Influence of Marketing on the Perception of a Vegan Food Product

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INFLUENCE OF MARKETING ON THE PERCEPTION OF A VEGAN FOOD PRODUCT

Master's thesis

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U Zagrebu, 15.07.2021.

Gabrijela Mikulić

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Abstract: The outcome of successful marketing is an increase in sales and revenue, but the impact of marketing can also be utilized to contribute to positive changes. Example of such a change is encouraging omnivores to eat a plant-based diet. However, most people have a negative attitude towards veganism and remain resistant to change. For more effective marketing campaigns, it is crucial to know the attitudes of the target population, as well as the impact of marketing decisions on the perception of the advertised product. Therefore, the aim of this study was to examine participants 'attitudes about the vegan diet and to determine the impact of marketing on omnivores' perception of a vegan food product (a cookie) using an experimental design. 1166 participants answered an online survey with different measures of product acceptability and a scale of attitudes towards the vegan diet. The results on indicate that omnivores have a negative general attitude towards the vegan diet, while vegetarians and vegans have a more positive attitude and don't differ from each other. The same pattern of results holds true on the subscales of the attitudes questionnaire, Benefits and Satisfaction. On the Practicality subscale, all dietary groups differ significantly, with omnivores giving the lowest and vegans the highest estimates. The experimental part of the research found a negative impact of vegan marketing, where omnivores gave significantly lower estimates of buying likelihood if the cookie was presented as vegan. Compared to the control, participants indicate higher expected retail price for the vegan cookie, as well as willingness to pay. Different advertised motivations for producing a vegan cookie didn't influence any of the estimates. Overall, results indicate that it may not be advisable to emphasize that a product is vegan if the goal is to market the product towards the general population.
Key words: marketing, vegan diet, cognitive dissonance, willingness to pay

Sažetak: Ishod uspješnog marketinga je povećanje prodaje, a time i prihoda, ali utjecaj marketinga može biti od koristi i u kontekstu pozitivnih promjena. Jedna od tih promjena je poticanje svejeda na prehranu temeljenu na biljnoj hrani. Ipak, većina ljudi ima negativan stav prema veganstvu i nije sklona promjeni. Za efektivnije marketinške kampanje ključno je znati stavove ciljne populacije, kao i utjecaj marketinških odluka na percepciju proizvoda koji je na tržištu. Zbog toga, cilj ovog istraživanja bio je ispitati stav sudionika o veganskoj prehrani i utvrditi utjecaj marketinga na to kako svejedi percipiraju veganski prehrambeni proizvod (keks) koristeći eksperimentalni nacrt. 1166 sudionika ispunilo je online upitnik s različitim mjerama prihvatljivosti keksa te skalom stavova prema veganskoj prehrani. Rezultati pokazuju kako svejedi u prosjeku imaju negativan generalni stav prema veganskoj prehrani, dok vegetarijanci i vegani imaju pozitivniji stav i međusobno se ne razlikuju. Jednaki rezultati dobiveni su i na subskalama upitnika stavova Korisnost i Uživanje. Na subskali Praktičnost sve se prehrambene skupine značajno razlikuju, gdje su svejedi dali najniže, a vegani najviše procjene. Eksperimentalni dio istraživanja je utvrdio negativan utjecaj prikazivanja proizvoda kao veganskog, gdje svejedi daju značajno niže procjene vjerojatnosti kupovanja keksa ukoliko je prikazan kao veganski. Utjecaj prikazivanja različite motivacije za proizvodnju veganskog keksa nije se pokazao značajnim. U usporedbi s kontrolnim keksom, za veganski keks postoji očekivanje više maloprodajne cijene, kao i spremnost za plaćanje više cijene. Istraživanje upućuje kako je za plasiranje veganskog proizvoda s ciljem prodaje općoj populaciji vjerojatno nepoželjno isticati veganski sastav proizvoda u marketingu.
Ključne riječi: marketing, veganska prehrana, kognitivna disonanca, spremnost na plaćanje

Introduction

One can look at food from many different perspectives. It's fuel, the center of many social events, and a part of human culture and history. It's inseparable from our life experience and by providing this necessity, in 2019 global food and grocery retail market reached a value of 11.7 trillion U.S. Dollars (GVR, 2020). Food can also be considered as a vote; by buying more nutrient-dense foods we can vote for our health, by eating at home instead of a restaurant we might vote for our financial freedom, and by buying a specific brand we vote for the economic prosperity of that company. The way companies try to get this consumer's "vote" is by marketing; spending a substantial amount of money towards their campaigns (Harris et al., 2019). The goal of marketing strategies is to increase sales, and therefore profit, but there are some examples of food marketing and country policies that aim to serve a different goal. For example, some countries chose to instill policies aimed to fight against the obesity epidemic (Swinburn et al., 2011), ranging from price subsidies and more informational food labels to restrictions like a tax raise on foods with poor nutritional value. Reactions to such policies have been mixed, where the most disliked type of policy, tax increase (Kwon et al., 2019) has been shown to be one of the most effective (Escobar et al., 2013). On the other hand, there are some marketing strategies used to increase sales of healthy foods by using appealing descriptors that raise taste expectations or increase value perception (Wansink and Love, 2014). An interesting thing about marketing healthy food is that it has a challenging task of fighting against "unhealthy=tasty" intuition (Raghunathan et al., 2006), but it's worth noting there is some evidence that intuition might differ depending on the culture (Werle et al., 2013). By putting "healthy" on their packaging, companies might increase sales amongst health-conscious consumers, but at the same token steer away others, expecting the healthy food to be less tasty. Alongside being thought of as less tasty, healthy food has been shown to be perceived as less filling (Suher et al., 2016) and lower in calories (Carels et al., 2007). It's possible that this pattern could extend to foods appropriate for per-

sons with somewhat restricted diets, such as gluten-free or a vegan diet. Stating that a food product is vegan makes it easier for vegans to identify it as suitable for them, but it also might make it less desirable to non-vegans. To understand why it's important to make vegan food more acceptable to the general population, it's useful to define what it is and consider the effects it entails.

Impact of veganism

According to The Vegan Society (2014) veganism is "a philosophy and way of living which seeks to exclude—as far as is possible and practicable—all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose; and by extension, promotes the development and use of animal-free alternatives for the benefit of animals, humans and the environment. In dietary terms, it denotes the practice of dispensing with all products derived wholly or partly from animals." At its core, it is motivated by an ethical principle of compassion, so the rise in popularity of the vegan diet (Ipsos, 2021) doesn't seem like a trend, but rather a shift in society. And unlike the low-fat or no-gluten diets, a vegan diet has the potential to have a strong impact on human health and the well-being of animals and the planet. For example, greenhouse gas emissions from animal agriculture match those caused by fossil-burning vehicles (Jackson et al., 2020) and dietary meat reduction in the human diet has been recognized as an important factor in slowing down climate change (Gerber et al., 2013) and biodiversity conservation (Machovina et al., 2015). This comes as less of a surprise knowing humans kill 70 billion land animals every year for food (Sanders, 2020). Environmental concerns seem even more important since climate change has been declared a global emergency (Ripple et al., 2019). Even still, it can be challenging to connect the food we put on our plates to a global problem, and animal suffering involved in meat production is always disconnected from the end product, making it easy to ignore. Fox and Ward (2008) found that vegans list environmental concerns, animal suffering, and personal health to explain their choice to live a vegan lifestyle, but it's

very rare that someone's motivation for the initial switch is of environmental nature, and most of them made the change for the health concerns. Omnivores most often state they would be willing to go vegetarian for health reasons as well (Mullee et al., 2017). One could argue that the positive impact of meat reduction on our health is the most visible and directly beneficial to us, making it a salient motivator. Despite it being the most common motivator, health has less of a "staying power" than reducing animal suffering, where ethical vegans adhere to a vegan diet longer than health vegans (Radnitz et al., 2015). Despite all the benefits a vegan diet might offer, most people seem unwilling to make the change and even exhibit animosity towards people who have already decided to go plant-based. As expected, reasons for this are complex and mutually connected, so three of the most often mentioned reasons will be discussed here.

Veganism as a threat to customs and identity

Firstly, a shift to a vegan diet can be seen as a threat to customs, culture, and identity. This threat is particularly prominent among right-wing adherents (Dhont and Hodson, 2014) who are more resistant to such a change. Even when it's for the better, change tends to be stressful, especially when it's related to something as pivotal for our existence as food. Almerico (2014) outlined the importance of our food choices: "Food choices tell stories of families, migrations, assimilation, resistance, changes over time, and personal as well as group identity". People might think that by forgoing meat and animal products they are losing a part of their identity, from childhood comfort foods to traditional dishes ingrained in their heritage. A potential positive people see in changing their diets is discovering new foods and flavors, cited as a factor omnivores consider when thinking about excluding meat from their diets (Mullee et al., 2017). Another positive is connected to the food industry's advancement in replicating animal products, making the change easier (Saari et al., 2021). This seems to have an impact on the food industry, as plant-based product sales in European Union, estimated above

4 billion in 2019, are projected to have a value of over 7.5 billion by 2025 (Geijer, 2021). This was met with backlash, especially from the dairy industry. Currently, the biggest share of plant-based products is made up of dairy milk substitutes, leading to the proposition of Amendment 171, which would ban comparisons of plant products to dairy products in the EU, making it illegal to call almond milk for example "creamy" or even "lactose-free". More than 450 000 consumers signed the petition against it (Waldersee, 2021) and in the end, the proposition was withdrawn. This is an indicator that change is happening, and meeting customers halfway could make the transition more acceptable.

Veganism as a moral threat

The second reason why people find it hard to accept veganism is that it challenges omnivores' morals. The fact that most people agree we should treat animals well and at the same time consume meat is called "the meat paradox" (Rothgerber, 2014). The stark difference between ethical beliefs of kindness and behavioral pattern of contribution to cruelty causes cognitive dissonance, defined by the Theory of Cognitive Dissonance (Festinger, 1957). Usually, omnivores can ignore this dissonance because eating meat is the norm, but the presence of a vegetarian or a vegan makes the dissonance salient, serving as a reminder that eating meat is a choice. To deal with the discomfort caused by the cognitive dissonance, meat-eaters use many strategies, ranging from avoidance of information, dissociation, denial of animal pain, and reduced perceived choice to perceived behavioral change, convincing themselves that they eat less meat than they actually do (Rothgerber, 2014). The other common approach to reducing discomfort is degrading the person causing it. Omnivores expect to be judged by vegans based on their ethical choices, causing them to engage in the "do-gooder derogation", describing vegans in a negative manner as a result of their overtly moral behavior. This counter-intuitive pattern of putting down persons making kinder choices can be explained well by anticipated moral reproach theory (Minson

and Monin, 2012). Vegans and vegetarians pose a symbolic threat to omnivores' self-image as good and ethical people, who expect that their morality will be seen as inferior in comparison to those of vegans. To invoke this negative reaction, vegetarians just have to be present (Rothgerber, 2014). When asked, omnivores rate themselves as less moral than vegetarians (Minson and Monin, 2012) and expect their morality to be rated as low by vegetarians. In the same research, vegetarians did rate omnivores' morality lower than their own, but not as much as omnivores expected them to. This indicates that expectations of reproach are more important than the actual reproach exhibited by vegetarians.

Expectation of moral reproach might in part be the reason why omnivores exhibit a negative attitude towards vegans. When compared to other common prejudice target groups, attitudes toward vegans were only more positive in relation to drug addicts (MacInnis and Hodson, 2017). It also might explain why some vegans and vegetarians feel uncomfortable disclosing their dietary choices, stating that it has distanced them from the mainstream, and even from friends (Fox and Ward, 2008). Evidence suggesting bias towards vegetarians and vegans further supports that, where one-third of the respondents exhibit anxiety about revealing they are vegan, and more than half report of some form of everyday discrimination and engage in activities to prepare themselves for the discrimination (MacInnis and Hodson, 2017). It's important to note that reactions might differ depending on the motivation behind vegetarianism. For example, moral vegans might be critical towards health vegetarians deeming their choice selfish (Fox and Ward, 2008) and even children show more negative attitudes toward moral vegetarians (motivated to reduce animal suffering) who ate meat compared to vegetarians motivated by health (Hussar and Harris, 2010). Overall, vegans and vegetarians challenge the status quo and omnivores' morality, making them a target of negativity.

Vegan food perception

The third reason one can find for resistance against changing their diet is the food itself. Research suggests the biggest obstacles to following a vegan diet are taste, price, and practicality (Bryant, 2019). The same paper also reported that the vegan diet is perceived as less healthy, tasty, enjoyable, and acceptable than a vegetarian diet. Mullee et al. (2017) report taste as one of the main reasons for not being vegetarian, alongside a lack of interest and awareness. This evidence speaks about veganism as undesirable in terms of the enjoyment a diet can provide. Vegans themselves describe their diet as tasty and enjoyable, but it seems that everyone has the most positive attitudes towards their own diet style (Povey et al., 2001). And while it's possible for a vegan option to be less tasty than a product that includes animal ingredients, the biggest reason for consuming plant-based protein was taste, revealing that once a person gives vegan substitutes a chance, their flavour is palatable (Mintel, 2018). Against evidence like this, vegan food still has a reputation for being bland and it might be attitudes and expectations that play a vital part in this perception. And this is also where it's really difficult to separate different obstacles to veganism. An experiment using cookies (Hennigan, 2015) showed a correlation between attitudes toward veganism and taste preference of a product labeled "vegan", where more negative attitudes predicted lower taste rating of the cookie. In the same experiment, participants showed a preference for a "classic" cookie in a condition where the moral threat was salient. Similarly, people expect low-fat food to be less tasty (Tuorila et al., 1994) and food labeled "organic" to be more nutritious (Lee et al., 2013). This is probably one of the main reasons willingness to pay for organic food is higher, and that holds true in Croatian research as well (Petljak et al., 2017). This has important implications on marketing practices; one can change expectations, and even taste perceptions of a food product by putting a different label on it. Research on attitudes towards a vegan diet, and perception and expectations regarding vegan food could guide marketing efforts to be more efficient and fruitful.

Research goal, problems, and hypotheses

This thesis aims to explore attitudes towards the vegan diet and determine the impact of different marketing of vegan products on the perception of these products. In the first part of this thesis attitudes toward a vegan diet measured by an attitudes scale will be examined. Second part is tied to an experimental design, comparing dependent variables between 4 groups where participants were randomly assigned to each group. All participants in the experiment were presented with an image of the same food product (a cookie), but only omnivores' data is included in all the following analyses. In the first group (control) the cookie was presented as a "new cookie" on the market. The second group (vegan) had the description of a "new vegan cookie".The third (vegan + health) and the fourth (vegan + animals) group had the additional advertised motivation, claiming the motivation for the vegan cookie was to be healthier or less damaging to animals compared to a conventional cookie, respectively. Lastly, willingness to pay for different cookies described in the experimental design will be presented through descriptive statistics.

Problem 1

Measure attitudes towards the vegan diet in connection to the respondent's current diet.

Hypothesis 1

Omnivores will on average have a negative attitude towards a vegan diet, scoring below central value on the Attitudes toward vegan diet scale, while attitudes of vegetarians and vegans will be more positive compared to omnivores.

Problem 2

Examine the effect of vegan food labeling on the perception of acceptability, expected price, willingness to pay, and intent to buy a food product.

Hypothesis 2

Participants will rate the cookie labeled “vegan” as less acceptable, rate their willingness to pay for it and expected selling price as higher, and exhibit less intention to buy the product compared to the control cookie.

Problem 3

Examine the effect of different marketing of a vegan food product dependent on the advertised motivation behind producing the product (health or ethical reasons) on the perception of a food product.

Hypothesis 3

Compared to a cookie labeled only as “vegan”, participants will rate the same product marketed as “healthier” because of its vegan ingredients as more acceptable, with higher willingness to pay and expected selling price, and with a greater intention to buy the product. In the situation where marketing is directed towards reducing animal suffering, the cookie will be rated as less acceptable and participants will state lower willingness to pay and intention to buy while having a greater expectation of selling price compared to the vegan condition.

Problem 4

Describe willingness to pay in different experimental groups in an exploratory manner using van Westendorp’s Price Sensitivity Meter.

Method

Participants

Overall, 1,305 participants of age started filling out the survey. Participants who didn’t complete the Attitude towards vegan diet scale were excluded from all the analyses, so the sample consists of N = 1,166 participants. There are more respondents

who identify as female (N = 866) compared to male (N = 285), while 15 participants selected “Other” or “I don’t want to answer”. Age range of participants is from 18 to 70 years, but with a median of C = 24 and mean of M = 26.17 (SD = 8.16), sample is skewed towards the younger population. In terms of education, the biggest proportion of participants have a highschool diploma (40%), followed by Bachelor’s degree (31%) and Master’s degree (25%), with less than 1% of participants whose highest achieved education level is primary school or a postgraduate degree. The last important socio-demographic variable is diet type, with 83% of omnivores (eat every food group), 9% vegetarians (don’t eat meat (including fish) but consume eggs and milk), and 8% vegans (avoid all animal products) in the sample. The ratio of different dietary habits is not representative of that found in the population. The proportions of vegetarians and vegans are higher than expected with some sources reporting 3.7% of vegetarians in Croatia (AFC, n.d.). Overrepresentation of can be attributed to data collection efforts, targeting groups interested in a plant-based lifestyle.

Experimental manipulation

There were four groups in this research design. Participants were divided into groups by chance. All participants were asked to fill out the same questions regarding their socio-demographic data and evaluation of the food product (a cookie), but they were given different descriptions of this cookie. The cookie was presented as a new cookie on the market, and all respondents were presented with the same image, as well as the same list of main ingredients (flour, sugar, and chocolate chips). Group one (control) had no additional information, so the description was: ”In front of you is a picture of a new cookie on the market. The main ingredients of this cookie are flour, sugar and chocolate chips. All questions below apply to this new cookie.”. To group two (vegan) the cookie was described as “a new vegan cookie” instead of just “a new cookie” on the market; ”In front of you is a picture of a new vegan cookie on the market. The main ingredients of this cookie are flour, sugar and chocolate chips.

All questions below apply to this new vegan cookie.". Group three (vegan+health), alongside the vegan description, had a marketing message which described the product as healthier as a result of its vegan ingredients: "In front of you is a picture of a new vegan cookie on the market. The main ingredients of this cookie are flour, sugar and chocolate chips and it doesn't contain any animal products to make it healthier than conventional cookies. All questions below apply to this new vegan cookie.". The fourth group (vegan+animals) was presented with the same description as the third group, apart from the message that emphasizes reducing animal suffering in the food industry instead of the health benefits: "In front of you is a picture of a new vegan cookie on the market. The main ingredients of this cookie are flour, sugar and chocolate chips and it doesn't contain any animal products to reduce animal suffering in the industrial food production. All questions below apply to this new vegan cookie.". All groups were shown a photograph of two chocolate-chip cookies on white background without packaging, as shown on Figure A1 in the Appendix. The photo was created specifically for this experiment and the cookies used were commercially available vegan cookies.

Instruments

Attitudes towards vegan diet were measured by Attitudes toward plant-based diet scale used in Faber et al. (2020), adapted to be used for a vegan diet. The scale starts with the sentence "A vegan diet…", followed by nine items indicating attitude, for example: "is healthy." and "takes into account animal welfare.". Participants indicated their level of agreement with these sentences on a 5-point Likert scale ranging from "Totally disagree" (1) to "Totally disagree" (5). The original instrument is in English and it was translated to Croatian using the back-translation method. Authors of the scale report a unidimensional structure with high reliability ($\alpha = .816$). Principal component analysis in this research also yielded a one-factor solution with 54.24% variance explained, but confirmatory factor analysis didn't result in a satisfac-

tory fit (see Table A1 in Appendix). The fit of the one-factor model was compared to a three-factor model and a bifactor model, which includes three group factors and one general factor. Models were constructed based on item-content analysis, with three items loaded on each group factor. The bifactor model was accepted, with a general factor measuring general attitude and three group factors named *Benefits*, *Satisfaction* and *Practicality*, as shown on Figure A2 in Appendix. Cronbach alpha reliability for this scale is $\alpha = .88$. Reliability of subscales Practicality is $\alpha = .71$, Satisfaction $\alpha = .89$, and Benefits $\alpha = .8$. It has been argued that the Omega index is more appropriate for reliability estimates (Trizano-Hermosilla and Alvarado, 2016) since it doesn't require items to be tau-equivalent. Following that, this scale shows the reliability of $\omega = .92$ for the bifactor solution.

The acceptability of cookies was measured by The 9-point hedonic scale (Peryam and Pilgrim, 1957) applied to seven sensory characteristics. Participants evaluated the acceptability of appearance, texture, color, sweetness, moistness, flavor, and overall acceptability of cookies. Those characteristics were used in prior research (Ibrahim, 2013) and participants were asked to make their evaluations according to how they imagine the cookie would be. They indicated their answers on The 9-point hedonic scale which consists of nine categories ranging from "Dislike extremely" (1) to "Like extremely" (9). Croatian translation was taken from Ritz et al. (1992). The score was calculated by averaging the answers for each participant, and the scale exhibited acceptable reliability ($\alpha = .8$).

Two measures of willingness to pay were used. Firstly, respondents were presented with an image of a packet of Oreo cookies along with their store price (14.99 HRK). Price was collected through an online delivery service of a major retail store. That served as a reference point for an open-ended question "How much would you be willing to pay for a same-sized packet of this new cookie?". A similar set-point method

was used in prior research regarding calorie estimates (Chernev and Gal, 2010). The second measure used was The Price Sensitivity Meter, also known as the van Westendorp method (Van Westendorp, 1976). It consists of four open-ended questions through which respondents indicate at what price they see the product as too cheap, good value, expensive, and too expensive. For example, the question "At what price would you consider the product to be so expensive that you would not consider buying it?" is used to gauge a price that is too expensive. Based on cumulative frequencies, several price points are calculated, including acceptable price range for the product, as well as optimal prices for launching the product on to the market and price at which the revenue is maximized.

Two additional questions regarding the price and desirability of the product were added. The first one is an open-ended question where respondents estimate what they expect a package of cookies will actually cost in stores. The second is a Likert-type question which refers to an estimate of how probable it is for the respondent to buy the new cookie in the next six months. Answers to this question range from "Definitely not" (1) to "Definitely yes" (5).

Procedure

Data was collected via an online platform *SurveyMonkey* from 14th to 23rd of May 2021. Invitation to partake was distributed through social networks, with an emphasis on Facebook groups centered around food and recipes, as well as vegetarian groups and vegan non-profit organizations. First part of the questionnaire included socio-demographic questions, followed by Attitudes toward vegan diet scale. After that, participants were divided randomly into one of the four groups (control, vegan, vegan+health, vegan+animals) and answered questions regarding the cookie (acceptability, willingness to pay, expected price and likelihood to buy), followed by the van Westendorp's Price Sensitivity Meter. The average time needed to complete the ques-

tionnaire was five minutes. The research design was approved by the Ethics committee of the Department of Psychology at the Faculty of Humanities and Social Sciences, Zagreb.

Results

Attitudes towards a vegan diet

Following results from confirmatory factor analysis, omnivores, vegetarians, and vegans have been compared on each subscale of The Attitudes Towards Vegan Diet Scale. The result on each subscale has been calculated as a mean of the items in the subscale, so the results range from 1 to 5, with a higher result denoting a more positive attitude. Firstly, the normality of the data was tested, by checking skewness and kurtosis and visual inspection of histograms. Bartlett's test was also used to check for the equality of variance assumption. While the distributions don't deviate drastically from a normal distribution, variances between groups are significantly different (tested by Levene's test), leading to non-parametric data analyses. Kruskal–Wallis test was used to test the differences between omnivores, vegetarians, and vegans on their attitudes on Benefits, Satisfaction, and Practicality of a vegan diet. It resulted in a significant difference on all tested subscales and the overall scale with large effect sizes, as shown in Table 1.

Dunn's multiple comparison test was used for post-hoc testing. Results indicate that omnivores have significantly more negative attitudes compared to vegetarians and vegans on all the subscales. Vegetarians and vegans don't differ on their attitudes towards the Benefits and Satisfaction of a vegan diet, but they differ in their views on Practicality, where vegans exhibit more positive attitudes. Regarding the overall attitudes on the scale, omnivores exhibit negative attitudes, scoring slightly below the mid-point of the scale (M = 2.92, SD = 0.60), confirming the first hypothesis. Omnivores also exhibit more negative overall attitudes compared to vegetarians and vegans, who don't differ in that regard and score above the mid-point of the scale.

Table 1
Kruskal-Wallis Test on subscales of Attitudes Towards Vegan Diet Scale

Subscale	Diet type	*N*	*M*	*SD*	$\chi^2(12)$	η_p^2
Benefits	Omnivore	971	3.55	0.75	319.36**	0.27
	Vegetarian	101	4.41	0.59		
	Vegan	94	4.52	0.60		
Satisfaction	Omnivore	971	2.99	0.88	573.08**	0.49
	Vegetarian	101	4.40	0.65		
	Vegan	94	4.69	0.60		
Practicality	Omnivore	971	2.23	0.64	385.8**	0.32
	Vegetarian	101	3.02	0.76		
	Vegan	94	3.49	0.77		
Attitudes overall	Omnivore	971	2.92	0.60	623.81**	0.52
	Vegetarian	101	3.94	0.53		
	Vegan	94	4.23	0.58		

*$p < .05$. **$p < .01$.

Effects of vegan marketing

To test for the effects of including the word "vegan" in the description of the cookies, t-tests were used to compare the control group and the experimental (vegan) group as the assumptions for parametric testing were met. Only omnivores and participants who gave responses to all items relevant to the experiment were included as the marketing efforts would be directed towards omnivores. Big differences in group sizes between omnivores, vegetarians and vegans would also make it difficult to test for statistical differences. Items measuring the expected price of the product and willingness to pay (WTP) were open-ended, so outliers were identified. Outliers were identified using the interquartile range (IQR) criterion, where results of 1.5 IQR below the first quartile or 1.5 IQR above the third quartile were removed. Oyeyemi et al. (2015) use this definition of outliers and examine more advanced methods for outlier identification. Criterion chosen in this research led to five respondents removed for being outliers in the expected price variable, and ten in the WTP variable. As shown in Table 2, the control group and experimental group differ on all variables except acceptability.

Table 2
Results of t-test comparison between Control and Vegan group

Variable	Group	*N*	*M*	*SD*	*t*(398)	*Cohen's d*
Acceptability	Control	205	6.76	1.15	0.16	0.02
	Vegan	195	6.75	1.19		
WTP	Control	205	11.90	3.30	-6.26**	-0.63
	Vegan	195	14.10	3.72		
Expected price	Control	205	16.07	4.68	-11.14**	-1.11
	Vegan	195	21.90	5.74		
Likely to buy	Control	205	2.67	1.02	2.91*	0.29
	Vegan	195	2.38	0.93		

*$p < .05$. **$p < .01$.

WTP and expected price are higher in the vegan condition, while participants in the control group are more likely to buy the cookies, with medium, large and small effect size, respectively. Results partially confirm the second hypothesis.

Effects of different advertised vegan motivation marketing

The vegan experimental group in prior analyses served as a control in testing the influence of including motivation for veganism in the marketing of a vegan product. It was tested against vegan+health condition and vegan+animals condition using one-way ANOVA. The same variables were used, as well as the same criterion for excluding participants based on their results. There were 53 respondents removed based on their response on expected price and 23 based on their WTP result. None of the results were statistically significant, leading to the conclusion that including motivation for the production of a vegan product didn't influence the ratings of acceptability, WTP, expected price nor the likelihood to buy the product, rejecting the third hypothesis. Descriptives for the groups can be seen in Table 3.

Table 3
Results of one-way ANOVA between experimental groups

Variable	Group	*N*	*M*	*SD*	*F*(523)	*p*
Acceptability	Vegan	178	6.78	1.18	1.20	.27
	Vegan+health	167	6.40	1.26		
	Vegan+animals	180	6.64	1.23		
WTP	Vegan	178	14.23	3.50	0.02	.88
	Vegan+health	167	14.57	3.54		
	Vegan+animals	180	14.18	3.70		
Expected price	Vegan	178	22.17	4.78	0.09	.77
	Vegan+health	167	22.96	4.59		
	Vegan+animals	180	22.32	4.61		
Likely to buy	Vegan	178	2.41	0.92	0.68	.41
	Vegan+health	167	2.32	0.89		
	Vegan+animals	180	2.49	0.91		

Van Westendorp's Price Sensitivity Meter (PSM)

Willingness to pay measured by van Westendorp's Price Sensitivity Meter (PSM; Van Westendorp, 1976) was calculated on data from omnivores only. Participants with missing responses on the scale and intransitive price preferences were excluded. An example of an intransitive price preference is a higher estimate of a price that is "too cheap" and a lower estimate of a "too expensive" price. This can occur if the participant misunderstands the question, is unmotivated, or simply makes a typing error. Data from a participant was also excluded if they gave a response of 50 HRK or more on the "too expensive" question. This was done as it's highly unlikely such a product would cost that much, as the author was not able to identify any cookies on the Croatian market with a comparable price. Based on giving an estimation higher that 50 HRK, data from 22 participants was excluded, and additional 49 participants were excluded based on intransitive price preferences. The main result of PSM is a graph of cumulative percentages, where several information points regarding the pricing of the product can be identified. Figure 1 and Figure 2 represent that graph for the control and vegan group, respectively. Firstly, from this analysis, one can gauge the range of acceptable prices for a product. The lowest point in that range is a *Point*

of Marginal Cheapness (PMC), which is represented by an intersection of "too cheap" and "not expensive" lines on the graph. This is considered the lowest acceptable price as customers might doubt the quality of a product priced lower than that. The upper limit of the price range is called *Point of Marginal Expensiveness* (PME), on the intersect of "not cheap" and "too expensive" lines. Prices higher than PME could cause a decline in sales of the product, as the customers find it too expensive. *Optimal Price Point* (OPP) is at a point where a similar number of people consider the product "too cheap" and "too expensive". This is often a desirable price for products just coming out on the market. Lastly, *Indifference Price Point* represents a price where participants rate the product as "not cheap" (bargain) and "not expensive" (pricey) at a similar rate. At this price most customers find the price acceptable, and from a profit stance, it is a price that will probably gather the most revenue. These four price points for each of the experimental groups are shown in Table 4 and the results of these analyses can be compared purely on a descriptive level. Results suggest a trend of a higher WTP for all vegan cookies which exibit a trend of higher price preferences for PMC, IPP and OPP, with a higher OPP for vegan cookies with motivation in their descriptions. The acceptable price range for all of the vegan groups is the same, while in the case of the classic (control) cookie, PMC is lower.

Table 4
Results of van Westedorp's Price Sensitivity Meter

Group	N	PMC	PME	IPP	OPP
Control	175	8	19.99	13.99	10
Vegan	157	10	20	15	12
Vegan+health	136	10	20	16	15
Vegan+animals	152	10	20	15	15

Legend: PMC - Point of Marginal Cheapness, PME - point of Marginal Expensiveness, IPP - Indifference Price Point, OPP - Optimal Price Point

Figure 1

Price Sensitivity Meter - Control group

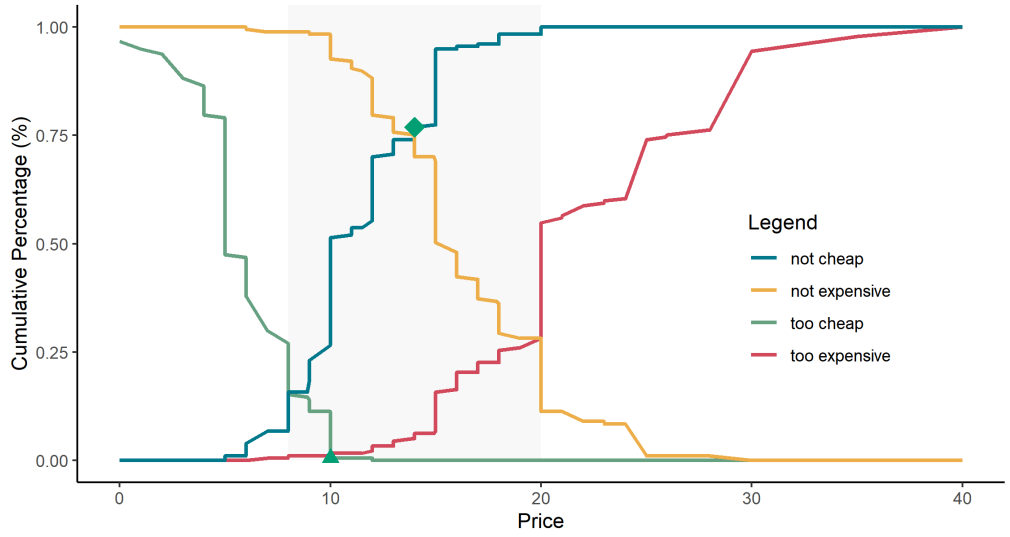
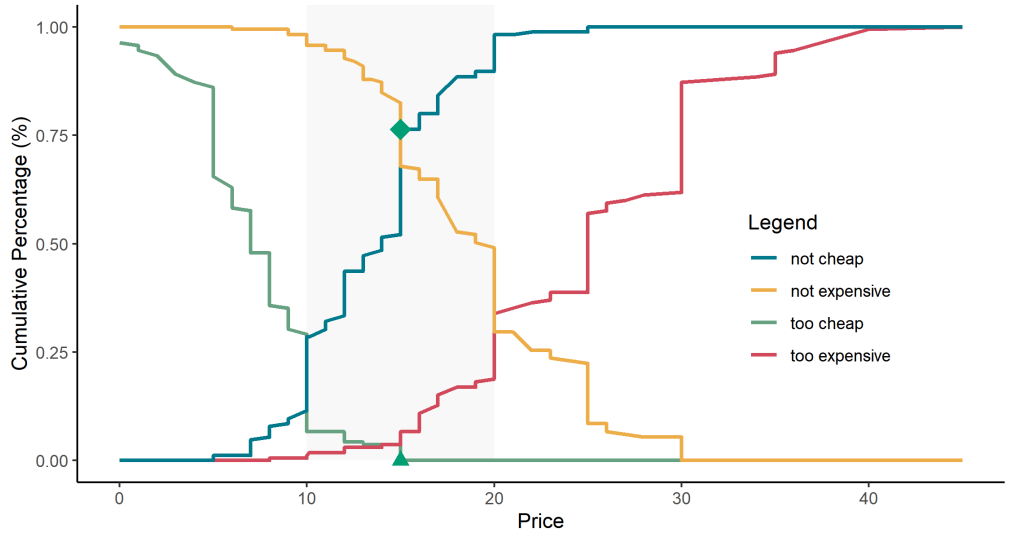


Figure 2

Price Sensitivity Meter - Vegan group



Discussion

As hypothesized, omnivores on average exhibit negative attitudes towards a vegan diet, but that doesn't hold true on all subscales of the Attitudes Towards Vegan Diet Scale. It seems that they recognize the benefits of veganism for human health, animals, and the planet, but vegetarians and vegans exhibit more positive attitudes compared to them. It might be that vegetarians and vegans excluded some (or all) an-

imal products from their diet because they are more aware of the benefits that choice offers. It could also be that they made the choice for one reason, and afterward learned about the added benefits, as some research suggests (Fox and Ward, 2008). The aspect that was the most negatively evaluated was practicality. It is also the only aspect where vegetarians and vegans differ, with vegetarians holding a more negative attitude compared to vegans. Omnivores had a more negative attitude than both of the other groups. This pattern remains true for satisfaction one can get from a vegan diet, where omnivores perceive it as less satiating and enjoyable.

One explanation for these results might be cognitive dissonance. Omnivores believe there are benefits to a vegan diet and consequently that their current diet is harmful to the animals, the environment, and potentially themselves (Povey et al., 2001). Despite that, their behavior is not aligned with that belief, so to justify the choices they engage in dissonance-reducing strategies (Rothgerber, 2014). By describing the vegan diet as unenjoyable and impractical they can explain why they don't follow a plant-based diet as well. Along those lines, vegetarians agree with vegans in terms of benefits and satisfaction regarding a vegan diet. Still, vegetarians consider it less practical. Here, cognitive dissonance might also be in play, explaining why they didn't exclude all animal products if they think veganism is both beneficial and enjoyable. It mustn't be ignored that certain vegan products are more expensive and potentially less available in certain areas. Someone following a vegetarian diet in an area with a lacking choice of vegan products might just find it too complicated to be completely plant-based, despite them wanting to be vegan. Expanding the offer of vegan products and making them more accessible, both in terms of price and the number of stores including them in their offer. Overall, these results are in line with previous research, and support findings that people prefer the diet which they already follow (Povey et al., 2001). Interestingly, there is evidence suggesting vegetarians are more similar to omnivores compared to vegans in regards to their attitudes toward the vegan diet (Fediw, 2018), but in this sample, they seem to align more with vegans.

Although omnivores described the vegan diet as less enjoyable compared to vegetarians and vegans, their ratings of acceptability of the cookies in the experiment didn't differ in any of the groups. This is probably influenced by a limitation in this design regarding the choice of the food item. Cookies are generally a very palatable dessert, achieving high acceptability ratings across different research settings (Ibrahim, 2013; Provencher et al., 2009). If that is combined with information provided, that clearly states cookies at hand contain sugar and chocolate, consistent high positive ratings of acceptability are not surprising. It might just be that a cookie, no matter what, is still a cookie. Considering other variables in the experiment, comparing the control group to the vegan group, all the differences were statistically significant.

Firstly, participants stated they would be willing to pay (WTP) more for a vegan cookie compared to a classic one. As vegan food is often considered healthier, in an experiment comparing "classic" and "healthy" cookies, healthy cookies were considered more expensive (Provencher et al., 2009). Although not the same, it can be compared to research on organic products which finds people are willing to pay more for organic compared to conventionally grown food (Lee et al., 2013; Petljak et al., 2017). Organic food has also be found to be perceived as more healthy, but less tasty (Schuldt and Hannahan, 2013), something that seems to be in line with the perception of vegan food. Moderately correlated with WTP ($r = .39$, $p < .01$), the expected price was also higher in the vegan group.

The most telling variable for the influence of including the word "vegan" in the marketing is the likelihood to buy the product. Participants stated they are less likely to buy the cookies in the next six months in the vegan condition. One might argue that participant's likelihood to buy was influenced by the expected price, where a higher expected price caused them to be less likely to buy the product. The research design doesn't offer causal analyses, but there is no correlation between the expected price and likelihood to buy in this experiment, a finding which goes against this explanation. Even still, WTP and likelihood to buy show a small positive correlation

($r = .16$, $p < .01$), indicating participants who are willing to pay more for the cookies are also more likely to buy the product. This goes to show that describing a product as "vegan" might be a bad decision when thinking about increasing the revenue. In an experiment where vegetarian dishes were either listed on a general menu or on a separate list labeled "vegetarian", the same dishes, when labeled, were less likely to be chosen (Bacon and Krpan, 2018). In a survey which measured the appeal of different descriptors on food packaging, from "fresh" and "nutritious" to "low-fat" and "gluten-free", the word "vegan" was the lowest-rated, and 35% of participants said they are less likely to buy a product with that label (Morning Consult, 2018) . As the word "vegan" seems to have a negative connotation, labeling a product "plant-based" might be more appropriate if the goal is to appeal to a wider audience (Faber et al., 2020). To be still recognizable by current vegans, product packaging could include a third-party label, administered to a food company by a trusted organization (Gerke and Janssen, 2017). This provides reassurance that a product at hand is vegan, and possibly avoids omnivore's negative reaction.

All comparisons between the vegan, vegan+health, and vegan+animals conditions are insignificant, and some trends are even opposite of those hypothesized. For example, based on anticipated moral reproach, it is expected that mentioning a product is vegan to reduce animal suffering would be a stronger threat than a product aimed to be healthier, or just "vegan". That would in turn activate defensive mechanisms which would lead omnivores to disparage the product (Minson and Monin, 2012). In terms of this experiment, that means lower acceptability ratings, as well as a lower likelihood of buying. Regardless of these expectations, there is no difference between vegan+animals and other groups on these variables. The first explanation might be that participants lowered their likelihood to buy just because the product is vegan, and weren't prone to give even lower ratings, no matter what the motivation for product production was. The second thing to consider involves the experimental stimulus, i.e. description of the cookies, and cookies as a product in general. Unlike a hamburger

for example, which involves meat and, unquestionably, an animal has to suffer (die) to make it, in milk and eggs conventionally used in cookie production the suffering is not so overt.

One could argue that in order to produce milk and eggs no animal has to die, which is true. That doesn't mean commercial animal farming is without suffering, with papers presenting ethical issues with egg production (Thompson, 2014). In addition, cow's milk had a higher death-per-calorie ratio than beef (Kolbe, 2018), making the ethical issue even more obvious. It might be that milk and eggs are not seen as morally doubtful products by omnivores in general, which would in turn make products that don't contain them (in terms of ethics) no different from products containing them. In terms of how the cookies were described in this experiment, the main ingredients were listed: flour, sugar, and chocolate chips. That leaves little "room" for animal-based products, so even a person aware of the ethical issues of milk and eggs might consider it as less problematic, compared to a direct product such as cheese or yogurt. This experimental design can also be the reason why the vegan+health group showed no differences as well, and trends of rating even go in an opposite direction, where the likelihood of buying seems to be lower compared to the other groups. It just might come down to the perception of cookies as a product in general. Cookies are thought of as unhealthy food, so marketing them as healthy because of their vegan content might not be believable to customers. That is even more true in this case, where ingredients clearly mention sugar and chocolate, hardly health-promoting foods. Werle et al. (2013) avoided this confounding effect by identifying a product with neutral health ratings in a pilot study. By including such a product, the hypothesis that health-motivated vegan products are accepted differently might be confirmed. Labeling a vegan product as healthy doesn't seem like such a threat to moral identity as mentioning animal suffering. Choosing to eat healthfully is a personal choice, with little effect on the well-being of others. Then, buying a plant-based product might be seen simply as making a healthier choice, instead of a moral one.

Van Westendorp Price Sensitivity Meter was analyzed on each of the four experimental groups separately. Results can't be inferentially tested, so this part of the results offers some descriptive insights, and results are discussed only in terms of trends, rather than statistically significant differences. Point of Marginal Cheapness (PMC) in all the vegan conditions is the same (10HRK), as well as Point of Marginal Expensiveness (20HRK), while PMC in the control group is slightly lower (8HRK). Pricing a product cheaper than PMC might raise suspicion amongst consumers, as the product might be seen as poor quality. The trend in PMC in this study indicates that consumers might doubt the quality of a vegan alternative at a higher price than a conventional product. The Optimal Price Point (OPP) trend suggests that vegan alternatives possibly should enter the market at a higher price as well, where OPP for vegan+health and vegan+animals conditions are 50% higher than OPP for the control group. On the other hand, differences between Indifference Price Points (IPP) are not so pronounced, but the trend is in the same direction. When all of this is taken together, it seems that Croatian consumers are willing to pay more for vegan products. In a UK survey, 45% of respondents said they would be willing to pay more for food and drink products labeled as "cruelty-free" (Ceuta Group, 2020), while over 60% of respondents in the Netherlands said they would pay more for sustainable products (Gelder, 2020). This information could be useful for companies selling new vegan products, where a potentially higher price could bring in more revenue to cover the relatively higher cost of research and development of the products.

Limitations and practical implications

It's important to mention the limitations of this study. Going back to the socio-demographic data, women are over-represented in the sample and this not only makes the generalization of results limited, but it's probable that it also had an effect on the results. It's documented that men on average have a more negative attitude towards vegetarian diets compared to women (Bacon and Krpan, 2018; Chin et al.,

2002). This might mean that attitudes toward a vegan diet measured in this study are more positive than they are in the general population.

Focusing on the experimental design, choosing a cookie as the manipulation item might not be the best choice. Originally, it was chosen for its practicality so that an in-person experiment could be easily conducted, and vegan, so that the vegan participants could also partake. The high hedonic quality of the cookie seemed to be a confounding variable, so in future research, it's advisable to control this factor or use a more neutral food item. Another improvement could be made in the description, where directly mentioning ingredients like sugar and chocolate can make the manipulation less effective. Something can also be said about the order in which the items were presented, where it's possible that prior questions had an impact on those coming after them. McFarland (1981) recommends asking more general questions first, and then continue to more specific questions, which was done in this research. He also notes that answers to questions regarding interest are influenced more by the item order compared to those regarding evaluation. Probability to buy could be viewed as an interest in buying the product and prior questions' effect on this item are unknown. Generally, it's more important to control for the item order when we strive to get information on the population, and less important when the goal is a comparison (Bradburn and Mason, 1964) which was done in the experimental part of this study. This ties into the last limitation which will be mentioned, regarding willingness to pay. As the van Westedorp scale was administered after all the other items, the results presented can't be seen as reflective of the true WTP of participants. Also, it's hard to state WTP measured in this manner. As the scale consists of only four items it's economical and fast, with a low dropout rate of respondents. In their review, Breidert et al. (2006) mention some shortcomings of using this method in the market research, such as placing too much focus on product price, the unwillingness of respondents to express their true WTP, and even if they state their true WTP, it doesn't have to translate into behavior, and a few more. In order to measure true WTP, indirect methods are advised.

Conclusion

To summarize, general attitudes toward the vegan diet in Croatia are negative; omnivores see the benefits a vegan diet offers, but they also perceive it as unsatisfying and impractical. Still, when asked to give ratings for a cookie presented as vegan, they find it as acceptable as the control, and are willing to pay more for it. Despite that, their likelihood to buy is lower, which can be explained by the cognitive dissonance theory. Including motivation for production of a vegan product didn't have an effect on the variables measured, possibly due to the choice of cookies as the stimulus in this research. Trends of willingness to pay indicate that participants are ready to pay more for the vegan cookie, and might even doubt the quality if it was priced the same as the conventional one. This might guide food producers to choose their labels more carefully to make vegan products more acceptable to omnivores; for the health of the planet, humans, and other animals.

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Appendix

Figure A1
Cookies image used for the experiment

Confirmatory factor analysis of Attitudes toward vegan diet scale

Confirmatory factor analysis was conducted on data from 561 respondents in order to separate it from the data used for exploratory factor analysis (N = 605), and data was separated into the two groups by chance. Three models were tested. One factor model suggested by the authors of the original scale which was adapted to be used for this research did not exhibit sufficient fit, indicated namely by TLI and CFI, which compare the model at hand with a baseline model (Xia and Yang, 2019), and RMSEA and SRMR above the acceptable values as well. Three factor model was tested next, where three items were loaded on each factor. Items were grouped based on their content and the factors were named Practicality, Satisfaction and Benefits. Item distribution is the same as in the bifactor model, shown on Figure A2, but the bifactor model has a general factor Attitudes added. Table A1 shows the bifactor model has a better fit. Bifactor solution also means the results of the entire scale can be calculated and therefore compared to prior work. Reliability of the subscales Practicality (α = .71), Satisfaction (α = .89) and Benefits (α = .8) is satisfactory, as well as the scale as a

whole (α = .88) and factor loadings can bee seen in Table A2. It is worth mentioning the item describing the vegan diet as ”local” doesn’t seem to work as well as the other ones. In the exploratory factor analysis it had the smallest factor loading (see Table A3). It is also questionable if it reflects the vegan diet on a conceptual level, so it might be worth to replace it with a better fitting item for the Practicality subscale.

Figure A2

Bifactor model of Attitudes toward vegan diet scale

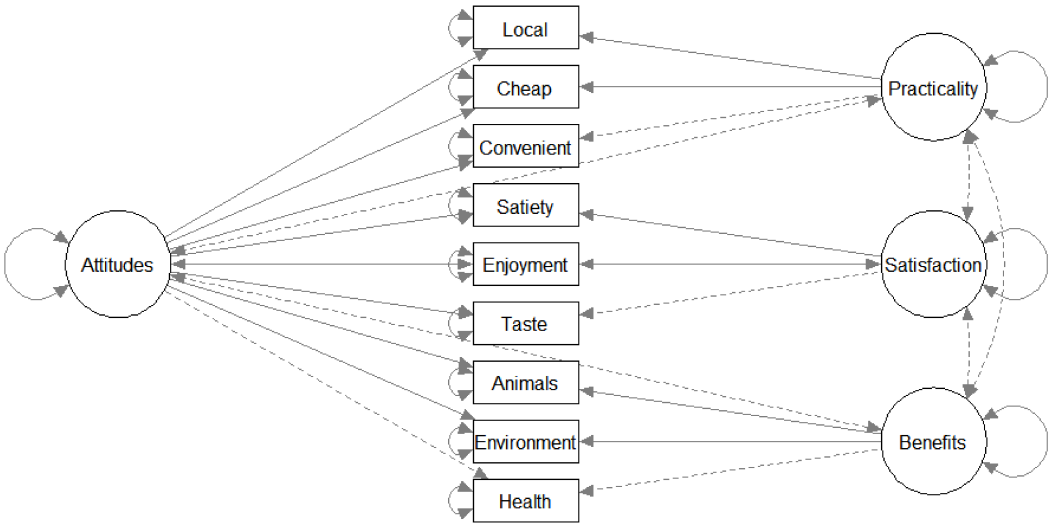

Table A1

Model fit statistics on Attitudes toward vegan diet scale

Model	$\chi^2(12)$	DF	CFI	TLI	RMSEA	SRMR	$\vec{\Delta}\ \chi^2(\vec{\Delta}\text{DF})$
One factor	477.42	27.00	.81	.75	.17	.09	
Three factor	136.03	24.00	.95	.93	.09	.06	88.79(6)**
Bifactor	47.24	18.00	.99	.98	.05	.03	341.38(3)**

Legend: CFI - comparative fit index, TLI - Tucker–Lewis index, RMSEA - root mean square error of approximation, SRMR - standardized root mean square residual

** $p < .01$.

Table A2

Factor loadings for bifactor model of Attitudes toward vegan diet scale

Item	Benefits	Satisfaction	Practicality	Overall attitude
Health	.255			.679
Environment	.793			.531
Animal welfare	.465			.478
Taste		.479		.709
Enjoyment		.546		.752
Satiety		.296		.715
Cheap			.219	.685
Convenient			.932	.592
Locally produced			.069	.481

Table A3

Factor loadings from principal component analysis of Attitudes toward vegan diet scale

Item	Factor loading	Uniqueness
Health	.767	.411
Environment	.733	.463
Animal welfare	.678	.541
Taste	.827	.316
Enjoyment	.854	.271
Satiety	.810	.344
Cheap	.677	.542
Convenient	.722	.479
Locally produced	.499	.751