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Perceived Barriers and Predictors of Dietary Intentions Regarding Omnivorous, Lacto-/Ovo-Vegetarian and Vegan Diets

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Abstract. Understanding the psychology behind the limitation or exclusion of animal products from people's diets is important due to ethical, medical and environmental issues. A survey measuring attitude, subjective norm, perceived behavioral control (PBC) and intention in regards to three different diets - omnivorous, lacto-/ovo-vegetarian and vegan - was completed by 823 Swedes. Barriers towards eating a vegan diet were also explored. Attitude was the strongest predictor of intentions and PBC became a stronger predictor as the diets contained fewer animal products; both results supported the study's hypotheses. Different barriers to eating a vegan diet were reported by groups eating different diets. These findings may help as attempts at lowering the consumption of animal products are made.

Interest in plant-based diets is increasing around the world. According to Djurens Rätt (2017), 9% of Swedes call themselves vegetarians or vegans and almost 50% of non-vegetarians report an increasing interest in vegetarian diets. Understanding the psychology behind the decision whether or not to exclude all, or some, animal products from one's diet is becoming increasingly important. In the present study the Theory of Planned Behavior (Ajzen, 1991, 2005) was applied in order to predict the intention to eat different diets and respondents were asked to list experienced barriers against eating a vegan diet.

The Theory of Planned Behavior

The Theory of Planned Behavior (TPB; Ajzen, 1991, 2005) aims to explain the processes behind deliberate behaviors. It builds on the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and is based on the assumption that a person's behaviors are mostly under their control. The theory consists of the five variables *attitude towards the behavior*, *subjective norm* (SN), *perceived behavioral control* (PBC), *intention* and *behavior*. A person's attitudes towards the behavior, SN and PBC are assumed to predict their intention to perform the behavior and the intention is assumed to predict the behavior. There is also a direct link between PBC and behavior since control over a behavior can affect whether it is at all possible to perform.

Attitudes toward the behavior of eating a lacto-/ovo-vegetarian diet could be, for example, that they are tasty or unhealthy. SN refers to the amount of normative pressure to perform the behavior that the person experiences. PBC is the amount of control a person *perceives* to have over the behavior and is not necessarily the same as the actual control. Control means ability, having the means to perform the behavior and not being stopped from performing the behavior. Behind attitude, SN and PBC are beliefs called *behavioral beliefs*, *normative beliefs* and *control beliefs*, respectively (Ajzen, 1991, 2005). Knowledge about the beliefs makes it possible to not just predict behavior but to explain it as well. In this study, control beliefs were studied by asking participants what barriers they experience against eating a vegan diet.

Defining Dietary Terms

When researching diets containing varying levels of animal products there are several different terms used. The Cambridge Dictionary (2018) defines *lacto-vegetarian* as a diet excluding all animal products except milk, *ovo-vegetarian* as a diet excluding all animal products except eggs and a *vegan diet* as a diet excluding all animal products. A *vegetarian diet* without the prefixes ovo- or lacto- in front means a diet without any animal products, just like a vegan diet, but is often used synonymously with lacto-/ovo-vegetarian which contributes to confusion.

Another category used in this study is *pescetarian*, which refers to a diet excluding all meat except fish and other animals living in water (Cambridge Dictionary, 2018). Then there is *plant-based diet*, a term coined by Lea, Crawford and Worsley (2006), which refers to a diet focused on plants and which may contain a small amount of animal products.

Vegetarian diets are often compared to non-vegetarian diets, which can be referred to as *omnivorous, meat diets, semi-vegetarian, meat-avoiding*, etc. Semi-vegetarians and meat-avoiders are people who are not fully lacto-/ovo-vegetarian or vegan but limit their meat consumption. In this study the terms omnivore, pescetarian, meat-avoiders, lacto-/ovo-vegetarian and vegan were used in an attempt to make the distinctions and definitions clear.

Reasons to Exclude Animal Products From One's Diet

Reasons for excluding animal products from one's diet include concerns about animal suffering, personal health and the environmental impact of animal products. The World Health Organisation and their International Agency for Research on Cancer classified processed meat as a carcinogen and red meat as a probable carcinogen in 2015 (IARC, 2015). Increasing evidence show that consuming no, or less, animal products is beneficial for human health and reduces the risk of several different diseases (Etemadi et al., 2017; Zelber-Sagi et al., 2018; Tonstad et al., 2013; Tantamango-Bartley et al., 2016; Crowe, Appleby, Travis & Key, 2013; Tai Le & Sabaté, 2014).

Tukker et al. (2011) and Westhoek et al. (2014) both found that healthier diets containing less animal products have less environmental impact, indicating that what is good for humans is also good for the planet at large. Westhoek et al. reported that meat and dairy contribute to the most environmental damage compared to other foods and, according to Tucker et al., small dietary changes aren't enough to make a change. Baroni, Cenci, Tettamanti and Berati (2007) compared different diets combined with different methods of production and found that a vegan diet based on foods from organic production methods had the lowest environmental impact. The more animal products included in the diet the more adversely it affected the environment.

Predictors and Barriers to Vegetarian Diet Behaviors

Povey, Wellens and Conner (2001) used the TPB as a framework when studying dietary behaviors in Britain. They found that people held the most positive attitudes and beliefs towards their own diet, and that the further away a diet was from their own the more negatively they felt about it. Participants also experienced a stronger SN and PBC regarding their own diet except for vegans who experienced greater social pressure to eat a lacto-/ovo-vegetarian diet. Out of the predictors of intention, subjective norm was the weakest for all diets. Attitude was

the strongest predictor for omnivorous diets, but not for vegetarian or vegan diets where PBC was strongest.

Povey et al. further found that behavioral beliefs (beliefs behind attitudes) about meat diets were both positive and negative for meat eaters, and solely negative for both lacto-/ovo-vegetarians and vegans. Negative beliefs were connected to concerns about human health and weight, cruelty to animals, environmental issues and cost. Positive beliefs concerned taste, variability and nutritional balance. Positive beliefs about vegetarian diets were that they are healthy, humane, nutritionally balanced, unfattening, tasty, cheap and environmentally friendly. Negative beliefs towards vegetarian diets were connected to cost, nutritional unbalance, dull taste, restriction and hypocrisy.

Vegan diets were considered positive due to ethical reasons, health and environmental reasons (Povey et al., 2001). Meat eaters reported no positive beliefs about vegan diets, but positive beliefs increased as the diet the respondent ate became more like a vegan diet. Negative beliefs about vegan diets consisted of them being nutritionally unbalanced, extreme, restrictive, unnatural, boring or bland, difficult to maintain and lacking variety.

Zur and Klöckner (2014) also used TPB as a part of their study on motivation to limit meat consumption in Norway. They combined it with norm activation theory (Schwartz, 1977) and protection motivation theory (Rogers, 1975) and found that *"habits were the most important predictors of meat consumption"* (Zur & Klöckner, 2014, p. 636) but that intentions to reduce meat consumption were affected by attitudes, health beliefs and moral beliefs. PBC only affected moral beliefs but was found to be relevant to the decision making process, as was social norms, attitudes, habits and beliefs about morality and health.

Differences in attitudes between groups eating different amounts of meat were also found by Clonan, Wilson, Swift, Leibovici and Holdsworth (2015). *Low meat eaters* cared more about where their meat came from, preferred animals to be reared outdoors, disagreed more with the statement that they don't think much about the animal when buying meat and were less likely to agree that *"animal welfare standards in the UK are very high"* (p. 2451).

Meat enjoyment and habits have been reported as barriers against lowering the consumption of animal products (Pohjolainen, Vinnari and Jokinen 2014; Lea and Worsley, 2003). Health beliefs and difficulties in preparing vegetarian foods (Pohjolainen, Vinnari and Jokinen, 2014) and a belief that humans are meant to eat meat, a normative pressure from family to eat meat and a need for more information about vegetarian diets (Lea and Worsley, 2003) have also been found to be important barriers. Lea, Crawford and Worsley (2006) found that a need for more information about plant-based diets was the greatest barrier, followed by an unwillingness or inability to change their own or their family's eating habits and a limitation in availability of plant-based foods. Vegans have reported stigma and strain in personal and professional relationships due to their diet and beliefs (Hirschler, 2011). Such issues were greatest in the beginning of becoming vegan. Acquiring knowledge about vegan issues, such as animal rights, and how to cook vegan meals were important parts of the orientation process.

The Present Study

As limiting the consumption of animal products is becoming increasingly common as well as increasingly important due to environmental impact, ethical issues and health concerns it becomes an interesting topic of study. To understand why people choose to eat meat, lacto-/ovo-vegetarian diets or vegan diets we must look at the psychology behind these dietary decisions. Understanding the mechanisms behind the reduction in consumption of animal products is helpful when attempting to promote healthier and more sustainable diets that contain less, or no, animal products.

The present study partly replicated the studies by Povey, et al. (2001) and Zur and Klöckner (2014) by looking at attitudes, SN and PBC in regards to the dietary consumption (or non-consumption) of animal products. In this study, it was tested whether the TPB (Ajzen, 1991, 2005) can explain the intention to eat different diets and which of the variables attitude, SN and PBC are the strongest predictors. It was hypothesized that attitude would be a strong predictor of intentions overall and that PBC would become a stronger predictor as the diet becomes more restrictive in regards to elimination of animal products; a vegan diet requiring the most behavioral control and a meat diet the least. Experienced barriers (control beliefs) against eating a vegan diet were also explored.

Method

Participants

Complete responses were obtained from 823 people with a mean age of 30.1 years (*SD* = 11.7). Women made up 81.8% (*n* = 673) of the participants, men 16.3% (*n* = 134) and 1.9% (*n* = 16) identified as *other*. The majority of participants (56%) reported university as their highest level of education, 6.6% reported other post-gymnasiet education, 33% gymnasie (age 16-19), and 4.4% högstadie (age 13-16). The number of participants in each diet group was as follows: Omnivore (*n* = 206), Pescetarian (*n* = 39), Lacto-/ovo-vegetarian (*n* = 205), Vegan (*n* = 343), Meat-avoider (*n* = 28) and Other (*n* = 2).

Instrument

The survey consisted of ten sections with a total of 46 questions, exploring demographic information, attitudes, SN and PBC towards meat, lacto-/ovo-vegetarian and vegan diets as well as intentions to follow the different diets. Questions and scales were inspired by the Theory of Planned Behavior (Ajzen, 1991, 2005) and the studies by Povey, Wellens and Conner (2001) and Zur and Klöckner (2014).

Participants were asked to place themselves in a dietary category; omnivore, pescetarian, lacto-/ovo-vegetarian, vegan or other. Most of the participants in "other" were later re-coded as either omnivore, pescetarian, lacto-/ovo-vegetarian, vegan or meat-avoider judged by their description of their diet. Two participants were left in "other" due to lack of information about their diet.

Attitudes were measured by three 7-point ratings on the question *"what do you think about meat eating?"* (1 = bad/harmful/unpleasant, *7 = good/beneficial/pleasant).* SN was measured by asking participants to rate how much they agree with four different statements about norms from specific others (friends, family, colleagues/classmates and health experts) using 7-point scales (1 = not at all, 7 = very much). The statements were phrased as *"My friends think I should eat meat"* with *friends* and *meat* changed for the different questions. This was followed by a section where the participants were asked to rate how important norms from the different persons are to them (e.g., *"Considering your dietary choices, how important are the opinions of your friends?")* using 7-point scales (1 = not important at all, 7 = very important).

PBC was measured by three questions (e.g., *"How much personal control do you experience in regards to eating a diet containing meat?", "To what extent do you feel able to follow a diet containing meat?"* and *"How easy or difficult is it for you to follow a diet*

containing meat?"), all of which were rated using 7-point scales (1 = *very little control*/*to a very low extent*/*very hard*, 7 = *complete control/to a great extent/very easy*). This was followed by an open-ended question asking the participants to list perceived barriers to eating a vegan diet and they were asked to give a maximum of eight examples. The last three questions of the survey measured intentions to eat the different diets (*"My intention is to eat a diet that contains meat/a vegetarian diet/a vegan diet"*) on three separate 7-point scales (1 = *I don't agree at all*, 7 = *I fully agree*).

A pilot study was performed before the main study was carried out. The participants were recruited using a convenience sample of 17 people out of which 12 completed the survey. Reliability between the items measuring the variables was tested using Cronbach's Alpha. Comments from participants were collected at the the end of the survey. Changes were made based on the tests and comments.

Procedure

The survey was distributed through Facebook groups and advertised by posters. Most of the Facebook groups had a food or dietary focus but some were just discussion forums. The survey was also shared in the researcher's personal Facebook feed and through friends. When distributing the survey the researcher's profile was made as anonymous as possible except for name and photograph. The posters were placed in a vegan shop, outside a grocery store and in different departments of the University of Gothenburg and Chalmers University in Gothenburg, as well as in a kiosk and a library in Stenungsund. The survey was in Swedish, meaning only fluent Swedish speakers could participate.

The distribution of respondents across diet groups and the mean levels of attitudes, PBC and SN in the different groups were examined. In order to test the usefulness of the TPB in this context, and to answer the question of which variable is the strongest predictor of intention to consume different diets three multiple regression analyses were performed, one for each type of diet. Finally, the qualitative answers to the open-ended question about perceived barriers to the consumption of a vegan diet were analysed using framework analysis. An inter-rater reliability check was performed by letting an independent coder code 10% of the responses, which showed a 79% correspondence.

Results

According to the Theory of Planned Behavior (Ajzen, 1991), attitudes, perceived behavioral control (PBC) and subjective norms (SN) predict the intention to perform a behavior. Multiple regression was used to assess the predictive power of the different variables on intention to eat different diets. It was hypothesized that attitude would be a strong predictor overall and that PBC would become a stronger predictor as the diets contained less animal products, i.e., strongest for vegan diet, weaker for lacto-/ovo-vegetarian diet and weakest for a diet containing meat. Finally, reported barriers towards following a vegan diet were analyzed and coded into appropriate themes.

Regression Analyses

The variables from the TPB were entered into one multiple regression per diet with intention to eat a meat diet, lacto-/ovo-vegetarian diet or vegan diet being the dependent

variable. The results of the regression for intention to eat meat showed that 76% of the variance was explained by the model, $R^2 = .76$, $F(3, 819) = 850.4$, $p < .001$. The model explained 44% of the variance for a vegetarian diet, $R^2 = .44$, $F(3, 819) = 211.7$, $p < .001$. For a vegan diet, 71% of the variance was explained by the model, $R^2 = .71$, $F(3, 819) = 653.3$, $p < .001$. *Table 2* shows the internal correlations between the variables entered into the analyses.

Table 2

Internal Correlations Between the Variables Intention, Attitude, Perceived Behavioral Control (PBC) and Subjective Norm (SN) for Meat Diet, Lacto-/ovo-vegetarian Diet and Vegan Diet

Variable	1	2	3	4
		Meat diet (n = 823)		
1. Intention	-	0.870**	0.379**	0.302**
2. Attitude	-	-	0.429**	0.321**
3. PBC	-	-	-	0.173**
4. SN	-	-	-	-
		Lacto-/ovo-vegetarian diet (n = 823)		
1. Intention	-	0.643**	0.286**	0.236**
2. Attitude	-	-	0.287**	0.199**
3. PBC	-	-	-	0.072*
4. SN	-	-	-	-
		Vegan diet (n = 823)		
1. Intention	-	0.773**	0.702**	0.265**
2. Attitude	-	-	0.563**	0.247**
3. PBC	-	-	-	0.194**
4. SN	-	-	-	-

*$p < .01$; **$p < .001$ Pearson Correlation

Attitude towards a diet containing meat was a significant positive predictor of the intention to eat a meat diet, $\beta = 0.86$, $t(819) = 43.29$, $p < .001$. However, PBC, $\beta = 0.006$, $t(819) = 0.32$, $p = .75$, and SN, $\beta = 0.025$, $t(819) = 1.39$, $p = .17$, towards a diet containing meat were not significant predictors of the intention to eat meat.

Intention to eat a lacto-/ovo-vegetarian diet was significantly and positively predicted by attitude towards a lacto-/ovo-vegetarian diet, $\beta = 0.59$, $t(819) = 21.16$, $p < .001$, PBC towards a lacto-/ovo-vegetarian diet, $\beta = 0.11$, $t(819) = 3.99$, $p < .001$, and SN towards a lacto-/ovo-vegetarian diet, $\beta = 0.11$, $t(819) = 4.16$, $p < .001$.

Attitude towards a vegan diet was a significant positive predictor of intention to eat a vegan diet, $\beta = 0.54$, $t(819) = 23.29$, $p < .001$. So was PBC towards a vegan diet, $\beta = 0.39$, $t(819) = 16.78$, $p < .001$, and SN towards a vegan diet, $\beta = 0.06$, $t(819) = 2.85$, $p = .004$.

PBC as a predictor of intention was, in line with the hypothesis, increasingly important as the diets contained fewer animal products. The predictive power of SN on intention was strongest in relation to a lacto-/ovo-vegetarian diet, less important but still significant for vegan diet and non-significant for meat diet. Attitude was the strongest predictor of intention for all the diets.

Barriers Towards Eating a Vegan Diet

Participants were asked to list a maximum of eight barriers towards eating a vegan diet. The reported barriers were experienced either directly by the participants or indirectly through other people. Some vegans, for example, mentioned that *other* people's lack of knowledge acted as a barrier. Not everyone answered the question making the number of responding omnivores 178 (86.8%), meat-avoiders 27 (96.4%), pescetarians 33 (84.6%), lacto-/ovo-vegetarians 181 (88.3%) and vegans 311 (90.6%).

The barriers were organized into three larger themes; social barriers, personal barriers and practical barriers as shown in *Table 3 - 5*. Out of the responding participants, only 83 (11%) reported no barriers at all against eating a vegan diet.

Table 3

Social Barriers Towards Eating a Vegan Diet According to Different Dietary Groups

Social barriers	Omnivore	Meat-avoider	Pescetarian	Lacto-/ovo-Vegetarian	Vegan
Prejudice/reactions from others	2 (1%)	1 (4%)	2 (6%)	11 (6%)	36 (12%)
Norms	0 (0%)	0 (0%)	1 (3%)	3 (2%)	16 (5%)
Eating with non-vegans	18 (10%)	2 (7%)	9 (27%)	38 (21%)	78 (25%)
Language difficulties (abroad)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (2%)
Total	20	3	12	52	133

Note. Percentages represent the amount of participants reporting the barrier out of all participants in the dietary group.

Table 4

Personal Barriers Towards Eating a Vegan Diet According to Different Dietary Groups

Personal barriers	Omnivore	Meat-avoider	Pescetarian	Lacto-/ovo-Vegetarian	Vegan
Restriction/ lack in variation	18 (10%)	0 (0%)	2 (6%)	11 (6%)	7 (2%)
Missing certain products or tastes	26 (15%)	7 (26%)	7 (21%)	41 (23%)	9 (3%)
Dislikes certain products or tastes	29 (16%)	4 (15%)	3 (9%)	2 (1%)	1 (0.3%)
Lack of interest and motivation	19 (11%)	2 (7%)	0 (0%)	9 (5%)	6 (2%)
Lack of knowledge	38 (21%)	2 (7%)	8 (24%)	29 (16%)	51 (16%)
Allergy or illness	9 (5%)	4 (15%)	0 (0%)	10 (6%)	7 (2%)
Tradition/culture	3 (2%)	0 (0%)	0 (0%)	0 (0%)	6 (2%)
Preference	4 (2%)	0 (0%)	0 (0%)	1 (0.6%)	2 (0.6%)
Opinions	14 (8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	160	19	20	103	89

Note. Percentages represent the amount of participants reporting the barrier out of all participants in the dietary group.

For omnivores, personal barriers were greatest with 160 answers out of 299 placing in that category. The biggest category for lacto-/ovo-vegetarians were practical barriers with 144 answers out of 299, and the same was true for vegans with 222 answers out of 444. Social barriers were mentioned the least amount of times for omnivores with 20 answers out of 299 and for lacto-/ovo-vegetarians with 52 answers out of 299. The smallest category for vegans was personal barriers with 89 answers out of 444.

The most important barriers for vegans were *Lack of availability* (*n* = 166), *Eating with non-vegans* (*n* = 78) and *Lack of knowledge* (*n* = 51). For lacto-/ovo-vegetarians the most important barriers were *Lack of availability* (*n* = 88), *Missing certain products or tastes* (*n* = 41) and *Eating with non-vegans* (*n* = 38). The most frequently mentioned barriers by omnivores were *Lack of knowledge* (*n* = 38), *Unhealthy/nutrient deficiency* (*n* = 30) and *Dislikes certain*

products or tastes (*n* = 29). These were closely followed by *Lack of availability* (*n* = 28) and *Missing certain products or tastes* (*n* = 26).

Worth mentioning is that *Prejudice/reactions from others* was reported more frequently by vegans (*n* = 36) than any other group and that *Opinions* (against veganism) was only mentioned as a barrier by omnivores (*n* = 14).

Table 5

Practical Barriers Towards Eating a Vegan Diet According to Different Dietary Groups

Practical barriers	Omnivore	Meat-avoider	Pescetarian	Lacto-/ovo-Vegetarian	Vegan
Lack of availability	28 (16%)	10 (37%)	15 (45%)	88 (49%)	166 (53%)
Time consuming	11 (6%)	1 (4%)	1 (3%)	11 (6%)	6 (2%)
Hidden ingredients / Difficulty reading ingredient labels	8 (4%)	3 (11%)	1 (3%)	4 (2%)	30 (10%)
Cost	19 (11%)	2 (7%)	6 (18%)	19 (10%)	9 (3%)
Habit/ difficulty to change	23 (13%)	4 (15%)	3 (9%)	12 (7%)	8 (3%)
Unhealthy/ nutrient deficiency	30 (17%)	3 (11%)	4 (12%)	10 (6%)	3 (1%)
Total	119	23	30	144	222

Note. Percentages represent the amount of participants reporting the barrier out of all participants in the dietary group.

Discussion

In this study the Theory of Planned Behavior (TPB; Ajzen, 1991, 2005) and it's variables attitude, subjective norms (SN) and perceived behavioral control (PBC) were used as a framework for studying the psychology behind the intention to eat an omnivorous, lacto-/ovo-vegetarian or vegan diet. It was hypothesized that attitude would be a strong predictor over all and that PBC would become a stronger predictor as the diets contained less animal products. These hypotheses were confirmed. Control beliefs, in the form of barriers to eating a vegan diet, were investigated as well and differences in perceived barriers were found between omnivores, vegetarians and vegans.

The Theory of Planned Behavior (Ajzen, 1991, 2005) seems to be a powerful predictor of behavior judging by the amount of variance it was found to explain by the regression analysis. Comparing the strength of the variables attitude was found to be the strongest predictor of intention to eat any diet. This finding is different from that of Povey, Wellens and Conner (2001) who found that attitude was the strongest predictor only for diets containing meat. They found PBC to be the strongest predictor of intention to eat a vegetarian or vegan diet. Conner and Van Dyck (cited in Povey, et al., 2001), however, found attitudes to be the strongest predictor of intention to eat a vegetarian diet.

As hypothesized, PBC became a stronger predictor of intention as the diets contained less animal products. It is reasonable that diets further away from the norm require more control over one's behavior. Povey, et al. (2001) concluded that *"in order to eat a vegetarian or vegan diet, it is necessary for a person to have some control over what he or she eats"* (p. 24). SN was the weakest predictor of intention which is in line with the findings by Povey, et al. (2001). This may indicate either that people don't care what other people think about their diet or that the way SN was measured was flawed.

The fact that not only attitudes but also behavioral control plays an important role in our dietary decisions is noteworthy. It indicates that people who eat animal products do not do so only because they like it or because they don't care about animals and the planet, but because they experience lower control over and greater barriers against the consumption of vegetarian/vegan diets. This is important to keep in mind and it indicates a need for more information about and greater availability of foods free from animal products.

There are several possible reasons why the current results differ from those of Povey, et al. (2001): their study was conducted in the U.K. and this one in Sweden; their study was published in 2001 and this one conducted in 2018; they used a convenience sample of 111 respondents whereas this study received 823 responses. Possibly the most important reason, however, is that the survey used in this study received comments from some participants that the questions about PBC were difficult to understand and answer. The items measuring PBC in this study were the same as those used in the study by Povey, et al. (2001; except for one item which was excluded) but translated into Swedish. The reason for excluding one item was because of comments from participants in the pilot study that it was hard to answer, partly because it was very similar to one of the other items. As the items used were essentially the same in both studies, either both studies had the same problems or the current study had bigger problems because of translation issues or cultural differences.

As PBC seems to become more important as a greater amount of animal products are excluded, looking at the perceived barriers to eating a vegan diet is interesting and illuminating. It provides the possibility to understand what underlies people's perception of their behavioral control. Differences in perceived barriers were found between omnivores, vegetarians and vegans. In this study, barriers were sorted into three categories: personal barriers, social barriers and practical barriers. The most important barriers found by Pohjolainen, Vinnari and Jokinen (2014; meat enjoyment, routines, health beliefs and difficulties in preparing vegetarian foods) would all be placed in the personal barriers category, except maybe for *Health beliefs* as *Unhealthy/nutrient deficiency* was placed under practical barriers.

Meat enjoyment and *Unwillingness to change* found in the study by Lea and Worsley (2003) and *A need for more information about plant-based diets* found by Lea, Crawford and Worsley (2006) could all be categorized as personal barriers. The latter study also found *Unwillingness or inability to change* and *Limitation in availability* to be important barriers. *Lack of availability* was placed under practical barriers in the current study as was *Difficulty to change*. *Unwillingness* would probably fall under personal barrier but *inability* could be due to practical factors.

In the current study, personal barriers were found to be most important for omnivores and least important for vegans, which contributes to some interesting insights. The most important category of barriers for lacto-/ovo-vegetarians and vegans were practical barriers such as *Lack of availability*, *Hidden ingredients/difficulty reading ingredient labels* and *Habits/difficulty to change*, with *Lack of availability* being the main one. Lea, Crawford and Worsley (2006) also found *Limitation in availability* and *Inability/unwillingness to change* to be important barriers. Hirschler (2011) found that stigma and strain on relationships were problems experienced by vegans, mainly at the beginning of the lifestyle change. This is in line with the current finding that vegans experience a lot of social barriers such as *Eating with non-vegans*, *Prejudice/reactions from others* and *Norms*. However, practical barriers were found to be more important than social barriers in this study.

For omnivores the most important barriers overall were *Lack of knowledge* and *Unhealthy/nutrient deficiency*. Out of the personal barriers, *Lack of knowledge* was the biggest one for vegans as well. *Health beliefs* and *Difficulties in preparing vegetarian foods* were important barriers in the study by Pohjolainen, Vinnari and Jokinen (2014) as well. Furthermore, Lea, Crawford and Worsley (2006) found *A need for more information* to be a barrier. Difficulties in preparing vegetarian foods is arguably connected to a lack of knowledge/need for information. It is interesting to see that health beliefs such as vegan diets being unhealthy or nutrient deficient prevails despite research indicating that the opposite it true. This is probably connected to the lack of knowledge and the norm in society that animal products are a natural and important part of the human diet.

Both perceived barriers and PBC might be connected to habits. Habits were mentioned as a barrier in the current study and so were other barriers which might be connected to habits such as *Lack of knowledge*, *Norms*, *Lack of interest or motivation* and *Missing certain products or tastes*. Zur and Klöckner (2014) found habits to be the most important predictor of intention to eat any diet. The differences between the groups' perceived barriers may be explained by differences in habits. Vegans, who are more used to eating a vegan diet, would experience different barriers than omnivores who are not used to eating a vegan diet.

The categories into which the reported barriers were sorted have some weaknesses. Some of the codes could be placed in any of the three categories or in two of them. As the codes are reported individually, however, the reader may compare the codes directly and ignore the categories they are placed within. Another interesting discussion is whether some of the barriers are more closely connected to attitudes or SN than to PBC. The attitudes found by Povey, et al. (2001) are very similar to the barriers found in this study. Behavioral beliefs (attitude beliefs), normative beliefs and control beliefs are all connected but it may be argued that practical barriers and to some extent personal barriers could be counted as control beliefs, while social barriers and some of the personal barriers should be counted as normative or behavioral beliefs. Other limitations with this study is the unequal distribution of genders, with 82% of participants being women, and the way the survey was distributed. With the majority of participants being women it might be problematic to generalize the findings onto the general population which has a more equal distribution of genders. The survey was mainly distributed through Facebook making it available only to people who are active in forums on Facebook.

Future research on the topic would benefit from using a more representative sample of participants and maybe a new way of measuring PBC as participants found the questions difficult to answer. Seeing as attitude is a strong predictor of behavior it would be interesting to investigate the behavioral beliefs behind attitudes and how to change them. Furthermore, this study showed that a lack of knowledge is a barrier against eating a vegan diet, so future research could investigate what is taught about nutrition in schools and at universities. Is the information given to people adequate and based on modern science?

Knowing that attitudes and behavioral control are important influences on dietary behaviors, as well as knowing what specific barriers people experience against eating a vegan diet, is helpful if we want to promote a decrease in the consumption of animal products. The top five barriers across groups in this study were *Lack of availability*, *Eating with non-vegans*, *Lack of knowledge*, *Missing certain products or tastes* and *Cost*. Making vegan products more available, desirable and affordable as well as spreading knowledge about diets without animal products would lower these barriers.

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Appendix 1

Survey Questions

Attityder till en kost som innehåller kött

Vad tänker och tycker du om att äta kött? Max 8 tankar/åsikter.

_____

Vad tycker du om köttätande?
1 - Dåligt 2 3 4 5 6 7 - Bra

Vad tycker du om köttätande?
1 - Skadligt 2 3 4 5 6 7 - Välgörande

Vad tycker du om köttätande?
1 - Obehagligt 2 3 4 5 6 7 - Njutbart

Attityder till (lacto-/ovo-)vegetarisk kost

Vad tänker och tycker du om vegetarisk kost? Max 8 tankar/åsikter.

_____

Vad tycker du om vegetarisk kost?
1 - Dåligt 2 3 4 5 6 7 - Bra

Vad tycker du om vegetarisk kost?
1 - Skadligt 2 3 4 5 6 7 - Välgörande

Vad tycker du om vegetarisk kost?
1 - Obehagligt 2 3 4 5 6 7 - Njutbart

Attityder till vegansk kost

Vad tänker och tycker du om vegansk kost? Max 8 tankar/åsikter.

_____

Vad tycker du om vegansk kost?
1 - Dåligt 2 3 4 5 6 7 - Bra

Vad tycker du om vegansk kost?
1 - Skadligt 2 3 4 5 6 7 - Välgörande

Vad tycker du om vegansk kost?
1 - Obehagligt 2 3 4 5 6 7 - Njutbart

Normer kring köttätande
Jag är intresserad av *din* upplevelse

Mina vänner tycker att jag ska äta kött
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor utsträckning

Min familj tycker att jag ska äta kött
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor utsträckning

Mina kollegor/kurskamrater tycker att jag ska äta kött
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor utsträckning

Hälsoexperter tycker att man ska äta kött
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor utsträckning

Normer kring (lacto-/ovo-)vegetarisk kost
Jag är intresserad av *din* upplevelse

Mina vänner tycker att jag ska äta vegetariskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor stor utsträckning

Min familj tycker att jag ska äta vegetariskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor stor utsträckning

Mina kollegor/kurskamrater tycker att jag ska äta vegetariskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor utsträckning

Hälsoexperter tycker att man ska äta vegetariskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor stor utsträckning

Normer kring vegansk kost
Jag är intresserad av *din* upplevelse

Mina vänner tycker att jag ska äta veganskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor stor utsträckning

Min familj tycker att jag ska äta veganskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor stor utsträckning

Mina kollegor/kurskamrater tycker att jag ska äta veganskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor utsträckning

Hälsoexperter tycker att man ska äta veganskt
1 - Inte alls 2 3 4 5 6 7 - I väldigt stor stor utsträckning

Mer om normer

Vad gäller ditt val av kost, hur viktigt är det vad dina vänner tycker?
1 - Inte viktigt alls 2 3 4 5 6 7 - Väldigt viktigt

Vad gäller ditt val av kost, hur viktigt är det vad din familj tycker?
1 - Inte viktigt alls 2 3 4 5 6 7 - Väldigt viktigt

Vad gäller ditt val av kost, hur viktigt är det vad dina kollegor/kurskamrater tycker?
1 - Inte viktigt alls 2 3 4 5 6 7 - Väldigt viktigt

Vad gäller ditt val av kost, hur viktigt är det vad hälsoexperter tycker?
1 - Inte viktigt alls 2 3 4 5 6 7 - Väldigt viktigt

Beteendekontroll - din kontroll och förmåga

Hur mycket personlig kontroll upplever du att du har över att äta en kost som innehåller kött?
1 - Väldigt liten kontroll 2 3 4 5 6 7 - Fullständig kontroll

I vilken utsträckning anser du dig ha förmågan att följa en kost som innehåller kött?
1 - Väldigt liten utsträckning 2 3 4 5 6 7 - Väldigt stor utsträckning

Hur lätt eller svårt anser du att det är att följa en kost som innehåller kött?
1 - Väldigt svårt 2 3 4 5 6 7 - Väldigt lätt

Hur mycket personlig kontroll upplever du att du har över att äta en vegetarisk kost?
1 - Väldigt liten kontroll (1) 2 3 4 5 6 7 - Fullständig kontroll

I vilken utsträckning anser du dig ha förmågan att följa en vegetarisk kost?
1 - Väldigt liten utsträckning 2 3 4 5 6 7 - Väldigt stor utsträckning

Hur lätt eller svårt anser du att det är att följa en vegetarisk kost?
1 - Väldigt svårt 2 3 4 5 6 7 - Väldigt lätt

Hur mycket personlig kontroll upplever du att du har över att äta en vegansk kost?
1 - Väldigt liten kontroll 2 3 4 5 6 7 - Fullständig kontroll

I vilken utsträckning anser du dig ha förmågan att följa en vegansk kost?
1 - Väldigt liten utsträckning 2 3 4 5 6 7 - Väldigt stor utsträckning

Hur lätt eller svårt anser du att det är att följa en vegansk kost?
1 - Väldigt svårt 2 3 4 5 6 7 - Väldigt lätt

Vilka hinder mot att äta en vegansk kost upplever du? Ange max 8 hinder.

_____

Intention inför framtiden

Min intention är att äta en kost som innehåller kött

1 - Instämmer inte alls 2 3 4 5 6 7 - Instämmer helt

Min intention är att äta en vegetarisk kost
1 - Instämmer inte alls 2 3 4 5 6 7 - Instämmer helt

Min intention är att äta en vegansk kost
1 - Instämmer inte alls 2 3 4 5 6 7 - Instämmer helt