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Spreading Veganism Through Vegan Labelling?
The Effect of the Vegan Label on Consumer
Perceptions and the Mediating Role of Dietary
Identity

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Master Thesis – Environmental Psychology

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July 2023

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Abstract

A vegan diet is effective in reducing one's environmental impact (Aleksandrowicz et al., 2016). Veganism is becoming more popular and vegan product labelling is increasing. In this experimental study, the effect of a vegan label on a sweet spread on consumer perceptions is investigated. We tested centrality of dietary identity (Rosenfeld & Burrow, 2017) as a mediator, adding diet as a moderator. In the online experiment, 428 participants evaluated either a picture of a sweet spread with vegan labelling or without. Our MANOVA showed a positive main effect of the vegan label on perceptions of healthiness, fair trade, sustainability and animal friendliness. Our regression did not find a mediating role of centrality of dietary identity. Diet moderated the expected taste and perception of sustainability, in such that vegans and vegetarians had a more positive effect than flexitarians and omnivores. We conclude that vegan labelling positively influences consumer perceptions and therefore recommend adding the label to such vegan products.

Key words: Vegan Label, Consumer Perceptions, Expected Tastiness, Diet, Centrality of Dietary Identity

Spreading Veganism Through Labelling? The Effect of the Vegan Label on Consumer Perceptions and the Mediating Role of Dietary Identity

A vegan diet is one of the most effective ways to reduce an individual's impact on the environment, as a plant-based diet requires about half the water use compared to an omnivorous diet and can reduce the greenhouse gas emission by up to 80% (Aleksandrowicz et al., 2016). Consumers are increasingly reducing or eliminating their consumption of animal products (EMR, 2021). In line with this, a growing number of products in supermarkets have a vegan label (EMR, 2021). Such products can be divided into two categories: vegan products developed to directly replace animal products, such as meat substitutes, and products that just happen to be vegan. Stremmel et al. (2022) categorized the latter category as 'randomly' vegan products, which can be products such as bread, spreads and sweets. They showed that these products are perceived differently when containing a vegan label. So far, most research has been done on vegan products that replace animal products (see, for example, Onwezen et al., 2021; Marshall et al., 2022; Demartini et al., 2022), while very little is known about 'randomly' vegan products. This thesis aims to contribute to this knowledge gap by experimentally investigating the relationship between vegan labels and consumer perceptions.

Using official vegan labels on these 'randomly' vegan products is beneficial for product transparency (Gerke & Janssen, 2017). However, the labelling of products can influence how people perceive the product, as for example in the 'halo effect' (Thorndike, 1920). The halo effect is an older concept in cognitive psychology. It is however still important in recent research, for example in the research of the fair trade label (Berry & Romero, 2021). The halo effect is a bias of judgement based on a singular aspect of the product or person. This is for example shown in the perception of the 'fair trade' label. The 'fair trade' label increases the perception of healthfulness of a food product, even though the label is not related to the concept of healthiness (Berry & Romero, 2021). Stremmel et al.

(2022) looked at the use of the vegan label on different types of spreads and found that the 'randomly' vegan products containing a vegan label were seen as more sustainable and healthier and people expected they would be less tasty than unlabelled products. However, these effects were only significant when people did not expect these products to usually be vegan, which was the case for an herb spread and a chocolate spread. Furthermore, they differentiated between utilitarian goal food (hummus and herb spread) and hedonic goal foods (jam and chocolate spread). There was no difference in the ratings of products associated with hedonic goals versus products with a more utilitarian goal. Even though the vegan labelled products were expected to be less tasty, the influences of the labelling of unexpected vegan products were associated with higher consumption intentions via the increased perceptions of healthiness and sustainability.

Consumer Perceptions

The influence of the vegan label on consumer perceptions is often measured using expected tastiness, perceptions of healthiness, sustainability and animal friendliness, as people might have an association between veganism and these perceptions (Stremmel et al., 2022; Demartini et al., 2022; Kilian & Hamm, 2021). These different perceptions will be discussed separately in the following sections.

Expected Tastiness

Expected tastiness is important to investigate as lowered expected taste of vegan and vegetarian products is actually the most prominent barrier for adopting a more plant-based diet (Rosenfeld & Tomiyama, 2020). Expected tastiness of a product is often connected with the perception of healthiness, as there is an assumption that unhealthy foods are more tasty than healthy foods (Raghunathan et al., 2006). However, this is not always a clear association, since the increased perception of healthiness stemming from an organic label stimulated the

perceived tastiness in healthy foods, but not for unhealthy foods (Nadricka et al., 2020). In the same manner, it seems that vegans associate vegan food with good taste and healthiness, as well as vegetarians and some former vegetarians but in a less strong manner (Kilian & Hamm, 2021). Contrary to this, flexitarians and some former vegetarians seem to associate vegan food with lower tastiness and increased healthiness. In Kilian & Hamm's study (2021), omnivores showed no clear association in the tastiness of vegan processed food. Thus, the association between the diet and the perception of tastiness appears to be rather complicated, as diet seems to moderate the tastiness associations with vegan food.

Perceived Healthiness

Vegan products are associated with a higher rating of perceived healthiness than non-vegan products (Kilian & Hamm, 2021). As previously mentioned, the healthiness perception increased for 'randomly' vegan products once the label was added, indicating a halo effect (Stremmel et al., 2022). This is in line with the increased perception of healthiness when a 'natural' label is added to a food product (Berry et al., 2017). An increase in perception of healthiness has been found for fair trade labels, and organic labels as well (Berry & Romero, 2021; Nadricka et al., 2020). Even though the labels themselves aren't concerned with the healthiness of the product, they are still associated with it. This association of healthiness with vegan products seems to be relatively consistent over different diets (Kilian & Hamm, 2021).

Perceived Sustainability and Fair Trade

A plant-based diet is an effective way to reduce one's impact on the environment (Aleksandrowicz et al., 2016), and plant-based diets are often marketed that way (EMR, 2021). This may form an association between vegan products and perceived sustainability. Accordingly, research found that unexpectedly vegan products with a label were seen as more sustainable than similar products without a label (Stremmel et al., 2022). In a similar fashion,

coffee and sugar with organic and fair trade labels are perceived as more sustainable than unlabelled products (Lazzarini et al., 2017). Whereas vegans and vegetarians seem to have a strong association between vegan products and sustainability, this appears to be less so the case for flexitarians and omnivores (Kilian & Hamm, 2021). Thus, one's diet might have a moderating effect on the relationship between 'randomly' vegan labelled products and perceived sustainability.

While perception of fair trade is included as a social dimension into the measurement of perceived sustainability in Stremmel et al. (2022), in this research we prefer to separate these perceptions. We prefer this separation as we expect a clearer relation between vegan diets and sustainability classified as environmental friendliness than for fair trade perception (EMR, 2021; Kilian & Hamm, 2021). In the same way we expect a halo effect for the perception of healthiness we expect a halo effect for perception of fair trade.

Perception of Animal Friendliness

As vegan products do not contain any animal products by definition, they might be associated with increased animal friendliness. The association between vegan products and animal friendliness perception seems to be strong for vegans, vegetarians and former vegetarians (Kilian & Hamm, 2021). However, there was no association found between vegan products and animal friendliness for flexitarians and omnivores in previous research (Kilian & Hamm, 2021). Once again, this perception seems to be moderated by diet.

Diet

In discussing the expected tastiness, perceptions of sustainability and animal friendliness, a moderating role of diet is of importance. Different types of labels have been shown to affect people depending on their diet. For example, vegetarians and vegans perceived products with a 'clean' label as healthy and natural, but for omnivores the label had

no influence on the evaluation of the products (Noguerol et al., 2021). We hypothesize that this moderating effect of diet plays a role in the assessment of vegan-labelled products as well. In general, we expect that the fewer animal products someone consumes, the more strongly they perceive vegan products to be tasty, sustainable and animal friendly.

Dietary Identity

Whereas diet is a description of the food choices someone makes, dietary identity is a social and personal identity focused on how people think and feel about consuming or avoiding animal products (Rosenfeld & Burrow, 2017). Therefore, eating a vegetarian diet is not necessarily the same thing as identifying as a vegetarian. The concept of dietary identity is based on the social identity theory (Tajfel, 1974). This means that vegans are members of a distinct social group and as such, they can form a salient vegan identity (Rosenfeld & Burrow, 2017). The concept of dietary identity may even become a motivation for people to adopt a vegetarian or vegan diet, as it can make them become part of an ingroup (Plante et al., 2019). Dietary identity is a fluid construct that comprises dimensions such as centrality, out-group regard and motivational dimensions. Centrality of dietary identity is specifically studied as this dimension is expected to be most likely to influence the daily food choices one makes (Rosenfeld & Burrow, 2017). As the dietary identity is a fluid construct and has not experimentally been tested yet, it is unknown how seeing the vegan label on food products influences it. It is possible that the vegan label might act as a cue to increase the salience of the dietary identity.

A strengthened identity based on cues is also seen in the concept of environmental self-identity (Van der Werff et al., 2014). Reminding people of their past environmental behaviour or providing cues that someone is an environmental person strengthens the environmental self-identity and is more likely to influence environmental behaviour (Van der

Werff et al., 2013; Van der Werff et al., 2014). Behaviour thus plays a role in identity, and behaviour might even form an identity (Randers & Thøgersen, 2023). In an experimental study of the development of meat and flexitarian identity, Randers and Thøgersen (2023) found that a flexitarian identity was developed through attitude formation based on repeated behaviours. When people were served vegetarian meals repeatedly, their flexitarian identity was strengthened, mediated through attitudes towards eating meat. This suggests that a self-perception process (Bem, 1972) is likely to explain the formation of such an identity.

Research Questions and Hypotheses

The consumer perceptions are analysed to determine how they are influenced by the label and to assess the relationships between each other. The hypothesized relations for the consumer perceptions are shown in Figure 1. The aim of this thesis is to research how vegan labels on a ‘randomly’ vegan product influence the consumer perceptions. Specifically a sweet cookie spread has been chosen as it is expected to act as a hedonic, unexpected food (Stremmel et al., 2022). Centrality of dietary identity is investigated as a mediator in this relation, while diet is investigated as a moderator on each relation in this model, as shown in Figure 2a and b. Except for taste (Figure 2a), we hypothesise identical models (Figure 2b).

Figure 1

The Effect of Vegan Label on Consumer Perceptions, 2x2 MANOVA

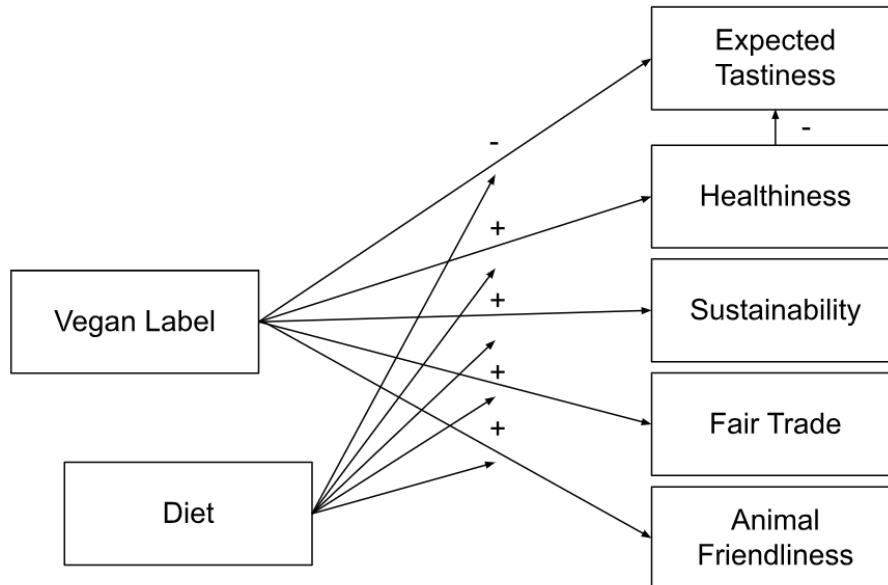


Figure 2a

Moderated Mediation Model of Expected Tastiness

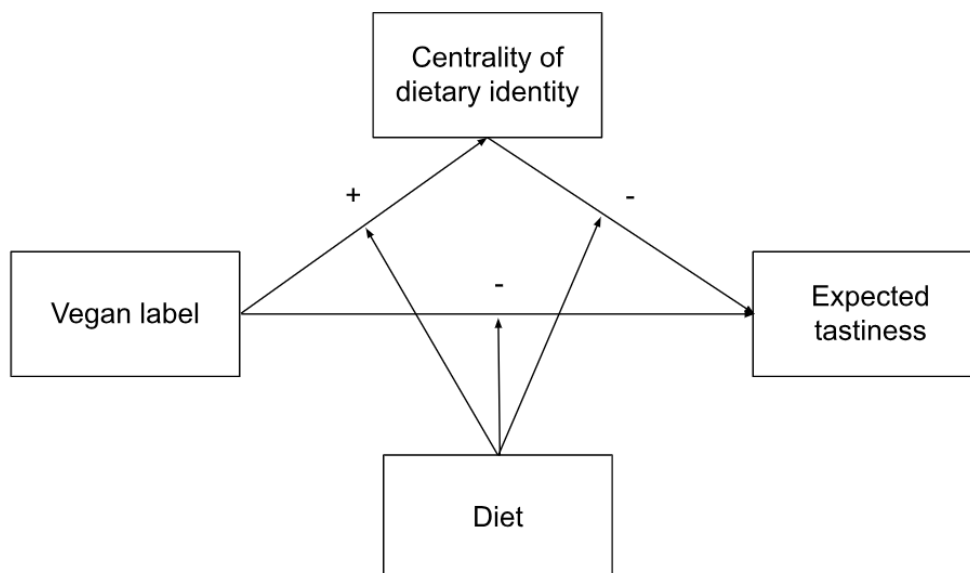
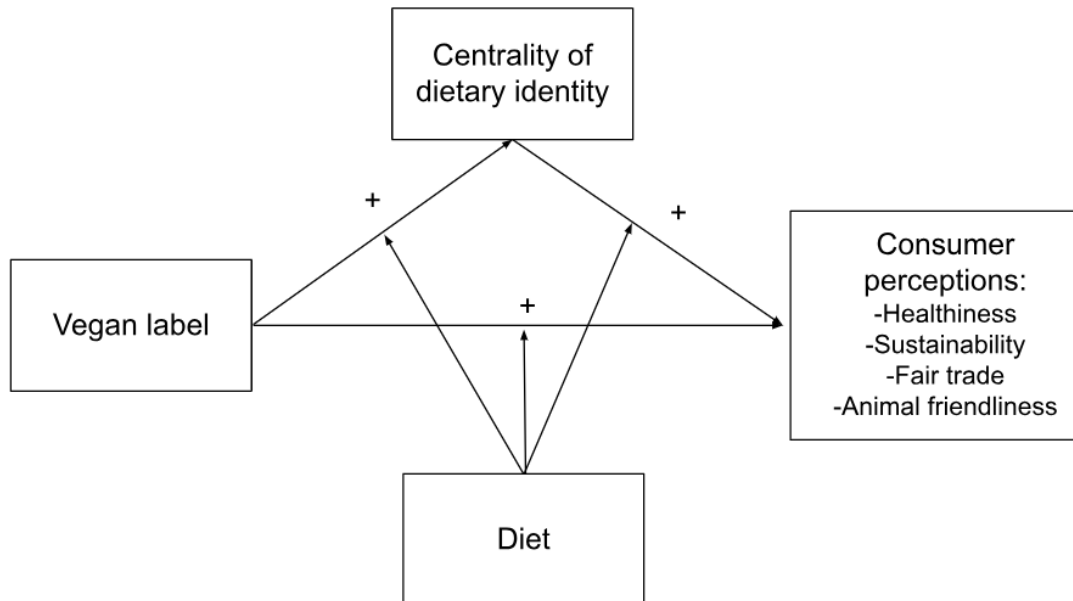


Figure 2b

Moderated Mediation Model of Perceived Sustainability, Perceived Fair Trade and Animal Friendliness



Hypotheses

Based on the literature previously discussed, we expect that the vegan label on the sweet spread negatively impacts the expected taste (H1a). While, the vegan label on the sweet spread positively impacts the perceptions of healthiness (H1b), sustainability (H1c), fair trade (H1d) and animal friendliness (H1e). We also expect an interaction between the impact of the vegan label and diet on the consumer perceptions of tastiness (H2a), healthiness (H2b), Sustainability (H2c), fair trade (H2d) and animal friendliness (H2e). Furthermore, we predict that seeing the vegan label increases the centrality of the dietary identity (H3a). The relationships between the vegan label and the consumer perceptions are mediated by the centrality of the dietary identity (H3b). It is expected that diet moderates the relationships

between the vegan label and the consumer perceptions (H4). For omnivores and flexitarians a lower expected taste is expected than for vegetarians and vegans (H4a). While for healthiness (H4b), sustainability (H4c), fair trade (H4d) and animal friendliness (H4e), a higher rating is expected when diets are more restrictive of animal products. We also predict that diet moderates between the vegan label and the centrality of the dietary identity (H5). For vegans and vegetarians the vegan label might increase the centrality of the dietary identity, while this is not expected in omnivores and flexitarians. Lastly, we predict a moderation of diet on the relation between the centrality of the dietary identity and the consumer perceptions of expected taste (H6a), healthiness (H6b), sustainability (H6c), fair trade (H6d) and animal friendliness (H6e). For omnivores and flexitarians this relationship might be negative, while for vegetarians and vegans this might be positive.

Method

The ethical committee of the faculty of behavioural and social sciences of the University of Groningen approved this study (PSY-2223-S-0027) on 23 February 2023.

Participants

An *a priori* power analysis was done using G*Power to determine the desired sample size. The desired sample size would be 300 for expected small to medium effect size. Participant recruitment was done via the *Nederlandse Vegetariërsbond* (Dutch vegetarian association, NVB), which reached mostly vegetarians and vegans. To reach a balanced sample in terms of diet, the university pool (SONA) was used to target omnivore participants. The total sample consisted of 428 participants, of which 84% was female and 15% was male. The average age was 41 ($SD= 17.59$), ranging from 18 till 78. As the recruited groups of the NVB and SONA are different, they are described separately in appendix A.

Measures

Vegan label

We chose the V-label as the vegan label in this study, as it is the most well-known vegan label in supermarkets (Vegatrends, 2020). In the labelled condition, a picture of a ‘randomly’ vegan cookie butter spread is presented with the vegan label, as shown in picture 1. In the control condition, the picture of the cookie butter spread without a label is shown.

Picture 1

The Cookie Spread with the v-label (1a) and without (1b)



As the general Dutch population is targeted in this research, the survey was presented in Dutch. No validated translation was available for the materials used, however to ensure proper translation of the questions a back-to-back translation was done.

Consumer perceptions

Perceptions of expected tastiness, perceived healthiness, perceived sustainability, perceived fair trade and perceived animal friendliness were measured as dependent variables. These measures are measured on a Likert scale ranging from 1 = fully disagree till 7 = fully agree in the same way as in previous research by Stremmel et al. (2022). Expected tastiness

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($M=3.61$, $SD=1.49$) was measured with only one item: “Compared to other sweet spreads, I think the sweet spread pictured above is better tasting”. Perceived healthiness ($M=2.48$, $SD=1.29$) was also measured with only the item: “Compared to other sweet spreads, I think the sweet spread pictured above is healthier” Perceived sustainability ($M=3.05$, $SD=1.99$) was measured using two items, concerning environmental friendliness and sustainability, which were combined into one perception of sustainability ($r=.87$). An example of an item is: “Compared to other sweet spreads, I think the sweet spread pictured above is more environmentally friendly”. Perceived fair trade ($M=2.73$, $SD=1.44$) was measured with only one item: “Compared to other sweet spreads, I think the sweet spread pictured above is more fair trade.” The perceptions of animal friendliness ($M=3.92$, $SD=1.99$) was measured as the last dependent variable, with the item: “Compared to other sweet spreads, I think the sweet spread pictured above is more animal friendly”.

Diet

Diet was measured with the dietary pattern question of the Dietary Identity Questionnaire (DIQ) (Rosenfeld & Burrow, 2018), in which participants select which food groups they exclude from their diet. The options for food groups are red meat, poultry, fish, dairy and eggs. Based on this question, participants are categorized as vegan in the case of exclusion of all these food groups and vegetarian if they exclude red meat, poultry and fish. In case one of these items was selected but was not defined as vegetarian by us, the participant was categorized as flexitarian. If none of these food groups were excluded, participants were categorized as omnivores.

Second, restrictiveness of animal product consumption was measured as an indicator for diet. This was done in the same manner as in Plante et al. (2019). Participants indicate to what extent they restrict the food groups of red meat, poultry, fish, dairy and eggs on a scale

ranging from 1= not at all to 7= completely. The scores on these items were combined in a composite score for restrictiveness of animal products ($\alpha = .87$). The questions concerning diet were presented in a randomized order to participants.

Centrality of dietary identity

Centrality of dietary identity is chosen as a measure of dietary identity. This is one dimension of the DIQ (Rosenfeld & Burrow, 2018). This dimension consists of five items measured on a seven point Likert scale, with 1= strongly disagree till 7= strongly agree ($\alpha = .92$). An example of an item in this dimension is: “My dietary pattern is an important part of how I would describe myself.”

Procedure

The relation between vegan labels on ‘randomly’ vegan products and the perceptions of the products is investigated in a moderated mediation model (Figure 2). Participants were recruited via the NVB and SONA. Participants received a link to Qualtrics, and were first presented with an informed consent page, stating information about the study and their privacy. The participants gave active consent via a button in Qualtrics. Participants were randomly assigned to either the control condition or the labelled condition via Qualtrics. They were shown the picture of the product (Picture 1) with or without the v-label. After seeing the picture, participants were asked what they saw in the picture to check for the manipulation and then answered questions about their perception of the product. On the next page the questions about diet and centrality of dietary identity were presented to all participants. Next, participants received general demographic questions about their age, gender and educational level. Finally, participants were thanked for their participation and could give comments about the research. Here they were offered the possibility to email the researcher to have a

chance at winning a bol.com voucher. This last page was adapted for the SONA participants, they would be thanked and told how many credits they would receive, instead of a voucher.

Results

Correlations

As shown in Table 1, all consumer perceptions were positively correlated with each other. The centrality of dietary identity was correlated with diet, such that a more strict diet was related to a higher centrality of dietary identity.

Table 1

Correlations (Pearson r) for Perceptions, Centrality of Dietary Identity and Diet

	1.	2.	3.	4.	5.	6.	7.
1.Tastiness	-						
2.Healthiness	.354***	-					
3.Environmental friendliness	.324***	.623***	-				
4.Fair trade	.291***	.608***	.750***	-			
5.Sustainability	.332***	.584***	.866***	.773***	-		
6.Animal friendliness	.151**	.387***	.648***	.503***	.648***	-	
7.Centrality of dietary identity	-.164**	-.023	.029	-.069	-.017	.108*	-
8.Diet (ρ_s)	.200***	.062	-.003	-.146**	.002	-.130**	-.442***

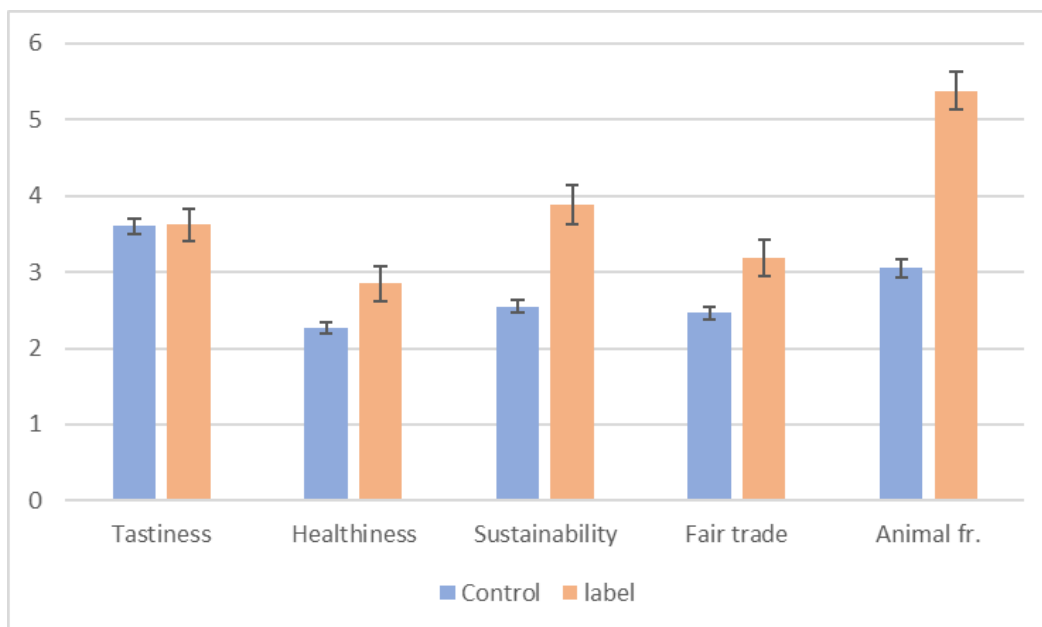
Note: Diet is coded as 1=vegan, 2=vegetarian, 3= flexitarian and 4=omnivore. * is significant at a level of $p= .05$, ** is significant at a level of $p=.01$, *** is significant at a level $p<.001$.

The influence of the vegan label on consumer perceptions

We tested the influence of the vegan label on consumer perceptions, using a MANOVA (Figure 1). Only the data of participants that passed the manipulation check is analysed in our statistical tests ($n=343$). As the assumption of equal variances was violated (Box's $M p<.001$), we used Pillai's trace. Apart from tastiness, the perceptions seem to be rated more positively in the labelled condition than in the control condition.

Figure 3

Consumer Perceptions (Means) per Condition for the Combined Sample



Note: Error bars represent the standard error. Fr. = friendliness.

The MANOVA of vegan label on the outcome perceptions was significant ($F(5,337)= 35.30, p<.001, \eta_p^2= .34$). The results of the tests between-subjects are presented in table 2. The table shows that hypothesis 1a, which stated a negative effect of the label on expected taste, is not supported. Hypothesis 1b,c,d,e all proposed a positive effect of the vegan label on the different perceptions of healthiness, fair trade, sustainability and animal friendliness, and are supported.

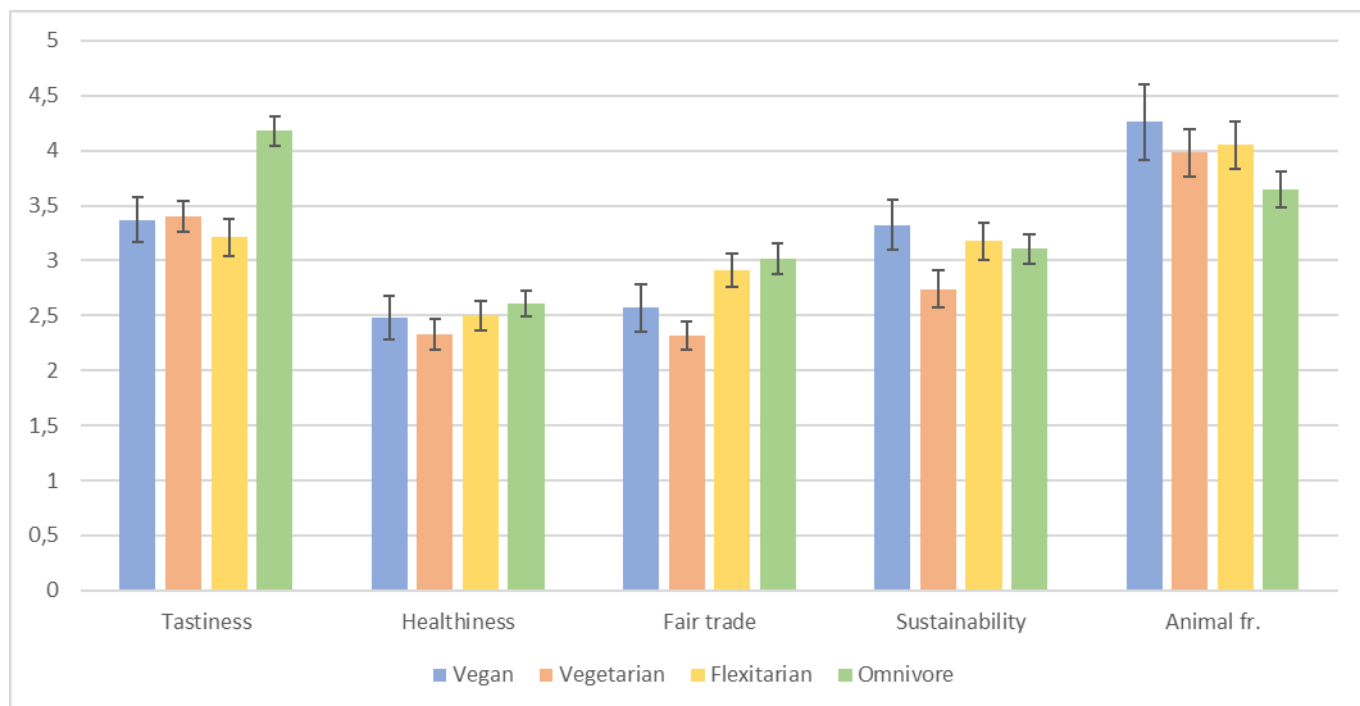
Table 2*MANOVA of Vegan Label on Consumer Perceptions*

Perception	F-value (1,341)	p-value	Effect size: η_p^2
Tastiness	.01	.917	.00
Healthiness	17.84	<.001	.05
Fair trade	21.96	<.001	.06
Sustainability	69.11	<.001	.17
Animal friendliness	162.40	<.001	.32

Thus, the vegan label had a positive significant effect on all perceptions apart from expected tastiness.

Differences in perceptions based on diet

A two-way MANOVA combining diet and the condition showed a significant main effect of diet on consumer perceptions ($F(15,999)=4.33, p<.001, \eta_p^2=.06$). Tests between-subjects showed significant results of diet on perceptions of taste ($p<.001, \eta_p^2=.06$), fair trade ($p=.002, \eta_p^2=.04$) and sustainability ($p=.027, \eta_p^2=.03$). These perceptions for each dietary group are presented in Figure 4. The differences in perception of tastiness were significant between omnivores and vegans ($p=.008$), between omnivores and vegetarians ($p=.001$) and between omnivores and flexitarians ($p<.001$). In the perception of fair trade the difference between vegans and flexitarians was significant ($p=.024$), as well as the difference between omnivores and vegetarians ($p=.002$). For sustainability perceptions there were no significant differences between the dietary groups.

Figure 4*Means per dietary group for Consumer Perceptions*

Note: Animal fr. = animal friendliness. All perceptions are measured on a scale from 1 till 7.

Error bars represent standard error.

The interaction between diet and condition was not significant ($F(15,999)=1.46$, $p=.115$, $\eta_p^2=.02$). Tests between subjects showed that there were no significant interactions between diet and label for any of the consumer perceptions. Therefore, hypotheses H2a,b,c,d,e are rejected.

Mediation of Centrality of Dietary Identity

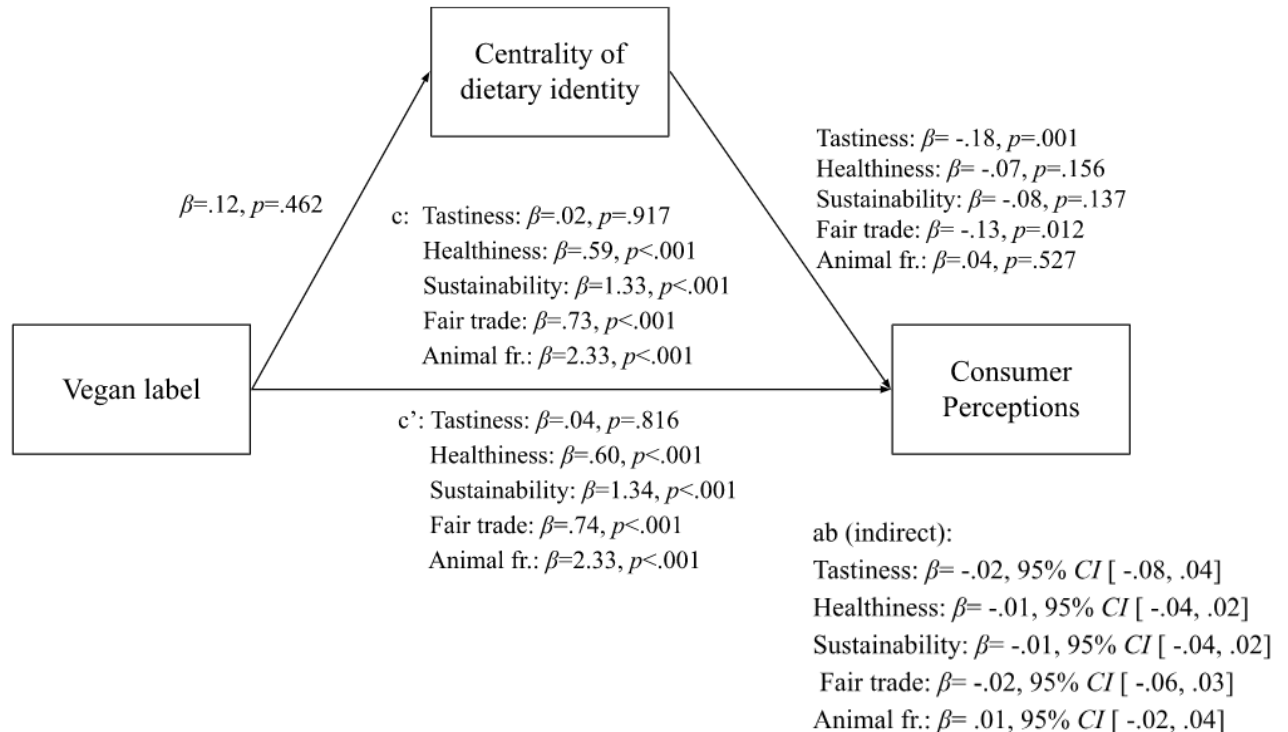
We tested the centrality of dietary identity as a mediator between the vegan label and consumer perceptions. The simple mediation effect is tested with a Hayes process model 4. However, condition did not have a significant effect on the centrality of dietary identity

($\beta=.12, p=.462, 95\% \text{ C.I. } [-.20, .43]$), so we rejected H3a. This means that the first pathway (label \rightarrow centrality of dietary identity) in the mediation model was not significant.

A mediating role of centrality of dietary identity is proposed for all consumer perceptions in hypothesis 3b. The Hayes process model 4 is used to analyse this hypothesis. The results of the mediation analyses on the different consumer perceptions are presented in Figure 5. No significant indirect effect of centrality of dietary identity was found on any of the consumer perceptions, so hypothesis 3 is not supported. However, there seems to be a direct influence of centrality of dietary identity on expected tastiness and perceptions of fair trade.

Figure 5

Mediation Analysis on Consumer Perceptions, Including Total Effects (c), Direct Effects (c') and Indirect Effects (ab)



A higher centrality of dietary identity might mean that people are more attracted to the vegan label as it signals an ingroup (Plante et al., 2019). Centrality of dietary identity is

therefore analysed as a possible moderator on the relationship between the label and consumer perceptions for exploratory analysis. Hayes Process model 1 was used to test this. However, there was no significant moderator effect of centrality of dietary identity.

Moderating role of diet

Lastly, the role of diet is investigated, as in Figure 2a and 2b. Hayes Process model 1 was used to test moderator effect on the main relation between label and perceptions. Hypothesis 4a stated a moderating effect of diet on the relation between the vegan label and consumer perceptions. It was expected that omnivores and flexitarians reported a lower expected taste in the labelled condition than vegetarians and vegans. For the other perceptions a more positive rating was expected when the diet was more restrictive.

The moderation model on expected tastiness was significant in total ($F(7,335)=5.18, p<.001, R^2=.10$). Condition was a significant predictor of expected tastiness ($\beta=1.13, p=.013, 95\% \text{ C.I. } [.25, 2.02]$), Omnivore diet was also a significant predictor of expected tastiness ($\beta=1.26, p<.001, 95\% \text{ C.I. } [.67, 1.86]$). The interaction between label and diet was significantly different for flexitarians ($\beta= -1.18, p=.032, 95\% \text{ C.I. } [-2.26, -.10]$) and omnivores ($\beta= -1.40, p=.010, 95\% \text{ C.I. } [-2.45, -.34]$) compared to vegans. Thus, in line with hypothesis 4a, diet moderated the effect of the vegan label on expected tastiness, in such that omnivores and flexitarians reported a lower expected tastiness in the labelled condition than vegetarians and vegans.

The same moderation model was investigated for perception of healthiness ($F(7,335)=3.28, p=.002, R^2=.06$). In this model, the main effect of the label was not significant ($\beta=.68, p=.089, 95\% \text{ C.I. } [-.10, 1.45]$). Also, none of the diets or the interaction effects were significant. It seems that there is no moderation effect of diet on the perception of healthiness. So, this does not support hypothesis 4b.

The moderation model for perceptions of sustainability was also significant ($F(7,335)=12.26, p<.001, R^2=.20$). The label was a significant predictor of the perception of sustainability ($\beta=2.19, p<.001, 95\% \text{ C.I. } [2.11,3.11]$). An interaction effect between diet and label was found for flexitarians ($\beta= -1.15, p=.0349, 95\% \text{ C.I. } [-2.21, -.09]$) and omnivores ($\beta= -1.08, p=.043, 95\% \text{ C.I. } [-2.12, -.04]$) compared to vegans. This partly supports hypothesis 4c, as vegans perceived the product with label as more sustainably than flexitarians and omnivores. However, no difference between vegans and vegetarians was found.

The same model was investigated for perception of fair trade ($F(7,335)=5.73, p<.001, R^2=.11$). The effect of the label on the perception was marginally significant ($\beta=.84, p=.051, 95\% \text{ C.I. } [-.01, 1.69]$). No effects were found of diet or its interaction with the label. This means that there is no support for hypothesis 4d for the perception of fair trade.

The same was done for perception of animal friendliness ($F(7,335)=24.77, p<.001, R^2=.34$). The effect of the label on the perception was significant ($\beta=2.68, p<.001, 95\% \text{ C.I. } [1.67, 3.69]$). However, no further effects of diet or its interaction were found. This means that hypothesis 4e is not supported for the perception of animal friendliness.

To sum up, a moderation effect of diet was found for expected tastiness and perceptions of sustainability. In both cases, omnivores and flexitarians perceived the labelled product less positive than vegetarians and vegans.

Finally, we tested the complete mediated moderation model (See figure 2), using Hayes Process model 59. Hypothesis 5 and 6 proposed a moderating effect of diet on the pathways of the mediation of centrality of dietary identity. This mediation was however not found. Interaction effects were still investigated, but no significant results were found for any of the consumer perceptions. This means that hypotheses 5 and 6a,b,c,d,e are rejected.

Discussion

The purpose of this study was to investigate the influence of the vegan label on consumer perceptions, and the mediating role of dietary identity (Rosenfeld & Burrow, 2017). We first examined whether the vegan label on the sweet spread influenced the consumer perceptions of expected tastiness, healthiness, sustainability, fair trade and animal friendliness. The results support the hypotheses that the vegan label positively influences the perceptions of healthiness, sustainability, fair trade and animal friendliness. We were interested in the effect of the vegan label on the centrality of dietary identity and proposed a mediation role of centrality of dietary identity. However, our mediation was not supported for any of the consumer perceptions. Further, we investigated the effect of diet as a moderator on these effects. Diet moderated the effect of the label on expected tastiness and perception of sustainability.

Expected tastiness

Although we expected a direct negative effect of the vegan label on the expected tastiness, we did not find evidence for this hypothesis. However, when taking the moderation of diet into account, there was a small negative effect of the vegan label on expected tastiness for omnivores and flexitarians. For vegans and vegetarians, the vegan label increased the expected tastiness. This result is consistent with Kilian and Hamm's (2021) finding that vegans and vegetarians associated vegan food with good taste, while flexitarians associated it with bad taste. Thus, the vegan label decreased the expected tastiness of the sweet spread for flexitarians and omnivores. A possible explanation for this effect is the outgroup-threat of veganism. Rosenfeld et al. (2023) found that intergroup threat mediated the lower expected taste of vegan products (burgers and ice-cream) for meat-eaters who strongly endorse the moral idea that justifies eating animals. This might be especially apparent in our study, as the

vegan label can make this perceived threat of veganism more salient (Rosenfeld et al., 2023). However, this explanation would only be applicable to the omnivores in our study and would not explain the lower expected taste of flexitarians. Another possible explanation could be that for flexitarians and omnivores vegan products are experienced as ‘novel’ foods. Koch et al. (2021) found that sustainable food alternatives are perceived as disgusting when they divert from what consumers see as normal food. It is possible that vegetarians and vegans are more used to vegan foods and have internalized them to be normal food products, while flexitarians and omnivores have less experience with certain vegan products and therefore expect them to be disgusting.

Our findings are however not in line with the ‘unhealthier is tastier’ intuition (Raghunathan et al., 2006). Participants did perceive the labelled product to be healthier, but this did not go hand in hand with a lower expected tastiness for vegetarians and vegans. It thus seems that, at least for those who have more positive views on vegan products this intuition did not motivate the rating of expected tastiness.

Perception of healthiness

The vegan label did have the expected positive effects on the perception of healthiness. Healthiness is not necessarily related to the vegan aspect of a product. This signals a possible halo effect of the vegan label, similar to the halo effect observed in products with a fair trade (Berry & Romero, 2021) or ‘natural’ label (Berry et al., 2017). This effect is not surprising as vegan diets are generally associated with health benefits compared to an omnivorous diet (Appleby & Key, 2016). The positive effect of the label on perception of healthiness was apparent for all diets, as there was no moderating role of the diet. It does indeed seem that even omnivores perceive vegan diets as healthier and more nutritious than an omnivorous diet (Adise et al., 2015). This finding is in line with earlier research by

Stremmel et al. (2022), who also found an increase in perception of healthiness for ‘randomly’ vegan food with a label. The positive effect of the vegan label on perceived healthiness for omnivores might be conflicting with findings that omnivores see eating animals as natural and as a necessary part of a person’s diet (Piazza et al., 2015). However, it is possible that these beliefs are not yet considered when deliberating the vegan label on a specific vegan product such as the sweet spread.

Perceptions of sustainability

The vegan label did have the expected positive effect on perceptions of sustainability. This might be explained by the knowledge that vegan diets help to reduce environmental impact (Aleksandrowicz et al., 2016) and also have been advertised that way (EMR, 2021). These results support previous findings by Stremmel et al. (2022), who also found an increased sustainability perception of product with a vegan label. Organic and fair trade label were also found to have a positive impact on perceptions of sustainability (Lazzarini et al., 2017). The relation between the vegan label and perception of sustainability was moderated by diet, such that vegans and vegetarians had a larger positive effect of the vegan label on the perception of sustainability than flexitarians and omnivores. This pattern of results is consistent with findings of Kilian and Hamm (2021), as they found a stronger association between sustainability and vegan products in vegans and vegetarians than in flexitarians and omnivores. This is also seen in the findings by Noguerol et al. (2021), which showed that ‘meat-reducers’ focused more on the sustainability aspect of food products than omnivores. It could therefore be that the steeper increase in perceived sustainability from seeing the vegan label is because this is more important to vegetarians and vegans. It, however, does not explain why this is not the case for flexitarians.

Perception of fair trade

We expected a positive effect of the vegan label on the perception of fair trade, and we found support for this hypothesis. Comparable to the perception of healthiness, fair trade is not directly related to the vegan quality of a product. This also supports the previously mentioned halo effect of the vegan label. The vegan label is seen as an ethical label and might therefore induce the perception of being more fair trade than an unlabelled product (Stremmel et al., 2022). The effect of the vegan label on perceptions of fair trade followed the same pattern for each dietary group, as no moderation of diet was found.

Perception of Animal Friendliness

The perception of animal friendliness was also positively influenced by the vegan label, supporting our hypothesis. Opposed to the healthiness and fair trade of a product, the animal friendliness is actually related to the vegan quality of a product, as the vegan label signals that no animal products have been used in the product. This effect was stable across all dietary groups, as it was not moderated by diet. It is not surprising that this was stable over all dietary groups, as not using animal products is inherently better for animal welfare.

The role of dietary identity

Contrary to our expectations, the centrality of dietary identity did not increase when seeing the vegan label. We expected the label to be a cue for the salience of the dietary identity, similar to the concept of environmental self-identity, where reminding people of their environmentally-friendly behaviour made their environmental self-identity more salient (Van der Werff et al., 2014). It is possible that in order to achieve this effect more exposure to the label is needed. In our study the participants only saw the vegan label once. How the centrality of dietary identity is influenced by repeatedly seeing the vegan label is still unknown, as this has not yet been researched. Further research should investigate how repeated exposure to the vegan label influences the centrality of dietary identity.

As seeing the vegan label did not influence the centrality of dietary identity, a possible mediation process is not supported. However, we found a small negative effect of centrality of dietary identity on expected tastiness and perceptions of fair trade. This was not moderated by diet, however, omnivores and flexitarians had a lower centrality of dietary identity than vegetarians and vegans. For both expected tastiness and perception of fair trade the diet had a direct effect, such that omnivores had a higher rating than vegans and vegetarians. So, a lower centrality of dietary identity is correlated with omnivore diets and might therefore influence the expected taste and perception of fair trade. That omnivores overall rate the sweet spread more positively on expected taste and fair trade than the other dietary groups, could be because of the health- and sustainability consciousness of meat-reducers (Noguerol et al., 2021).

Limitations and further research

Although the results of this research clearly support a general positive effect of the vegan label on consumer perceptions, several potential limitations need to be recognized. An important limitation of our research is that we only studied the effect of the vegan label on one product, the sweet spread. Participants were only shown the label once, which means that we were not able to investigate the effects of repeated exposure to the vegan label. Neither were we able to see how these effects generalize over different food groups. Stremmel et al. (2022) did compare a hedonic versus utilitarian category of spreads and found no differences for unexpected vegan products. The effects of the label for other types of products, like bread and cookies, are yet unknown. We would therefore recommend further research to look into different types of food products and the effect of repeatedly seeing the vegan label.

We managed to have a balanced sample with regards to participants' diets, however, to achieve this two different samples had to be combined. The two samples differed

substantially in average perceptions and descriptives. Nevertheless, the overall patterns in the sample were similar (Appendix B). Even though we tried to get a representative sample, there was an overrepresentation of females and higher educated people in our sample. This is especially relevant since gender influences diet as well as dietary identity (Rosenfeld, 2020). Similarly, people with higher education more often adhere to vegan or vegetarian diets (Mensink et al., 2016). This might mean that we used a sample that is more positive towards plant-based diets than the general population we targeted.

We focused only on the centrality dimension of the dietary identity in our study, as we expected this dimension to have the most influence on perceptions. However, it would be interesting to not only take into account the centrality of the identity, but also its other dimensions. It can be expected, for example, that the private and public regard dimensions of dietary identity also influence the effect of the vegan label, as these dimensions are more related to the ingroup-outgroup perception of veganism (Rosenfeld & Burrow, 2017). This is especially interesting in light of the intergroup threat of veganism (Rosenfeld et al., 2023) We suggest further research to investigate these other aspects of dietary identity in the influence of the vegan label on consumer perceptions as this can provide more information of the specific factors influencing this relationship. With that information, the vegan label can be targeted more effectively.

Practical implications

Despite the limitations that are discussed, the results suggest several practical implications. The label helps consumers following a plant-based diet in recognizing vegan products, and as this study showed, adding a vegan label on a ‘randomly’ vegan product influences its consumer perceptions. As we have seen in our research, the consumer perceives the product to be more healthy, sustainable, fair trade and animal friendly than a product

without a label. The negative effect of the label on the expected tastiness of the product for flexitarians and omnivores was relatively small. Thus, based on this research, we would recommend the use of the vegan label on these ‘randomly’ vegan products as it makes consumers perceive the product more positively and is likely to increase consumption intention. Using the vegan label on these types of products might therefore help to adhere to a vegan diet. It could also be an easy way to boost sales, as adding the label to an already vegan product is only a small change.

Conclusion

To conclude, our results showed a halo effect of the vegan label for perception of healthiness, fair trade, sustainability and animal friendliness. Omnivores and flexitarians perceived the vegan-labelled product as less tasty, while for vegans and vegetarians the label positively influenced expected tastiness. No evidence for a mediating role of centrality of dietary identity was found. In sum, we conclude that the vegan label on a ‘randomly’ vegan product has an overall positive effect on consumer perceptions and increases product transparency.

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Appendix A: Sample descriptive specified for both samples***Vegetarian Association (NVB)***

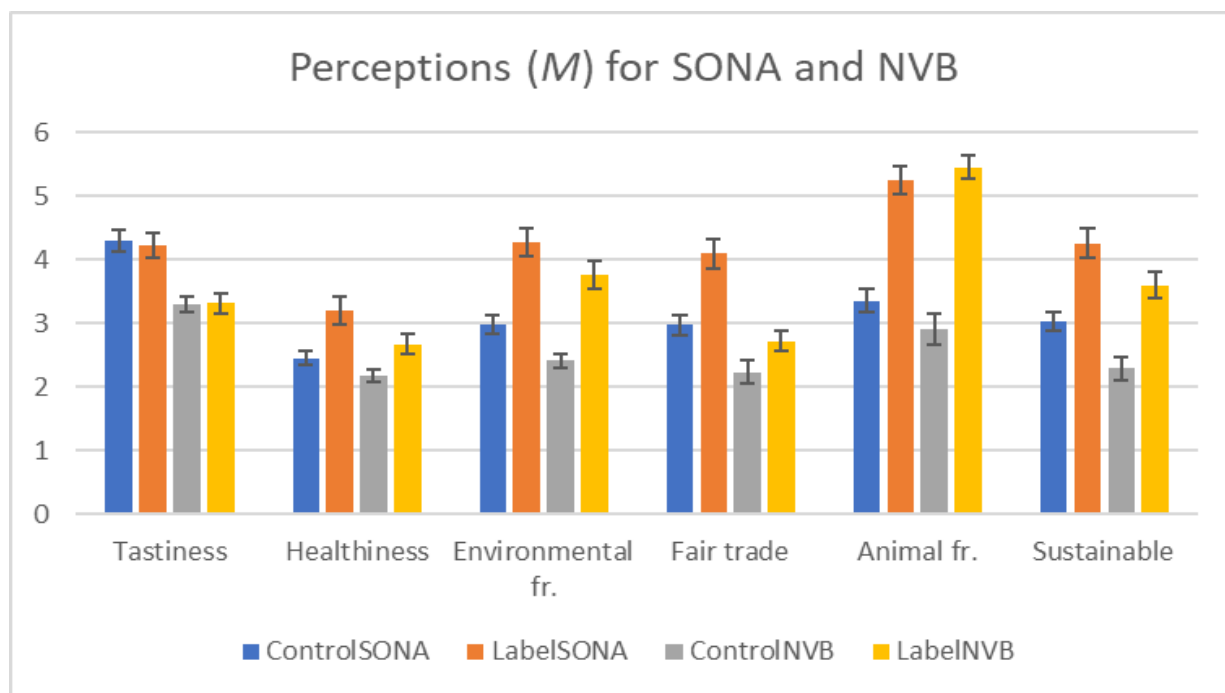
The NVB sample consisted of 297 participants. Of this sample, 10% were male, 89% female and 1% other. The average age of the participants was 49.85 ($SD = 13.18$), with the lowest age being 18 and the highest age 78 . The most common level of education was applied sciences/bachelor level (48%) .The diets of the participants are distributed as follows; 16% omnivores, 22% flexitarians, 43% vegetarians, 19% vegans.

University Pool (SONA)

The SONA sample consisted of 131 participants. Of this sample, 24% were male, 73% female and 2% other. The average age of the participants was 20.11 ($SD = 1.77$), with the lowest age being 18 and the highest age 26. The most common level of completed education was secondary school (75%) .The diets of the participants are distributed as follows; 70% omnivores, 26% flexitarians, 2% vegetarians, 2% vegans.

Appendix B: Sample comparison

The pattern of means of the perceptions in each sample is presented in these graphs. The means in the NVB sample are lower than in the SONA sample, but the pattern of the means is similar.



Note: Error bars represent standard error. Fr. = friendliness.