence of Health Consciousness on  
Consumers' Intention to Buy  
Vegan-Labelled Unexpected Vegan Hedonic Products**

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**Abstract**

Observant consumers may have noticed vegan food products taking up increasingly more space on supermarket shelves. It would be highly problematic if a vegan label were found to entice consumers to buy more unhealthy hedonic products. This study aims to examine the influence of health consciousness on consumers' intention to buy vegan-labelled unexpected vegan hedonic products. The understanding of the (health) halo effect and cognitive dissonance theory is essential to the theoretical framework. Through a questionnaire administered to a convenience sample, a quantitative investigation was conducted on consumers' intention to buy specific chocolate chip cookies, where the packaging was designed and manipulated for this study. Based on 219 valid responses, a one-way between-subjects Analysis of Variance indicated that the absence or inclusion of a vegan label on unexpected vegan hedonic product's packaging, does not influence consumers' intention to buy this type of product. In addition, a Regression Analysis indicated that consumers' level of health consciousness does not influence their perception of the unexpected vegan hedonic product, nor their intention to buy. These findings imply that consumers are not enticed to buy more unhealthy hedonic products when their packaging is provided with a vegan label; knowledge that could be harnessed to combat the alarming increase in overweight and obesity in Europe. Further research should be aimed at an enhanced understanding of consumers' perception of unexpected vegan hedonic products, as well as the influence of these perceptions on consumers' decision-making, specifically within the context of vegan labelling.

*Keywords:* vegan label, unexpected vegan, hedonic, health consciousness, halo effect

### **A Tale of Two Cookies:**

#### **The Influence of Health Consciousness on Consumers' Intention to Buy Vegan-Labelled Unexpected Vegan Hedonic Products**

Observant consumers may have noticed a trend while shopping for their groceries (Mintel Group Ltd., 2023): vegan products are taking up increasingly more space on supermarket shelves. While European consumers with a vegan diet (approximately 2-4%) are still vastly outnumbered by omnivorous consumers (approximately 48-68%) (European Vegetarian Union, 2021), vegan products gain popularity among people with all kinds of dietary identities (Good Food Institute, 2021). Due to the growth of the global plant-based food market, estimated to be worth up to 40.35 billion euros by 2028 (Expert Market Research, 2021), an increasing number of food producers and marketers are interested in selling and marketing vegan products.

In this study, the terms 'vegan' and 'plant-based' are considered synonymous when referring to a type of food product. According to the European Vegetarian Union (2023), to be defined as vegan or plant-based, “food and other products must not be created with the help of living animals or animal-derived products”, which applies to all stages of the manufacturing and eventual processing of the final product. Particularly in Western countries, an increasing amount of vegan food products are provided with a vegan label (EMR, 2021), the V-Label being the leading example within the European Union (European Vegetarian Union, 2019). A vegan label is provided to enhance both the product's visibility (i.e., the salience of the product on supermarket shelves) and transparency (i.e., the accessibility of information on the ingredients, production process and sustainability of the product) (European Vegetarian Union, 2019).

Vegan products can be divided into two categories: 'intentionally vegan' and 'randomly vegan' products. The first category includes products that are substitutes for animal

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products, such as plant-based meat or cheese alternatives. In this case, the manufacturer intended the product to be vegan and adapted the production process accordingly. The randomly vegan category includes products that are not intended to be plant-based and therefore have no special production process, yet are nonetheless vegan, such as certain cookies, spreads, and beverages (Stremmel et al., 2022). Since known variants on some of these randomly vegan products often do contain animal ingredients such as milk, butter, or egg (e.g., cookies), the majority of consumers might not expect these products to be vegan. Therefore, Stremmel et al. (2022) refer to this specific kind of product as ‘unexpected vegan’.

A further distinction can be made between ‘utilitarian’ and ‘hedonic’ vegan products. According to Stremmel et al. (2022), the term ‘utilitarian’ refers to “food that serves a functional purpose, such as satisfying hunger or providing essential nutrients” or “food that contributes to long-term goals” (e.g., healthy ageing) (p. 3). Examples of vegan utilitarian products include fruits and vegetables as well as plant-based meat and cheese alternatives. On the other hand, the term ‘hedonic’ refers to “unhealthy food whose consumption is linked to short-term goals like pleasure and immediate gratification” (Stremmel et al., 2022, p. 3). Examples of vegan hedonic products include cookies, sweet beverages, ice cream, and chips.

For many, veganism has a healthy image. Health benefits, such as it being lower in cholesterol than an omnivorous diet and thus reducing the risk of chronic diseases (e.g., cardiovascular disease, coronary heart disease, type-2 diabetes, and cancer), are widely assumed (Appleby & Key, 2016; Barnard et al., 2009; Clarys et al., 2014; Craig, 2009; Dinu et al., 2017, Fehér et al., 2020). However, it is important to nuance this image of veganism, since it is not necessarily always the healthier diet choice. A vegan diet consisting predominantly of utilitarian products might be rich in healthy nutrients, while a vegan diet consisting predominantly of hedonic products might be rich in unhealthy saturated fats and refined sugars. In other words, quality and health implications vary from one vegan diet to

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another. Nonetheless, manufacturers and marketers might pick up on the vegan trend and provide their unexpected vegan hedonic products (e.g., cookies) with a vegan label in the hope that this will give their product a healthier image and thus increase sales. It would be considered highly problematic when unhealthy products are deliberately portrayed as healthier in this way, which would be a form of consumer deception.

According to the World Health Organisation (WHO) Regional Office for Europe (2022), “overweight and obesity affect almost 60% of adults and nearly one in three children (...) in the WHO European Region” (p. 2). This is an indication of a serious public health problem, as being overweight and obese are major risk factors for chronic diseases (e.g., cardiovascular disease, coronary heart disease, type-2 diabetes, and cancer) (WHO, 2023). Besides causing personal suffering, a rise in chronic diseases challenges healthcare capacities and imposes an increasing economic burden on national health budgets (Brennan et al., 2017). Thus, it is increasingly important to stimulate a healthy lifestyle including a healthy diet, by encouraging people to make more healthy choices in the supermarket instead of unhealthy ones.

The fact that veganism is a current trend, and thus interesting from a financial point of view or a marketing and consumer psychology perspective, is therefore not the principal reason why the practice of vegan labelling - especially of unexpected vegan hedonic products - is relevant to explore scientifically. The findings of this study could have important implications for the stimulation of more healthy decision-making in the supermarket and may contribute to fighting the worrying rise of overweight and obesity in Europe. Consequently, this study aims to experimentally assess whether providing unexpected vegan hedonic products with a vegan label influences consumers' intention to buy this type of product, and the role of consumers' level of health consciousness in this context. For this purpose, a

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quantitative study was conducted on consumers' intention to buy specific chocolate chip cookies, of which the packaging was designed and manipulated for this study.

### **Vegan Labelling and Product Perceptions**

In their study, Stremmel et al. (2022) found that when an unexpected vegan product is provided with a vegan label (vs. no label), the perceived healthiness, perceived sustainability, and expected tastiness of the product become biased. On the one hand, perceived healthiness and sustainability both increase, while on the other hand, expected tastiness decreases. To substantiate their findings on product perception and consumption intention, Stremmel et al. (2022) relied on the 'halo and horn effects'. These effects refer to the cognitive bias in which a feature of one object affects the assessment, either positive for the halo effect or negative for the horn effect, of another feature of the same object (Burton et al., 2015; Nisbett & Wilson, 1977). By way of illustration: if a consumer associates veganism with a healthy lifestyle, the vegan label might increase their perceived healthiness of unexpected vegan hedonic products (i.e., chocolate chip cookies) through the so-called 'health halo effect' (Bullock et al., 2020).

Another finding of Stremmel et al. (2022) was that when the perceived healthiness of the vegan-labelled unexpected vegan product increases, consumers' consumption intentions increase as well. The product's biased healthiness could thus be problematic for consumers. After all, if people are enticed by a vegan label to eat (and thus buy) more of the product, it could negatively affect their health. Simultaneously, the bias could benefit manufacturers and marketers undesirably, since manufacturers and marketers might decide to provide the packaging of unhealthy unexpected vegan hedonic products (e.g. chocolate chip cookies) with a vegan label to enable the false expectation that these products are healthier compared to similar other products, with the aim of enticing consumers to buy. This strategy could be considered consumer deception and could thus be deemed undesirable.

However, if the vegan label misleads consumers in terms of a product's healthiness,

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does that mean that consumers actually prefer to buy vegan-labelled products over unlabelled ones? Stremmel et al. (2022) found that when the expected tastiness of the vegan-labelled unexpected vegan product decreases, consumers' consumption intentions decrease as well. Thus, biased tastiness could also be problematic for manufacturers and marketers. Especially for hedonic products (e.g. unexpected vegan chocolate chip cookies), the taste of the product is extremely important. After all, consumers eat (and thus buy) these products for their enjoyment, not for health benefits. It can thus be expected that, when it comes to the effect of vegan labelling on unexpected vegan hedonic products, in general, the increased attractiveness in terms of healthiness does not outweigh the decreased attractiveness in terms of tastiness. From this line of thought stems the first hypothesis of this study:

**Hypothesis 1.** Consumers' intention to buy unexpected vegan hedonic products is lower for products with vegan-labelled packaging compared to products with unlabelled packaging.

### **Vegan Labelling and Health Consciousness**

Could there nevertheless be a specific type of consumer for whom, when it comes to the effect of vegan labelling on unexpected vegan hedonic products, the increased attractiveness in terms of healthiness does outweigh the decreased attractiveness in terms of tastiness? This is important to consider, as this type of consumer could be (the most) susceptible to being misled by vegan labelling, with negative consequences for their health. Naturally, this would concern people for whom personal health is very important. That is, people with a higher level of health consciousness, a term which "refers to an individual's comprehensive mental orientation toward his or her health, being comprised of self-health awareness, personal responsibility, and health motivation" (Hong, 2009, p. 8).

In general, it can be expected that less health-conscious consumers buy and consume more hedonic products. After all, this group of people disposes less self-health awareness,

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personal responsibility, and health motivation compared to more health-conscious people. Consuming unhealthy, hedonic products does not conflict (too much) with their values and their lifestyle. As was stated before, it can be expected that, when it comes to the effect of vegan labelling on unexpected vegan hedonic products, the increased attractiveness in terms of healthiness does not outweigh the decreased attractiveness in terms of tastiness. Thus, the 'health halo effect' may decrease the less health-conscious consumers' intention to buy vegan-labelled unexpected vegan hedonic products (i.e., chocolate chip cookies).

On the contrary, in general, it can be expected that more health-conscious consumers buy and consume fewer hedonic products. After all, these people dispose of more self-health awareness, personal responsibility, and health motivation compared to less health-conscious people. It is inconsistent with their values and lifestyle to consume unhealthy, hedonic products such as cookies. When more health-conscious individuals are nonetheless tempted, for whatever reason, to consume a hedonic product, they might have the unpleasant experience of cognitive dissonance. This phenomenon is described as a psychological state of discomfort that arises when people become aware that their current behaviour (i.e., eating something unhealthy) conflicts with the perception they had of themselves (i.e., being a person who values their health) (Ong et al., 2017). People might then attempt to reduce the psychological discomfort "by altering one or more of the inconsistent cognitions, typically those least resistant to change" (Ong et al., 2017, p. 60).

When more health-conscious individuals are tempted to consume a hedonic product (e.g., chocolate chip cookies), the 'health halo effect' might make a product with a vegan label seem to be a healthier, better choice in comparison to similar products without labels. Thus, when buying the vegan-labelled hedonic product instead of a similar product without a label, their cognitions about the unhealthiness of the product may be altered and their experience of cognitive dissonance may decrease. Consequently, the 'health halo effect' may



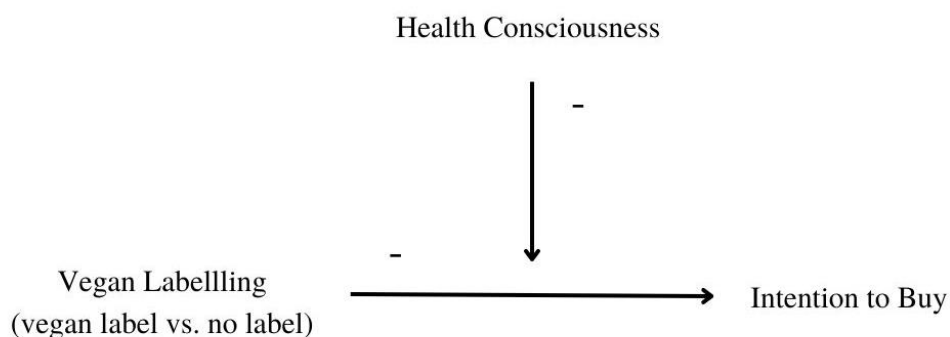
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increase the more health-conscious consumers' intention to buy vegan-labelled unexpected vegan hedonic products (i.e., chocolate chip cookies). For this type of consumer, when it comes to the effect of vegan labelling on unexpected vegan hedonic products, the increased attractiveness in terms of healthiness does outweigh the decreased attractiveness in terms of tastiness. This type of consumer could thus be (the most) susceptible to being misled by vegan labelling. From this line of thought stems the second hypothesis of this study:

**Hypothesis 2.** Consumers' intention to buy vegan-labelled (vs. unlabelled) unexpected vegan hedonic products is higher for consumers who score above average on health consciousness compared to consumers who score lower than average on health consciousness.

### Figure 1

*Conceptual Model of This Study*



## Methods

### Participants

For this study, which was conducted by a group of six third-year psychology students at the Faculty of Behavioural and Social Sciences of the University of Groningen, a convenience sample was used. Respondents were approached via verbal communication and social media (i.e., Facebook, Instagram, and WhatsApp). No inducement was used during their recruitment.

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Following the data collection, respondents who did not complete the online questionnaire, as well as respondents who rejected informed consent and respondents who indicated never buying cookies ( $N = 236$ ), were removed from the total dataset ( $N = 476$ ). Subsequently, respondents who failed at least two out of three attention checks ( $N = 21$ ) were removed from the dataset, as it cannot be assumed that these people completed the questionnaire truthfully and with full attention. The final, modified dataset ( $N = 219$ ) ensures the highest validity and reliability.

The age of the respondents varied from 16 years to 63 years, with a mean age of 26.85 years ( $SD = 10.36$ ). Of the participants, 32.90% identified as male ( $N = 72$ ), 66.20% identified as female, and .90% ( $N = 2$ ) identified as “other” (not further specified). Regarding participants’ nationality, 39.70% of the participants indicated being Dutch ( $N = 87$ ), 49.30% of the participants indicated being German ( $N = 108$ ), and 11.00% of the participants indicated holding a different nationality ( $N = 24$ ). Regarding participants’ educational level, 1.80% of participants indicated possessing a degree beneath high school level ( $N = 4$ ), 45.20% of participants indicated having graduated high school ( $N = 99$ ), 37.00% of participants indicated possessing a bachelor's degree ( $N = 81$ ), 14.20% of participants indicated possessing a master’s degree ( $N = 31$ ) and 1.80% of participants indicated possessing a degree above master’s level ( $N = 4$ ). Furthermore, it is relevant for this study to note that 9.60% of the participants indicated considering themselves vegan ( $N = 21$ ), 19.20% of the participants indicated considering themselves vegetarian ( $N = 42$ ), 37.00% of the participants indicated considering themselves flexitarian ( $N = 81$ ), and lastly, 34.20% of the participants indicated considering themselves omnivorous ( $N = 75$ ).

Grouping the data according to the vegan labelling condition (vegan label vs. no label), it is noticeable that respondents are not evenly distributed in terms of their dietary identity. In the ‘vegan label’ condition, vegans (11.90%) and vegetarians (23.70%) were better represented compared to the ‘no label’ condition (respectively 6.90% and 13.90%). Regarding the other demographics, no notable differences were found between the condition groups.

## Procedure

Upon approval of the experiment by the Ethics Committee of Psychology at the University of Groningen (research code: PSY-2223-S-0131), data were obtained from the 22<sup>nd</sup> of November until December 1<sup>st</sup> 2022, through an online questionnaire, as previously stated. The language of this questionnaire was English, and the duration of the questionnaire was around 15 minutes. Each participant completed the questionnaire once, in a single session.

Throughout the research project as a whole, the following variables were measured: vegan labelling (vegan label vs. no label), packaging colour (green vs. brown), intention to buy, willingness to pay, monthly income, health consciousness, biospheric values, dietary identity, gender, age, nationality, and educational level. In this study specifically, the variables of interest included: the independent variable indicating ‘vegan labelling’, the dependent variable indicating ‘intention to buy’, and a moderator indicating ‘health consciousness’.

Participants were randomly assigned to and evenly distributed over four experimental conditions, specifically: a) green packaging with a vegan label, b) green packaging with no label, c) brown packaging with a vegan label, and d) brown packaging with no label, between which a comparison was made. Since in this study specifically, the focus lay on the vegan labelling condition, the data were grouped according to this condition (vegan label  $N = 118$ ; no label  $N = 101$ ) and the packaging colour condition was excluded from the data analysis.

The role of the researcher was to distribute the online questionnaire without further actively engaging in the experiment. Upon starting the questionnaire, participants first were provided with information regarding the purpose of the study, the duration of the task, the consequences of participation, the processing of the data, and the participant’s rights. After granting their informed consent, participants were asked if they ever buy cookies, to facilitate the functioning of the manipulation. Next, based on the random assignment to one of the four

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conditions, participants were presented with a picture of a certain chocolate chip cookie packaging (see Appendix A), about which they answered four questions that served as a manipulation check (see Appendix B). This was followed by a wide range of items, concerning all variables that were relevant to the research project as a whole. For this study specifically, however, it is not relevant to note all items. It is of interest that participants were first presented with several statements regarding the dependent variable intention to buy (see Appendix C) and thereafter with eleven items concerning the moderator health consciousness (see Appendix D). They were also presented with several items concerning their demographics. An attention check was performed three times by asking participants to select a specific response option. Lastly, participants were asked whether they answered truthfully.

## **Materials**

### ***Vegan Labelling***

Four different pictures of chocolate chip cookie packaging, each including a combination of two out of four experimental conditions (i.e., green or brown-coloured packaging, with a vegan label or with no label), were designed by the researchers (see Appendix A). Participants were, on a random basis, provided with one picture. Based on a study by Stremmel et al. (2022), participants were provided with four items concerning this picture, serving as a manipulation check for the independent variable vegan labelling (see Appendix B). These items were answered on a 7-point Likert scale (i.e., 1 = *strongly disagree* and 7 = *strongly agree*). Since in this study specifically, the focus lay on the vegan labelling condition, the data were grouped according to this condition and the packaging colour condition was excluded from the data analysis, as previously stated.

### ***Intention to Buy***

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To assess participants' intention to buy the presented chocolate chip cookies, again items based on a study by Stremmel et al. (2022) were used (see Appendix C). The used scale for measuring this dependent variable had participants compare the chocolate chip cookies that were shown with similar chocolate chip cookies that came to the participants' minds. These items were again answered on a 7-point Likert scale (i.e., 1 = *strongly disagree* and 7 = *strongly agree*). The Cronbach's Alpha for the used scale of the dependent variable intention to buy was found to be  $\alpha = .775$ , which can be accepted as a valid score.

### ***Health Consciousness***

To assess participants' degree of health consciousness, eleven items from a re-conceptualization of scale development for measuring health consciousness by Hong (2009) were used (see Appendix D). The items of this scale, measuring the moderator, target either the topic of one's self-health awareness, one's personal responsibility, or one's health motivation. These items were again answered on a 7-point Likert scale (i.e., 1 = *strongly disagree* and 7 = *strongly agree*). The Cronbach's Alpha for the used scale of the moderator health consciousness was found to be  $\alpha = .765$ , which can be accepted as a valid score.

### **Study Design**

For this study specifically, an experimental study using a between-subjects design was performed. Participants were randomly assigned to one of two experimental conditions: a) packaging with a vegan label, and b) packaging with no label. First, the manipulation checks of power were each individually analysed using a univariate Analysis of Variance. Second, the first hypothesis was tested using a one-way between-subjects Analysis Of Variance. Lastly, the second hypothesis (i.e., the moderation hypothesis) was tested using Regression Analysis, first excluding and subsequently including the interaction term.

## Results

### Manipulation Checks

In terms of manipulation checks, the following four variables were examined: (a) manipulation check for sustainability, (b) manipulation check for environmental friendliness, (c) manipulation check for healthiness, and (d) manipulation check for tastiness (see Table 1).

**Table 1**

#### *Descriptive Statistics*

	N	Minimum	Maximum	Mean	Std. Deviation
MC Sustainable	219	1	7	3,84	1,574
MC Environmentally Friendly	219	1	7	3,88	1,624
MC Healthy	219	1	6	3,41	1,412
MC Tasty	219	1	7	4,54	1,271
Valid N (listwise)	219				

Between the variables ‘manipulation check for sustainability’ and ‘manipulation check for environmental friendliness’ a significant, strong positive correlation was found,  $r = .78$ ,  $p < .001$ . A significant, moderate positive correlation was found between the variable ‘manipulation check for healthiness’, and the variables ‘manipulation check for sustainability’ ( $r = .44$ ,  $p < .001$ ) and ‘manipulation check for environmental friendliness’ ( $r = .48$ ,  $p < .001$ ). No significant correlations were found between the variable ‘manipulation check for tastiness’ and any of the other variables (see Table 2).

**Table 2***Correlations*

		MC Sustainable	MC Environmentally Friendly	MC Healthy
MC Sustainable	Pearson Correlation	1	,778**	,435**
	Sig. (2-tailed)		<,001	<,001
	N	219	219	219
MC Environmentally Friendly	Pearson Correlation	,778**	1	,475**
	Sig. (2-tailed)	<,001		<,001
	N	219	219	219
MC Healthy	Pearson Correlation	,435**	,475**	1
	Sig. (2-tailed)	<,001	<,001	
	N	219	219	219
MC Tasty	Pearson Correlation	,001	,038	,123
	Sig. (2-tailed)	,989	,578	,070
	N	219	219	219

\*\* Correlation is significant at the 0.01 level (2-tailed).

The manipulation checks of power were each individually analysed using a univariate Analysis of Variance. For each of the four analyses, the following assumptions were examined: observations that are independent of the residuals (i.e., independence), a normal distribution of the residuals (i.e., normality) and an equal standard deviation for each group in the population (i.e., homoscedasticity). No evidence of violations was found.

First, the cookie packaging with a vegan label was indeed perceived as more sustainable than the packaging without a vegan label (i.e., no label),  $F(1, 217) = 17.96, p < .001, \eta^2 = .08$ . Second, the cookie packaging with a vegan label was indeed perceived as more environmentally friendly than the packaging without a vegan label,  $F(1, 217) = 12.33, p < .001, \eta^2 = .05$ . Third, the cookie packaging with a vegan label was not perceived as healthier than the packaging without a vegan label,  $F(1, 217) = .34, p = .56, \eta^2 = .002$ . Lastly, the cookie packaging with a vegan label was not perceived as less tasty than the packaging without a vegan label,  $F(1, 217) = 2.43, p = .12, \eta^2 = .01$ .

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These results indicate that both the manipulation of perceived sustainability and perceived environmental friendliness worked well. However, both the manipulation of perceived health and perceived taste, on the other hand, did not affect the participants.

### Descriptives

For statistical testing of the hypotheses, vegan labelling (vegan label vs. no label) was the used independent variable, intention to buy was the used dependent variable, and health consciousness was the used moderating covariate, as previously stated (see Table 3).

**Table 3**

#### *Descriptive Statistics*

Vegan Labelling		N	Minimum	Maximum	Mean	Std. Deviation
Vegan Label	Intention to Buy	118	1,00	7,00	4,0876	1,25438
	Health Consciousness	118	2,73	6,00	4,5686	,67375
	Valid N (listwise)	118				
No Label	Intention to Buy	101	1,00	6,67	3,9934	1,21196
	Health Consciousness	101	2,18	6,36	4,5626	,68968
	Valid N (listwise)	101				

No significant correlations were found between the independent variable, the dependent variable and the moderating covariate (see Table 4). Consequently, no statement can be made in this regard.



**Table 4***Correlations*

		Vegan Labelling	Intention to Buy
Vegan Labelling	Pearson Correlation	1	-,038
	Sig. (2-tailed)		,574
	N	219	219
Intention to Buy	Pearson Correlation	-,038	1
	Sig. (2-tailed)	,574	
	N	219	219
Health Consciousness	Pearson Correlation	-,004	,111
	Sig. (2-tailed)	,948	,102
	N	219	219

**Hypothesis Testing**

The first hypothesis was tested using a one-way between-subjects (vegan label vs. no label) Analysis of Variance with intention to buy as the used dependent variable. Before proceeding with this analysis, the following assumptions were examined: observations being independent of the residuals (i.e., independence), a normal distribution of the residuals (i.e., normality) and an equal standard deviation for each group in the population (i.e., homoscedasticity). No evidence of violations was found.

The results of this test indicated no statistically significant difference between the two groups (vegan label vs. no label), thus no significant effect of vegan labelling on intention to buy was found,  $F(1, 218) = .32, p = .57, \eta^2 = .001$ .

Support for the first hypothesis of this study was not found: whether the unexpected vegan hedonic product (i.e., chocolate chip cookies) packaging is provided with or without a vegan label, does not influence consumers' intention to buy this type of product.

The second hypothesis of this study (i.e., the moderation hypothesis) was tested using a Regression Analysis. Before proceeding with the analysis, the following assumptions were

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examined: the presence of linearity, a normal distribution of the residuals (i.e., normality), an equal standard deviation for each group in the population (i.e., homoscedasticity), and the absence of multicollinearity. No evidence of violations was found.

To begin with, the Regression Analysis was run including the variables vegan labelling and health consciousness, to test the main effects. The results of this statistical test indicated that vegan labelling did not significantly predict intention to buy,  $\beta = .04$ ,  $t(216) = .56$ ,  $p = .58$ . Furthermore, health consciousness did also not significantly predict intention to buy,  $\beta = .11$ ,  $t(216) = 1.64$ ,  $p = .10$ . Additionally, the results indicated that the model including both vegan labelling and health consciousness did not explain a significant proportion of variance in intention to buy,  $F(2, 216) = 1.50$ ,  $p = .23$ ,  $R^2 = .01$ .

The next step was to run the Regression Analysis including the variables vegan labelling and health consciousness as well as the interaction term, to test the interaction effect. The results of this statistical test indicated that the interaction term did not significantly predict intention to buy,  $\beta = .05$ ,  $t(215) = .51$ ,  $p = .61$ . Besides, the results indicated that the model including vegan labelling, health consciousness and the interaction term did not explain a significant proportion of variance in intention to buy,  $F(3, 215) = 1.09$ ,  $p = .36$ ,  $R^2 = .02$ . Both with and without controlling for the moderating covariate, no significant difference for the effect of vegan labelling on intention to buy was found.

Support for the second hypothesis of this study was not found: consumers' level of health consciousness does not influence their intention to buy vegan-labelled (vs. unlabelled) unexpected vegan hedonic products (i.e., chocolate chip cookies).

## Discussion

This study sought to answer the question of whether providing unexpected vegan hedonic products with a vegan label influences consumers' intention to buy this type of product, and what the role of consumers' health consciousness is in this context. For this

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purpose, a quantitative study was conducted on consumers' intention to buy specific chocolate chip cookies, of which the packaging was designed and manipulated for this study.

In their study, Stremmel et al. (2022) found that when an unexpected vegan product is provided with a vegan label, through the halo and horn effect, consumers' perceived healthiness and sustainability of this product increase, accompanying an increase in consumption intention, while on the other hand consumers' expected tastiness of this product decreases, accompanying a decrease in consumption intention. The consequences of these altered perceptions for consumers' intention to buy a vegan-labelled unexpected vegan hedonic product (e.g., chocolate chip cookies) might differ depending on consumers' level of health consciousness, or in other words, comprehensive mental orientation toward their health (Hong, 2009). Regarding more health-conscious consumers, when buying a vegan-labelled hedonic product instead of a similar product without a label, their experience of cognitive dissonance might decrease (Ong et al., 2017).

Based on the theoretical framework of this study, it was expected that consumers' intention to buy unexpected vegan hedonic products (i.e., chocolate chip cookies in this study) is lower for products with vegan-labelled packaging compared to products with unlabelled packaging. Regarding the role of consumer's health consciousness in this context, it was expected that consumers' intention to buy vegan-labelled (vs. unlabelled) unexpected vegan hedonic products is higher for consumers who score above average on health consciousness compared to consumers who score lower than average on health consciousness.

The results of this study indicated that whether the unexpected vegan hedonic product (i.e., chocolate chip cookies in this study) packaging is provided with or without a vegan label, does not influence consumers' intention to buy this type of product. Furthermore, the results of this study indicated that consumers' level of health consciousness does not influence their intention to buy vegan-labelled (vs. unlabelled) unexpected vegan hedonic products.

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Thus, this study's predefined hypotheses proved unsupported.

One possible explanation for the incongruence between the expected results and actual findings might be that this study's sample differed too much from the sample of Stremmel et al.'s (2022) study, upon which this study was heavily based. Whilst their sample consisted of German respondents recruited via the commercial online platform Prolific, the convenience sample of this study consisted largely of both Dutch and German university students, recruited by the researchers via verbal communication and social media. The respondents in these samples might have differed in their knowledge of and opinions on veganism, which may have influenced their product perception.

The knowledge of and opinions on veganism of respondents in this study (i.e., their understanding of this diet type) remain unknown. This might be problematic, since the operation of the health halo effect, on which the substantiation of this study's hypotheses relied heavily, requires a healthy image of veganism (Bullock et al., 2020). It cannot be established that this applied to participants in this study. Thus, the manipulation of the product's perceived healthiness might not have occurred as intended, which could be another possible explanation for the incongruence between the expected results and actual findings.

A different reason to question whether the health halo effect did occur as intended, is the fact that this study involved specifically a hedonic product. Overall, the vegan-labelled cookies were not perceived as healthier than the unlabelled cookies, whereas this was expected based on the health halo effect (Bullock et al., 2020). This may be due to the product choice in this study, as it should be blatantly clear to consumers that a hedonic product like chocolate chip cookies is unhealthy due to the abundant saturated fats and sugars that it contains, whether it is vegan or not. In retrospect, this was another flaw of this study's design.

It is worth noting this study's design limitations in a broader sense as well. In this study, only consumers' intention to buy was considered, which need not correlate with

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consumers' actual buying behaviour. Additionally, the setting in which participants evaluated the chocolate chip cookies (i.e., after being shown a picture of the product packaging in an online questionnaire) is very different from the realistic, natural setting (i.e. after making the autonomous choice to look at cookies from the supermarket shelf). This might interfere with the generalisation of the findings of this study outside the experimental setting.

Furthermore, limitations can be noted regarding this study's sample. First, the used sample was relatively small. In addition, the sample included too many adolescents, many of whom were students, to be representative of 'the consumer' in the broad sense. Not only were highly educated individuals, who are generally thought to be more critical thinkers, overrepresented, but also the ratio of respondents with a vegan diet to respondents with other diet types was not representative of society, in which the number of people with a vegan diet compared to other types of diet is much smaller. Moreover, despite the sample including respondents of several nationalities, the influence of respondents' cultural background on their opinions on nutrition in general and veganism in particular was not considered, while research indicates that food choices are shaped by culture (Enriquez & Archila-Godinez, 2022). Lastly, the generalisation of these findings to other countries and cultures might also be hampered since this study's respondents, who are from Western, educated, industrialised, rich and democratic (i.e., WEIRD) societies, are not representative of the global population as a whole (American Psychological Association, 2010).

Although this study has provided valuable insight into consumer behaviour related to unexpected vegan hedonic products, continued research on this subject is required to give more detailed insight, specifically to better understand how consumers perceive this specific type of product and how their decision-making is shaped by these perceptions. It is possible that the health halo effect does not apply to hedonic products; this study was unable to prove this. In order to strengthen the theoretical framework, it could thus be beneficial to explore

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this further using several types of hedonic products, instead of merely the chocolate chip cookies used in this particular study. The design of future studies could also be improved by providing participants with basic information about veganism during the experiment, as incorrect or inadequate knowledge might have distorted the working of the health halo effect. Finally, the sampling of future studies could be improved by selecting a more specific group of respondents, since a comparison based on a virtually equal ratio of vegans to omnivores could for example yield more useful information on differing consumer perceptions.

### **Conclusion**

Does providing unexpected vegan hedonic products with a vegan label influence consumers' intention to buy this type of product, and what is the role of consumers' health consciousness in this context? According to this study, the practice of labelling an unexpected vegan hedonic product does not influence consumers' intention to buy this type of product. Furthermore, consumers' level of health consciousness does not influence their intention to buy this type of product. This implies that consumers are not enticed to buy (and consume) more unhealthy hedonic products, such as unexpected vegan chocolate chip cookies, when the product packaging is provided with a vegan label. Thus, this study provides no ground for deeming the vegan labelling of unexpected vegan hedonic products 'consumer deception'.

The findings of this study could be consulted by government bodies, and food manufacturers and marketers, among others, when seeking information on promoting more healthy decision-making in the supermarket in order to combat the alarming increase in overweight and obesity in Europe. In addition, the findings of this study might prove to be useful from a marketing and consumer psychology perspective, or more specifically from a financial point of view, for manufacturers and marketers when seeking information on capitalising on the current trendiness of veganism by providing their unexpected vegan products with a vegan label. After all, this study provides no ground to dissuade them from

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doing so.

Nevertheless, this study also highlighted the importance of encouraging the conduct of further research that provides more detailed insight into consumers' perceptions of unexpected vegan hedonic products as well as the influence of these perceptions on consumers' decision-making, specifically within the context of vegan labelling. The "tale of two cookies" has not yet been entirely told and requires a sequel to best convey its message.

### References

- American Psychological Association (APA). (2010, May). *Are your findings 'WEIRD'?*  
Accessed on January 28<sup>th</sup> 2023, from <https://www.apa.org/monitor/2010/05/weird>
- Appleby, P. N., & Key, T. J. (2016). The long-term health of vegetarians and vegans.  
*Proceedings of the Nutrition Society*, 75(3), 287–293.  
<https://doi.org/10.1017/S0029665115004334>
- Barnard, N. D., Katcher, H. I., Jenkins, D. J. A., Cohen, J., & Turner-McGrievy, G. (2009).  
Vegetarian and vegan diets in type 2 diabetes management. *Nutrition Reviews*, 67(5),  
255–263. <https://doi.org/10.1111/j.1753-4887.2009.00198.x>
- Brennan, P., Perola, M., van Ommen, G.-J., & Riboli, E. (2017). Chronic disease research in  
Europe and the need for integrated population cohorts. *European Journal of  
Epidemiology: The Official Journal of the European Epidemiology Federation*, 32(9),  
741–749. <https://doi.org/10.1007/s10654017-0315-2>
- Bullock, K., Lahne, J., & Pope, L. (2020). Investigating the role of health halos and reactance  
in ice cream choice. *Food Quality and Preference*, 80.  
<https://doi.org/10.1016/j.foodqual.2019.103826>
- Burton, S., Cook, L. A., Howlett, E., & Newman, C. L. (2015). Broken halos and shattered  
horns: overcoming the biasing effects of prior expectations through objective  
information disclosure. *Journal of the Academy of Marketing Science: Official  
Publication of the Academy of Marketing Science*, 43(2), 240–256.  
<https://doi.org/10.1007/s11747-014-0378-5>



## A TALE OF TWO COOKIES

Clarys, P., Deliëns, T., Huybrechts, I., Deriemaeker, P., Vanaelst, B., De Keyzer, W.,

Hebbelinck, M., & Mullie, P. (2014). Comparison of nutritional quality of the vegan, vegetarian, semi-vegetarian, pesco-vegetarian and omnivorous diet. *Nutrients*, 6(3), 1318–1332. <https://doi.org/10.3390/nu6031318>

Craig, W. J. (2009). Health effects of vegan diets. *The American Journal of Clinical Nutrition*, 89(5), 1627. <https://doi.org/10.3945/ajcn.2009.26736N>

Dinu, M., Abbate, R., Gensini, G. F., Casini, A., & Sofi, F. (2017). Vegetarian, vegan diets and multiple health outcomes: a systematic review with meta-analysis of observational studies. *Critical Reviews in Food Science and Nutrition*, 57(17), 3640–3649. <https://doi.org/10.1080/10408398.2016.1138447>

Enriquez, J. P., & Archila-Godinez, J. C. (2022). Social and cultural influences on food choices: a review. *Critical Reviews in Food Science and Nutrition*, 62(13), 3698–3704. <https://doi.org/10.1080/10408398.2020.1870434>

European Vegetarian Union. (2019). *V-Label: Het kwaliteitskeurmerk voor vegan en vegetarische producten*. Accessed on October 10<sup>th</sup> 2022, from <https://www.v-label.eu/nl>.

European Vegetarian Union. (2021). *Relevance*. Accessed on October 10<sup>th</sup> 2022, from <https://www.euroveg.eu/relevance/>.

European Vegetarian Union. (2023). *FAQ*. Accessed on January 28<sup>th</sup> 2023, from <https://www.v-label.com/faqs/>

Expert Market Research (EMR). (2021). *Global Vegan Food Market Outlook*. Accessed on January 30<sup>th</sup> 2023, from <https://www.expertmarketresearch.com/reports/vegan-food-market>

## A TALE OF TWO COOKIES

Fehér, A., Szakaly, M., Szakaly, Z., Gazdecki, M., & Veha, M. (2020). A comprehensive review of the benefits of and the barriers to the switch to a plant-based diet.

*Sustainability (Switzerland)*, 12(10). <https://doi.org/10.3390/su12104136>

Good Food Institute. (2021). *Consumer insights & research reports: Alternative proteins*.

Accessed on October 10<sup>th</sup> 2022, from <https://gfi.org/resource/consumer-insights/>

Hong, H. (2009). *Scale development for measuring health consciousness: Re-*

*conceptualization*. International Public Relations Research Conference. Accessed on

October 24<sup>th</sup>, from [https://www.instituteforpr.org/wpcontent/](https://www.instituteforpr.org/wpcontent/uploads/ScaleDvlpmentMeasuring.pdf)

[uploads/ScaleDvlpmentMeasuring.pdf](https://www.instituteforpr.org/wpcontent/uploads/ScaleDvlpmentMeasuring.pdf)

Mintel Group Ltd. (2023). *Emerging Trends in the Plant-Based Industry*. Accessed on

January 11<sup>th</sup>, from <https://www.mintel.com/emerging-plant-based-trends>

Nisbett, R. E., & Wilson, T. D. (1977). The halo effect: Evidence for unconscious alteration of judgments. *Journal of Personality and Social Psychology*, 35(4), 250–256.

<https://doi.org/10.1037/0022-3514.35.4.250>

Ong, A. S. J., Frewer, L. J., & Chan, M. Y. (2017). Cognitive dissonance in food and nutrition - a conceptual framework. *Trends in Food Science & Technology*, 59, 60–69.

<https://doi.org/10.1016/j.tifs.2016.11.003>

Stremmel, G., Elshiewy, O., Boztug, Y., & Carneiro-Otto, F. (2022). Vegan labeling for what is already vegan: product perceptions and consumption intentions. *Appetite*, 175.

<https://doi.org/10.1016/j.appet.2022.106048>

World Health Organisation (WHO). (2023). *Obesity and overweight*. Accessed on January

28<sup>th</sup> 2023, from [https://www.who.int/news-room/fact-sheets/detail/](https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight)

[obesity-and-overweight](https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight)

## A TALE OF TWO COOKIES

WHO Regional Office for Europe. (2022). *WHO European Regional Obesity Report 2022*.

Accessed on January 28<sup>th</sup> 2023, from

<https://apps.who.int/iris/bitstream/handle/10665/353747/9789289057738-eng.pdf?sequence=1&isAllowed=y>

## Appendices

### Appendix A

This appendix contains the product packaging designs that were used in the questionnaire.

Illustration 1:

Green-coloured packaging with the vegan label.

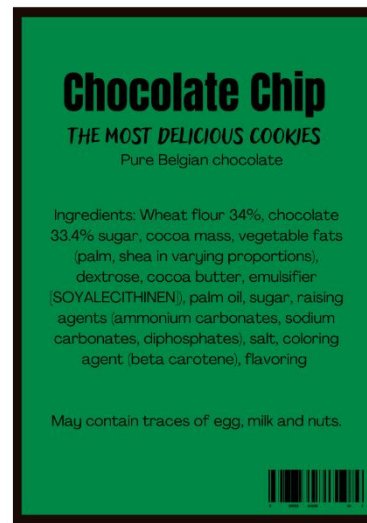
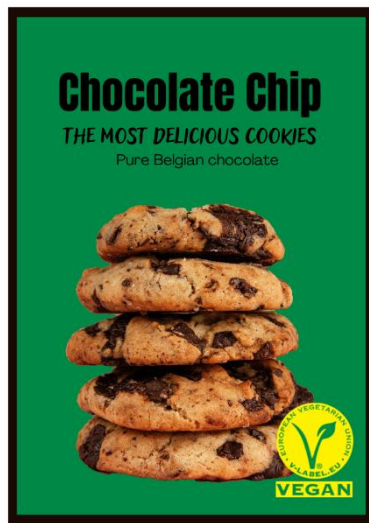
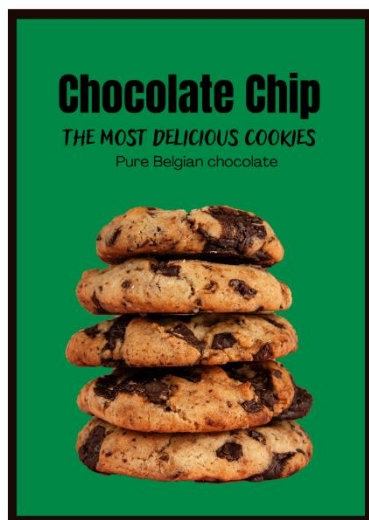


Illustration 2:

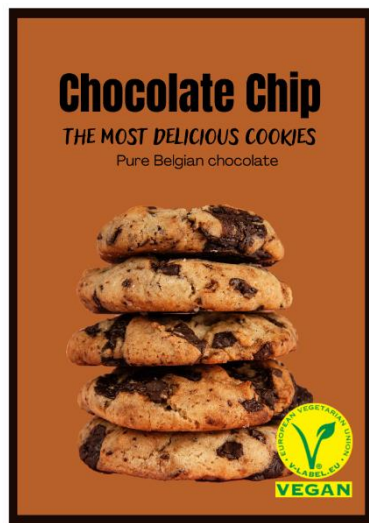
Green-coloured packaging without a label.



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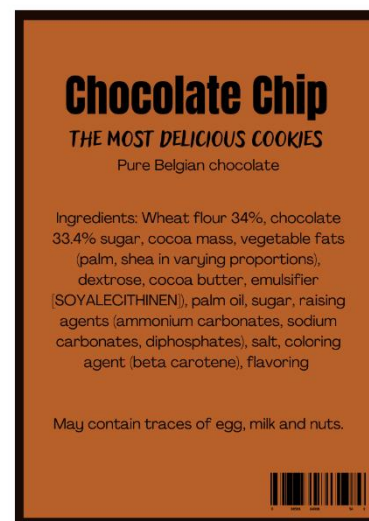
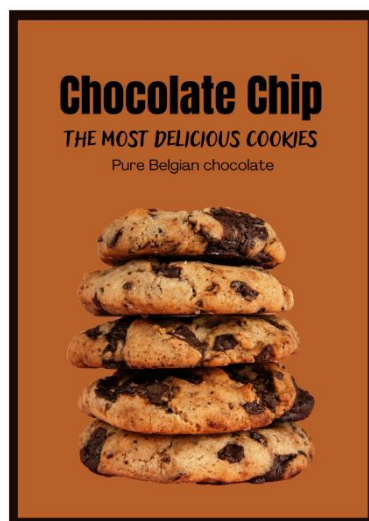
## Illustration 3:

Brown-coloured packaging with the vegan label.



## Illustration 4:

Brown-coloured packaging without a label.



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**Appendix B**

This appendix contains the questionnaire items for the manipulation check, based on items used in a study by Stremmel et al. (2022). These items were answered on a 7-point Likert scale (i.e., 1 = *strongly disagree* and 7 = *strongly agree*).

“Please rate the following statements.

Compared to other chocolate chip cookies...

- I think the chocolate chip cookies that were shown to me are healthier.
- I think the chocolate chip cookies that were shown to me are tastier.
- I think the chocolate chip cookies that were shown to me are environmentally friendly.
- I think the chocolate chip cookies that were shown to me are sustainable.”

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**Appendix C**

This appendix contains the questionnaire items for the dependent variable intention to buy, based on items used in a study by Stremmel et al. (2022). These items were answered on a 7 point Likert scale (i.e., 1 = *strongly disagree* and 7 = *strongly agree*).

“Imagine that the chocolate chip cookies that were shown to you are available in stores.

Then, rate the following statements.

Compared to other chocolate chip cookies...

- I would rather buy the chocolate chip cookies that were shown to me.
- I would buy the chocolate chip cookies that were shown to me in the near future.
- I plan to buy the chocolate chip cookies that were shown to me on regular basis.”

**Appendix D**

This appendix contains the questionnaire items for the moderating variable health consciousness, retrieved from a study by Hong (2009). These items were answered on a 7 point Likert scale (i.e., 1 = *strongly disagree* and 7 = *strongly agree*).

“To what degree do you agree with the following statements?

- I’m very self-conscious about my health.
- I’m generally attentive to my inner feelings about my health.
- I reflect about my health a lot.
- I’m concerned about my health all the time.
- I notice how I feel physically as I go through the day.
- I take responsibility for the state of my health.
- Good health takes active participation on my part.
- I only worry about my health when I get sick. (R)
- Living life without disease and illness is very important to me.
- My health depends on how well I take care of myself.
- Living life in the best possible health is very important to me.”