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Attitudes toward Vegans and Vegetarians: The Role of Anticipated Moral Reproach and

Dissonance

by

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Honours Thesis

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## Abstract

This study attempted to determine if anticipated moral reproach and cognitive dissonance explain negative attitudes toward vegans and vegetarians, and if vegans are subject to more negative attitudes than vegetarians. The sample consisted of 65 participants (women =41, men =24) who were randomly assigned into one of four conditions. Each participant read a vignette about a person who consumed either a vegan, vegetarian, plant-based or omnivore diet. They then completed a series of questionnaires that recorded their attitudes towards the person in the vignette, anticipated moral reproach, and cognitive dissonance. The results indicated that for the observed general attitudes for the vegan, vegetarian and plant-based diet conditions were more negative than for the omnivore condition, with plant-based diet being the most negative. For moral reproach the results indicated that higher levels of moral reproach contributed to more negative attitudes, but only in the omnivore condition. Whereas the liner regression indicated that cognitive dissonance was only significant predictor of attitudes in the vegan condition. The findings of this study indicated that diet can have an impact on attitudes, and that the diet its self may have a larger impact than the labels applied.

## Attitudes Toward Vegans and Vegetarians: The Role of Anticipated Moral Reproach and Dissonance

Although the majority of North Americans eat an omnivore diet, veganism and vegetarianism have in recent years experienced an increase in popularity (Duchene & Jackson, 2017). As a result, omnivores are believed to be more likely to discuss their attitudes towards vegans and vegetarians, due to the increased exposure to the groups, both in public dialogue and interpersonally among acquaintances. Cole (2011) examined all British newspapers published in the year 2007 that mentioned the words vegan, vegans or veganism. The results showed that the majority of papers published expressed a negative attitude towards veganism. Additionally, any positive papers published looked at only food suggesting that there is a limited perspective provided by the media on veganism. Cole (2011) provides evidence in support that there are systematic negative associations against vegans.

The purpose of this study will be to look at possible explanatory theories that could explain why veganism is observed to be viewed more negatively than vegetarianism. The theories that will be used are moral reproach (Minson & Monin, 2012) and cognitive dissonance (Loughnan, Haslam, & Bastian, 2010). This is an important topic to research as veganism and vegetarianism are theorized to be concepts that are strongly tied to the individual's identity and are seen to be as important to the individual as their sexual orientation, religion, and/ or ethnicity (Wright, 2015). Furthermore, this study may also help to explain why strategies that attempt to encourage people to adopt a vegetarian or vegan diet are often unsuccessful (Duchene & Jackson, 2017). It has been found that personal factors are the major contributor to choosing to become a vegetarian. These personal factors are altered by the perceptions held by the dominant group, omnivores (Hussar & Harris, 2010). By understanding why omnivores have these

perceptions about vegans and vegetarians, will lead to insight into why these negative attitudes are occurring.

### **Comparing Veganism and Vegetarianism in Terms of Attitudes and Diet**

To explore the potential difference in attitudes toward vegetarians and vegans it is important to clarify what the difference is between the two groups. Vegetarianism is defined as a diet that doesn't involve the consumption of meat or by-products of animal slaughter (Wright, 2015). In comparison, veganism consists of a diet without any animal-based products, or any item containing an ingredient derived from an animal (Wright, 2015). Furthermore, vegans place more stress on the ethical tie to animal rights than vegetarians. Animal rights scholar, Carol Adams defines veganism as "an ethical stance based on compassion for all beings" (Adams, 2010, pp.113) and argues that being vegan is about more than adhering to a specific diet. Further evidence to support that veganism is distinctly different from vegetarianism can be found by looking at the groups' origins. Historically, veganism was founded from a group of vegetarians, who no longer wanted to be seen as part of vegetarianism but rather as their own group (Adams, 2010). This supports the notion that veganism is distinctly different from vegetarianism, as it was created with the purpose to be different than vegetarianism. Evidently there are some clear differences between vegetarians and vegans. It is important to translate how these differences are believed to lead to differing attitudes towards vegans and vegetarians.

To understand why vegetarianism may be viewed more positively than veganism, one commonly offered explanation is that because vegetarians still consume dairy products, the group is viewed as having less polarizing views (Adams, 2010). Elaborating on this statement, Rothgerber found that 38% of people who identified as vegetarian reported consuming meat

products to some capacity (2014a). It has been theorised that the emergence of semi-vegetarianism has led to vegetarianism being perceived as less negative than veganism. Semi-vegetarianism is a term that refers to an individual who identifies as being a vegetarian but still consumes meat (Adams, 2010; Rothgerber, 2014a; Ruby, 2012). The amount of meat consumed, and the degree of willingness varies among semi-vegetarians. The presence of semi-vegetarianism has led to a blurred conceptualization of vegetarianism resulting in an increase in the perceived homogeneity between vegetarianism and omnivores (Adams, 2010). In support of this, Rothgerber found that semi-vegetarians were closer to omnivores than strict vegetarians regarding the level of disgust shown towards meat (2014a). In summary, this difference could alter the perception that the similarity between omnivores and vegetarians is greater than the similarity between omnivores and vegans.

Previous research has been conducted looking at attitude differences between vegetarians and omnivores. The reasoning that a vegetarian gives for maintaining the diet has been found to influence omnivore attitudes towards the group. Generally, the reasons for vegetarianism have been grouped into one of two categories. Health vegetarians tend to cite personal reasons for their membership, such as citing the health benefits or a food allergy. In contrast, ethical vegetarians cite external reasons, such as animal welfare. It has been found that when vegetarians reported being morally motivated, it resulted in a harsher judgement than when the reason reported was personal motivation (Hussar & Harris, 2010). In summary, it is likely that the observed differences between health and ethical vegetarians may translate to comparing vegetarians and vegans, as veganism is tied more to morality than vegetarianism.

Another area that is important to look at is the difference between vegetarianism, veganism, and conscious omnivores. As it is important to address if it is the association to

environmentalism or if it is the act of not eating meat that effects attitudes. Rothgerber (2015) states that vegetarianism is a specific form of environmentalism. As well, Bashir et. al (2013) found that individuals were less likely to affiliate with someone if they engaged in a stereotypical environmental activity such as engaging in environmental activism. However, research has shown that the diet that a person eats has a larger impact on attitudes then environmentalism. Rothgerber (2015) compared conscious omnivores to vegans and vegetarians to see how much of an effect the diet had on attitudes towards animals. Conscious omnivores are omnivores who limit their animal consumption and attempt to avoid consuming commercial meat and instead choose animals that are grass feed, or raised more humanely (Rothgerber,2015). The findings of the study were that conscious omnivores scored significantly lower than vegetarianism on both animal favourability and disgust towards meat. The findings also suggest that conscious omnivores conceptually aren't a group of transitioning vegetarians but rather a separate group. Also, conscious omnivores were found not to put as much emphasis on their eating habits as being a part of their social identity, aligning with the attitudes of normal omnivores (Rothgerber, 2015).

In conclusion, it is evident that there are some characteristics of vegetarianism and veganism that are different then omnivore environmentalists. These differences likely contribute to the differences in perceptions that are experienced by omnivores. To summarise it is evident that there is significant evidence to support that there is a difference in the perceptions of vegans and vegetarians that could contribute to a difference in attitudes between the two groups. This paper will now move to discuss some theories that have been applied to these groups in the past to potentially explain this phenomenon.

### **Anticipated Moral Reproach Towards Vegans and Vegetarians**

Anticipated moral reproach is defined as believing that an individual who holds a different moral stance is judging your own stance as being immoral (Minson & Monin, 2012). This perception of being judged leads to the individual developing a negative attitude towards the other group. In terms of group attitudes, anticipated moral reproach has been used to explain why, when a group stresses overly moral behaviour, it is given the derogatory label of a do-gooder or goody-two-shoes. Though not inherently negative, terms such as do-gooder are applied to the individual in a derogatory manner to express their dislike of the group (Minson & Monin, 2012). In engaging in the moral behaviour, vegans and vegetarians are perceived as believing that they are superior to omnivores. This theory has also been applied to various groups and has been found to be an effective theory in explaining why people who are obese or self-conscious about their personal fitness will avoid a doctor who overtly promotes their own personal fitness goals (Howe & Minson, 2017). It has also been used in the business context to explain why workers may avoid reporting their co-worker's behaviour, to avoid being viewed as whistleblowers or snitches (Wellman, Mayer, Ong, & DeRue, 2016; Antonetti & Maklan, 2016). It is evident therefore that moral reproach can be applied to several different contexts. This study will now discuss previous research of moral reproach that has been applied to vegetarianism and veganism.

Applying moral reproach to omnivore attitudes of vegans and vegetarians has not been extensively researched. What has been found is that when omnivores were asked to rate how much they perceived vegetarians as judging their meat-eating behaviour, the omnivores rated that vegetarians were highly judgmental of them. These ratings were significantly more negative compared to the vegetarian participant's actual ratings of omnivores (Minson & Monin, 2012). In addition, nearly half of the omnivores generated a negative association for the term vegetarian



(Minson & Monin, 2012). The logic behind this theory proposes that because morality is often attached to self worth it causes the individual to think that their morality is being discredited. Thus, as a result, the omnivore perceives that there is a threat to their self worth and this results in a more negative evaluation of the vegetarian.

An important limitation that is evident in the research on moral reproach, is that the theory lacks strong empirical support. For instance, the study by Minson and Monin (2012) suffers from a key methodological issue which is lack of a proper control group, meaning that the participants' attitudes to vegetarians were not compared to another group, such as omnivores. Rather, what the study did compare was omnivore attitudes towards vegetarians when they were either prompted to think of whether a vegetarian was evaluating them or not. This limitation makes it difficult to say with certainty that moral reproach is a theory that can accurately explain the differences in attitudes felt towards vegans and vegetarians. This paper will now examine another theory that has been used to compare vegetarians to omnivores.

### **Cognitive Dissonance in Application to Veganism and Vegetarianism.**

The theory of cognitive dissonance has been used in previous studies to attempt to explain why omnivores have been found to report contradictory attitudes towards animals (Loughnan, Haslam, & Bastian, 2010). Cognitive dissonance has also been used as a possible explanation as to why omnivores direct negative attitudes toward vegans and vegetarians. Festinger defined dissonance as the discomfort that is experienced when an individual is faced with an internal conflict concerning an inconsistency in their behaviour and their internal beliefs (Festinger, 1962). In response to cognitive dissonance, the individual will either change their behaviour or create a justification for their behaviour. These justifications act as an alternative

reasoning that can alleviate the person's experience of dissonance, as they alter the individual's beliefs about their behaviour (Bastian & Loughnan, 2017). Cognitive dissonance that specifically looks at attitudes concerning meat consumption has been referred to as the meat paradox; it is the cognitive dissonance that is experienced in regard to the conflict between wanting not to harm animals and the positive experiences surrounding the consumption of meat (Loughnan, Haslam, & Bastian, 2010).

Research into what specific justifications are made has found that, in regard to meat eating, the majority of justifications fall into one of four categories; Nice, Necessary, Normal, and Natural (Piazza et al, 2015). Nice refers to the pleasure that is experienced with the consumption of meat. Necessary is used to describe the belief meat is needed for both our health and survival. Thirdly, Normal is used to describe the view that meat consumption is the societal norm. Lastly Natural refers to the belief that humans have evolved to eat meat. Piazza et al (2015) found that all four of the categories were positively correlated with an increased desire to eat meat. However, they found that Nice and Necessary were the most strongly held beliefs by omnivores, and the weakest held beliefs by vegetarians. Furthermore Loughnan, Haslam, and Bastian (2010) found that the act of consuming meat can affect an individual's attitude towards animals. Specifically, they found that when participants consumed beef jerky, instead of nuts and seeds, they reported lower sympathy for and similarity towards animals. However, this study did not conduct a post meat consumption measure of dissonance. Meaning that the researchers could not determine if the negative evaluation of animals lead to alleviate the dissonance. According to the findings of previous research, it is evident that cognitive dissonance is an effective theory for explaining why omnivores may hold certain attitudes towards animals and meat consumption. It

is now important to look at cognitive dissonance in terms of how it could possibly relate to attitudes of an out-group, namely vegetarianism and veganism.

Cognitive dissonance has evidently been used primarily to explain attitudes towards animals, however there is also some research conducted specifically on attitudes towards vegetarians. Rothgerber (2014b) argues that this occurs due to vegetarians criticizing the eating of meat and as a result they are perceived as a threat to the omnivore. This threat causes dissonance in the omnivore as the vegetarian challenges the justifications that the omnivore has made for eating meat. Omnivores are believed to enhance their support of pro-meat attitudes as well as to negatively associate vegetarians with the cause of triggering this discomfort (Bastian & Loughnan, 2017). In support of this assumption, Rothgerber (2014b) found that when omnivores were exposed to a vegetarian compared to someone who ate a gluten free diet, this resulted in lower ratings of animal/human similarity, which presumably functioned to justify meat eating. Additionally, it has been found that exposure to a forced choice vegetarian, in other words, a vegetarian that cites health or allergy reasons for membership, results in lower meat justifications, compared to an individual who had become a vegetarian out of free choice (Rothgerber 2014b). Finally, Rothgerber (2014b) found that when omnivores were presented with a vegetarian, that was a semi-vegetarian, it led to a higher reported amount of meat consumed. This was interpreted as meaning that the omnivores felt less threatened by the semi-vegetarian, than they did with the strict vegetarian. In conclusion, the results suggest that vegetarians who are both strict and morally motivated create more cognitive dissonance for omnivores. Therefore, it is logical to suggest, because veganism is more restrictive and ethically based, it may cause more cognitive dissonance than vegetarianism.

In summary, cognitive dissonance is a well-studied theory for explaining how omnivore attitudes apply to meat eating behaviours. It has also been used as a potential explanation for negative attitudes between veganism and vegetarianism. Additionally, it should be noted that the most often used measures to look at omnivore attitudes toward vegetarians and vegans are centered around meat consumption, rather than differences in group attitudes. This paper will now discuss additional aspects found within previous research that are relevant to this study.

### **Additional Areas to Consider**

Previous research has compared omnivore ratings of vegans, vegetarians and omnivores in regards to gender stereotypes. This is worth noting as research in this area offers a direct comparison of attitudes towards each of the groups. Such a comparison is not found in studies that have looked at individual general attitude towards the groups. According to the literature, meat is symbolically representative of masculinity; whereas vegetables and grains are associated with femininity (Adams, 2010). It is theorised that this symbolism can lead to associating vegetarianism and veganism with being more feminine and less masculine (Wright, 2015; Adams, 2010). This could explain why more women self report being vegetarian than men (Rothgerber, 2013). Though it has been found that vegetarians were rated more feminine than omnivores (Ruby & Heine, 2011), there is however no significant difference in ratings of masculinity between the two groups (Thomas, 2016). However, in the same study, Thomas (2016) did find a difference between veganism and omnivores, in ratings of masculinity, meaning that omnivores were rated significantly more masculine than vegans. In summary these findings do provide support that there are differences in gender perceptions of veganism and vegetarianism.

Another aspect that is important to this study is the concept of plant-based diets. Plant-based diet is a term that can be used to refer to a diet that consists mostly of plants. Though the term can be used to describe both a vegan and vegetarian diet, it is also a separate classification (Duchene & Jackson, 2017). A person can eat a plant-based diet and not be either vegan and vegetarian. Little research has been conducted on plant-based diets as a separate entity from that of veganism and vegetarianism. However, plant-based diets have been growing in popularity (Duchene & Jackson, 2017). For this study, it is theorized that as a plant-based diet is a more generalized and new term, it doesn't contain the negative labeling that would be associated with veganism or vegetarianism, if they referred to the same thing. This is accordance to Becker's labeling theory, which proposes that a prescribed label can have an effect upon behaviour (as cited in Ulmer, 1994). In summary though there is little research on plant-based diets, it does provide an interesting methodological framework to consider when looking at group attitudes on veganism and vegetarians.

### **The Present Research Study**

Many studies measure veganism and vegetarianism as one concept, and do not directly compare the two groups. Although (Thomas, 2016) did compare veganism to vegetarianism, masculinity was used in place of a general measure of the participants attitudes. Therefore, this study will compare vegetarianism to veganism comparing specifically the attitudes that are held by omnivores about the groups. In addition, many studies that have looked at either veganism or vegetarianism have not included a control group and instead have compared the participants attitudes about the same group (Minson & Monin, 2012). Therefore, to remedy this, it is important that this study includes a control group, which in this case will be an omnivore diet.

It is also important to consider diet groups that are not vegetarian and vegan. As discussed previously semi-vegetarianism and conscious omnivores are groups that have been studied in the past (Rothgerber, 2014a; Rothgerber, 2015). For the purposes of this study, a relevant group that would be useful to look at are people who eat a vegan diet, but don't identify as vegan. A term commonly used to apply to this diet, is the term plant-based diet. The inclusion of plant-based diets as a condition will allow for the comparison of the term veganism, to a diet that doesn't involve any animal-based produces, therefore allowing for examining if there are any stereotypes associated specifically with the term vegan as opposed to the diet.

Two main theories that have been considered in previous studies to explain why diet type can alter attitudes which are cognitive dissonance and moral reproach. It is essential to address which theory better explains this phenomenon. For this study moral reproach was rationalized to be the primary explanatory theory, with cognitive dissonance as a secondary theory. This was rationalized because moral reproach offers a more direct explanation of why omnivores experience negative attitudes towards vegans and vegetarians. Cognitive dissonance proposes that vegans and vegetarians act as triggers, which activate dissonance already existing within the individual created by the consumption of meat (Loughnan, Haslam, & Bastian, 2010; Piazza et al, 2015; Rothgerber, 2014b). This study will specifically look at an individual's attitudes towards another group and not the individual's perceptions of their meat-eating behaviour or attitude towards animals. For this reason, moral reproach was therefore theorised to be the more dominant theory, as it more directly accounts for what this study is attempting to measure.

The hypotheses for this present study are as follows. Firstly, it is hypothesized that vegans will receive the most negative evaluation out of the four conditions. Secondly, it is hypothesized that the relationship described in the first hypothesis will be accounted for by

anticipated moral reproach. Thirdly, it is hypothesized that measured cognitive dissonance will account for a portion of the variation in attitudes, however the measured moral reproach is predicted to be the major contributing factor. The final hypothesis is that the term plant-based diet will yield a more positive evaluation in regard to attitudes than the term vegan. The independent variable being used is diet type. The independent variable has four conditions; vegan, vegetarian, omnivore, and plant-based diet. There are two dependent variables for this study; attitude and presence of stereotypes, which are conceptualised through a general attitude measure as well as a specific trait measure. Lastly, moral reproach and cognitive dissonance are conceptualized within this experimental design as being outcome measures that may account for relations between the independent and dependent variables. Both outcome variables will be measured using a Likert scale.

## Method

### Participants

The sample for this study consisted of 76 participants (51 women, 25 men,) whose mean age was 20, (age range: 18- 52 years,  $SD = 5.46$ ). The participant's diet was also recorded. The most commonly reported diet was omnivore (77.6%), the percentages for the other diets are as follows: meataterian (7.9%), pescatarian (5.3%) vegetarian (6.6%), vegan (1.3%), and other (1.3%). The analysis of the data was conducted on a subsample of the participants, as it was determined to only include those who reported their diet as either omnivore or meataterian ( $N=65$ , 41 women, 24 men,  $M_{age}= 20$  years). The participants consisted of students currently enrolled in a Psychology 1000 class offered at King's University College. Students were able to sign up for the study using the website SONA, where they read a sign-up poster about the survey

before deciding if they were interested in participating. Participants were eligible to receive compensation for completing an assignment based on the study in the form of a 2.5% bonus credit to their grade in Psychology 1000.

## **Materials**

**Diet type vignette.** The participants read a short paragraph that described a fictional character named Jamie, and the diet that Jamie ate (see Appendix A). The vignette also provided an explanation of the diet that Jamie ate in the form of listing what foods groups that Jamie ate. There were four different versions of the vignette, one for each of the conditions, the only thing that varied across the versions was the diet that Jamie ate. This vignette was modelled after similar vignettes used by both Thomas (2016), and Ruby and Heine (2011).

**General group attitude measure.** This measure was a standard thermometer measure used in Esses, Haddock, and Zanna (1993). Participants were presented with an image of a thermometer and were asked to rate their opinion of people who eat the same diet that Jamie had in the vignette (see Appendix B). Participants were asked to give any number from 0 to 100, with 100 representing that they were extremely favorable towards people who ate the same diet as Jamie and 0 representing extreme unfavorability towards the group.

**Moral reproach measure.** This measure was originally used by Minson and Monin (2012) and consists of four items. It measures the participant's moral beliefs towards several statements. A sample item from the measure would be "If Jaime saw what I normally eat, Jamie would think that I am". A reliability analysis was conducted on the four items and indicated a low Cronbach's Alpha ( $\alpha=0.35$ ). Therefore, after examining the measure it was concluded that only one item of the measure directly measured moral reproach, so the analysis of this variable



was based upon the results of the single item. The participants were asked to rate their responses on a 7-point Likert scale, with a score of one representing extremely immoral and a score of seven represents extremely moral.

**Cognitive dissonance measure.** This measure consisted of eight statements that the participants had to rate (see Appendix D). The participants rated each statement based on how much they agreed or disagreed with each of the statements using a 7-point Likert scale. A sample question from this measure would be “I feel guilty or upset after eating meat”. The measure was constructed to better suit the focus of this study, compared to other existing measures of cognitive dissonance (Rothgerber, 2015) which focus primarily on animal rights and ethics. The measure was created for this study and had the purpose of applying cognitive dissonance from a more diet focused perspective and thus focused on different areas, than other previous measures. The revised Cronbach’s Alpha of this scale was ( $\alpha=0.71$ ) for this study.

**Stereotype trait measure.** This measure consisted of a list of 18 traits. Participants were asked to rate each trait on how much they felt the trait matched their perception of the character in the vignette (see Appendix E). Participants rated each trait on a 7-point Likert scale, with anchors strongly disagree and strongly agree. Some of the traits were taken from the results of previous studies (Minson & Monin, 2012, Ruby & Heine, 2011, & Bashir et. al, 2013) that asked participants to describe traits to vegetarians, vegan and/or omnivores. The traits were arranged in an order that ensured that two related traits didn’t appear in succession of one another. For example, the trait open-mindedness was arranged to not appear next to closed-mindedness. After rating the 18 traits participants were also able to write down any additional traits that they felt Jamie possessed. Finally, participants were also asked to record what gender they thought Jamie

was as well as how similar they felt to Jamie, using a 5-point Likert scale that ranged from not similar to very similar.

**Demographic questionnaire.** This questionnaire asked the participants to record their gender, age, and diet type. The participants were asked to select their diet from a list of options that included; omnivore, vegan, vegetarian, meataritan, pescatarian and other with a qualitative option. For gender they were given the option to select; male, female, other, or prefer not to say. Age was measured by a single open-ended question. The participants were also given the opportunity to write down their opinion of the type of diet that the character ate or about the character.

### **Procedure**

Before the data was collected, this study underwent an ethics approval process conducted by King's University College ethics review board and received approval. Students enrolled in Psychology 1000, first heard about the opportunity to participate in an honours thesis as well as the compensation from their professor. To participate in the study, the students first used the SONA website. After reading a brief description of the study on the website (see Appendix F) students who were interested in participating were then directed to the survey which was created on Qualtrics by being provided with a hyperlink. Upon clicking on the link, the participants first saw the consent form. After reading the consent form, the participants indicated that they agreed and consented to participate in the study in order to continue.

The first measure presented in the study was the diet type vignette. The participants were randomly assigned one of the four conditions using Qualtrics randomization software. After they finished reading the vignette, the participants then completed the general attitude measure, where

they were asked to rate, using a thermometer as a reference, their general attitude towards the diet that the character in the vignette had. The third measure that was presented was the moral reproach scale. The participants then completed the dissonance measure, followed by the stereotype trait measure. This was followed by questions that asked the participants to assign a gender to Jamie, as well as to rate their similarity to Jamie using a 5point Likert scale. At this point the participants were then given the opportunity to list any traits that they felt Jamie possessed which weren't included in the list. Finally, the participants completed the demographic questionnaire as well as an additional qualitative response question that asked the participants for any additional comments about the character in the vignette or about people who eat the same diet as the character. Overall the study consisted of 30 questions, the mean time that the participants took to complete the study was 11.94 minutes ( $SD = 10.86$ ).

Once all of the measures were complete, the participants were then shown the debriefing form, which outlined the study's purpose, procedure, and hypotheses. The form contained contact information as well as references to other studies that covered a similar topic to this study. After the study was complete, the participants were able to complete and hand in the related assignment to earn compensation, which was an 2.5% credit toward their grade in Psychology 1000, for their participation in the study.

### **Results**

A reliability analysis was conducted on the cognitive dissonance measure. The initial Cronbach's alpha of the 8 items  $\alpha = 0.59$ . Items 6 and 8 were excluded from the analysis, increasing the Cronbach's alpha to  $\alpha = 0.71$ . A scale measuring cognitive dissonance was created representing the mean of the items remaining after conducting the reliability analysis. For the

stereotype traits, a Principal Components analysis with varimax rotation was conducted on the 18 traits. The rotated solution indicated that there were three factors. Items loading on each factor at absolute value 0.40 or stronger can be found in Table 1. The first factor accounted for 16.44 % of the variance, with items loading on it of open mindedness, friendliness, close mindedness and conservatism; which seems to represent general likability towards the individual. The second factor, accounted for 13.32% of the variance, and had the following significantly loaded traits: health and nutrition, physical fitness, and self-discipline. This likely represents a general stereotype towards being healthy. The final factor accounted for 13.05 % of the variance, with the traits, outspoken, political, eccentric, smug, and do-gooder loading on it. This factor likely represents perceptions of the activist type of personality. Using these three factors, a scale variable of the mean scores on all of the traits was created for each. Negatively loaded items had their scales reversed.

A one-way ANOVA was run with the participant's condition as the independent variable, and the scores on the thermometer, moral reproach and cognitive dissonance measure, the stereotype traits, as well as similarity to Jamie, as the dependent variables. The results indicated that the comparison between the general attitude measure and the participants condition was significant  $F(3,61) = 2.78, p = 0.05$ . Indicating that the participants ratings of their attitudes towards the target group were same across the conditions. The Tukey's HSD post hoc test indicated that the difference between the vegan ( $M = 63.00, SD = 19.36$ ) and omnivore ( $M = 80.38, SD = 21.99$ ) conditions were significant  $t(61) = 17.38, p < 0.05$ , as well as the difference between the plant-based diet ( $M = 58.82, SD = 19.96$ ) and omnivore condition  $t(61) = 21.56, p < 0.01$ . These results indicate that, for general attitudes; the condition that received the most negative evaluation is the plant-based diet condition. The results also indicated that the difference in the

ratings of similarity to Jamie across the experimental conditions was large enough to be significant  $F(3,61) = 5.8, p = 0.001$ . The HSD post hoc indicated that there was a significant difference between the vegan ( $M = 2.39, SD = 1.10$ ) and omnivore ( $M = 3.11, SD = 1.41$ ) conditions  $t(61) = 1.23, p < 0.05$ , as well as between the plant-based diet ( $M = 2.38, SD = 1.43$ ) and omnivore conditions  $t(61) = 1.62, p < 0.001$ . Lastly there was a significant difference between the vegetarian condition ( $M = 2.53, SD = 1.22$ ) and the omnivores condition,  $t(61) = 1.32, p < 0.01$ . None of the other variables were significant in the analysis of variance.

A linear regression was run to test to see how much of the variance in group attitudes did cognitive dissonance, moral reproach and the three stereotype traits account for. The results were split by condition and indicated that the regressions for the vegan condition and the omnivore condition were significant. Firstly, for the vegan condition  $F(5,12) = 4.097, p < 0.05$ , it was found that both cognitive dissonance  $\beta = 0.69, t(12) = 3.48, p < 0.01$  and the health factor  $\beta = 0.56, t(12) = 2.59, p < 0.01$  were significant. For cognitive dissonance the beta was positive, indicating that as levels of cognitive dissonance increased, so did levels of general attitudes. For the health factor it was also found to have significant positive relationship, indicating that increased endorsement lead to increased liking of the group. For the omnivore condition, the only variable that was found to be significant was moral reproach  $\beta = -0.73, t(7) = -2.72, p < 0.05$ . As the moral reproach was found to be negative it indicates that as levels of moral reproach increase, general attitudes decrease. Finally, as it was found in the linear regression that the health factor was a significant predictor in the vegan condition, a t-test was run comparing the health factor to the activism factor. This test was run to determine if there was a difference in the amount of endorsement that the participants reported for the stereotype factors. The results of the t-test indicated  $t(17) = 1.92, ns$  that there was no significant difference between the two factors, however the

means of the factors indicated that the health factor ( $M=4.62$ ,  $SD=0.53$ ) was non-significantly more endorsed than the activism factor ( $M =4.24$ ,  $SD= 0.81$ ).

To test to see if there were any gender stereotypes present, a Pearson Chi-square test was run between the participant's perception of Jamie's gender and the condition. The results indicated that there was a significant difference across the groups in regard to gender perception  $\chi^2(6) = 15.18$ ,  $p < 0.05$  based on the counts across the conditions. The results show that for the experimental conditions, vegan, vegetarian and plant-based diet, the participants were more likely to rate Jamie as female than male. The opposite was the case for the omnivore condition where more participants rated Jamie as male rather than female.

Table 1 *The Factor Loading of the Three Stereotype Factors*

<b>Factor 1</b>		<b>Factor 2</b>		<b>Factor 3</b>	
Trait		Trait		Trait	
Open minded	-0.76	Health and Nutrition	0.69	Outspoken	0.63
Friendly	-0.74	Physically fit	0.67	Political	0.87
Close minded	0.84	Lazy	-0.65	Eccentric	0.67
Conservative	0.76	Self - disciplined	0.76	Smug	0.46
				Do-gooder	0.5

## Discussion

To summarise the results of this study, firstly it was observed that there was a significant difference in the group attitudes between the control, omnivore condition and the experimental conditions. The results of the analysis of variance indicated that there was a significant difference between the omnivore condition and the other conditions, in terms of general attitudes. This difference indicated that omnivores were viewed significantly more positive than vegans, vegetarians and people who eat a plant-based diet. A linear regression was also run for each of the four conditions with only the vegan and omnivore conditions being significant. The findings indicated that cognitive dissonance and the second factor health were found to be significant contributors to the variance for the vegan condition. For the second theory, moral reproach, it was found to be a significant contributor within the omnivore condition. Lastly, support for a gender stereotype was found, as more participants in the vegan, vegetarian and plant-based condition reported Jamie as female, then in the omnivore condition.

The initial hypothesis of this study was that the vegan diet condition would receive the lowest evaluation out of the three other conditions. This hypothesis was based upon previous research, that has found that vegetarians who provide an ethical explanation for their diet are evaluated more harshly than those vegetarians who give health explanations (Hussar & Harris, 2010). It has also been reasoned that because vegetarians consume dairy products, they are more similar to omnivores, than vegans and therefore are perceived to be less polarizing (Adams, 2010). Therefore, it was rationalized that because vegans have a stronger ethical association than vegetarians, they would receive a more negative evaluation. However, this hypothesis was not



supported by the findings of this study, as attitudes towards the plant-based diet group were the most negative. As well it was found that there was no significant difference between the ratings in the vegan, vegetarian and plant-based diet condition. This suggest that omnivores do not perceive the labels of vegan, vegetarian and plant-based diet as being fundamentally different on the basis of general attitude. However, in terms of how the theories of cognitive dissonance and moral reproach can be used to explain the rating of general attitude for each of the conditions are different. This paper will now discuss how the measured moral reproach and cognitive dissonance differed across the four conditions.

The next main hypothesis of this study was that the variance in attitudes would be accounted for by moral reproach. Anticipated moral reproach, referring to the perceived judgment of an individual who is seen as morality superior, as being judgmental of one's own morality which in turn results in negative attitudes towards the said individual. The theory that moral reproach could be used to explain why omnivores have a negative attitude of veganism and vegetarianism, was not supported by the results of this study. The results showed moral reproach was only significant within the regression analysis of the omnivore condition. This indicated that higher levels of moral reproach towards omnivores were associated with lower attitudes. As this was found only for the control condition, it doesn't support the second hypothesis. What this finding does suggest is that exposure to vegans and vegetarians does not increase levels of moral reproach, as initially theorised. Rather what appears that the normative level of moral reproach experienced by omnivores is weakened when the target group is replaced by either; vegans, vegetarians or people who eat a plant-based diet. In summary the results of this study do not support the use of moral reproach as a means to understand why individuals may experience negative attitudes towards vegans and vegetarians. However, the finding that moral

reproach explained a significant portion of the variance in the omnivore condition, suggest that the theory had applications in other contexts.

The second theory of interest in this study as a potential explanatory variable was cognitive dissonance. Cognitive dissonance was not found significant in the one-way ANOVA but was found significant for the linear regression within the vegan condition. The positive direction of the relationship suggested that as levels of dissonance increase, so does the attitude towards the group. This finding contradicts previous research on this theory in the vegetarian and vegan context. For example, it has been found that exposure to vegetarianism results in higher reported ratings of cognitive dissonance (Rothgerber, 2014b) in comparison to a gluten-free diet. One possible explanation for the difference in findings may be due to the type of cognitive dissonance measure used in this study. Previous studies (Bastian & Loughnan, 2017) have used measures that focused on cognitive dissonance in the context of opinions of animals (Rothgerber, 2015), rather than looking at diets in particular. It may be that the relationship towards those who eat a vegan diet is different than the dissonance that is triggered by animal welfare and autonomy. As Rothgerber rationalized that vegetarians trigger cognitive dissonance as they act as a reminder of an omnivores' own incongruence (2014b) the findings of this study do support that veganism is associated with higher levels of cognitive dissonance, as well as higher attitudes. This could suggest that as levels of dissonance towards eating meat increase within the individual, it leads to increase in sympathy towards those who chose a non-meat diet. Thus, resulting in an increase in likability for the group. As this relationship was only observed to be significant for the vegan condition, it may imply that as the ethical connection towards vegans is stronger than for vegetarians (Adams, 2010), and that the experience of dissonance may be stronger for them than for those who eat a plant-based diet or vegetarian, in which it may be

perceived to be is less emphasis placed on ethics. In summary although the findings of this study do not match that of previous research, however the findings do still make logical sense and suggest that the effect of cognitive dissonance on group attitudes may be more complex than initially theorised at the start of this study.

For the stereotype traits, the regression of the vegan condition indicated that the second factor, known as the health factor was a significant positive predictor. Indicating that stronger endorsement of the health stereotype lead to higher levels of liking among participants. This finding is similar with previous research by Rothgerber who found that if health reasons were given for a person's choice of a vegetarian diet would lead to a greater endorsement from omnivores than if the vegetarian gave an ethical reason for the diet (2014b). Though when compared the second and third factors were not significantly different from one another, the general trend of the means indicated that the second factor was more endorsed than the third activism factor. This could potentially explain why veganism was not perceived more negatively than those who eat a plant-based diet.

In regard to the additional analysis that were conducted to look at genders stereotypes and perceived similarity of the character in the vignette, the results found were consistent with previous research. Firstly, the result of the chi square was consistent with previous research. The results indicated that more participants reported Jamie's gender as being female for the vegan, vegetarian and plant-based diet conditions. Whereas, for the omnivore condition, participants were more likely to rate Jamie's gender as male. This finding matches previous research that has found that there is a gender bias towards vegans and vegetarians. For example, it was found previously that individuals are more likely to rate a vegetarian as feminine than an omnivore

(Ruby & Heine, 2011). These findings are also consistent with Carol Adams, who theorizes that the gender stereotype observed is linked to meat as a symbol of masculine identity (2010).

For the similarity ratings towards Jamie, it was found to be significant for the analysis of variance, meaning that there was a significant difference in the similarity ratings of the omnivore condition compared to the others. This means that the participants' rated the omnivores condition as being significantly more similar to them than the vegan, plant-based diet or the vegetarian condition. The group that the participants felt the least similar to was the plant-based diet group. This supports with the findings of the general attitude measure, that the plant-based diet group received the most negative evaluation.

There are several limitations to this study that are worth noting, when taking into consideration the results. Firstly, the small sample size, though the initial pool of participants did consist of 76 individuals, all non-omnivores were not included in the analysis as the interest was in the attitudes of omnivores toward non-omnivores. This means that the lack of significant results in the analysis might have been due to not enough of an effect size to truly measure the phenomenon. Additionally, it is important to note that meatatarians were included within the sample of omnivores, though it is not known if they are a distinct group from normal omnivores and their inclusion may have influenced the results. In addition, the use of a primarily student sample meant that there was likely a more liberal leaning that might have contributed to weakening the results, however it does strengthen the findings found especially directed toward general group attitudes. Another major limitation to this study was the type of materials used. Firstly, for the moral reproach measure, it was rationalized that only one question of the four-item measure directly measured the variable in question, therefore it can be argued that using only one question to attempt to capture a variable is not accurate or valid. The second

problematic measure used in this study was the cognitive dissonance, although the final reliability was acceptable, it was not ideal.

The results of this study make it evident that follow-up research is needed to be conducted to better explain the phenomenon. Firstly, it would be important to include a larger sample of participants, as well as potentially including a more diverse sample than the student sample. As well as focusing on testing and creating more in-depth measures that have a greater reliability. In conclusion, this research provides evidence that there is a significant difference in attitudes projected at, people who eat a vegan, vegetarian and plant-based diet, and those who eat an omnivore diet.

This study looked at comparing veganism, vegetarianism, omnivores, and plant-based diets, which had not been done so in previous research, as well as compared moral reproach to cognitive dissonance, in an attempt to determine which was the best predictor of group attitudes. The results show some support for cognitive dissonance as it was found to be a significant predictor of the difference in attitudes for the vegan condition, but not for the plant-based diet or the vegetarian condition. The regression indicated that there was a positive relationship between these variables which indicated that as levels of cognitive dissonance increased so did attitudes towards vegans. Though logically this finding makes sense, it does contradict previous literature on cognitive dissonance that looks at veganism and vegetarianism. Moral reproach was found to be a significant predictor for only omnivore condition. This relationship indicated that as levels of moral reproach towards the omnivores increased, attitude towards the individual decreased. This finding supports moral reproach in general but not its application to this context. To conclude, it is clear from the findings of this study, support that diet can have an effect on

attitudes, and that diets that are plant-based such as veganism and vegetarianism are viewed more negatively than that of the standard omnivore diet.

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## Appendix A

### Version 1: Omnivore condition

Jamie is an 18 year old student at the University of Western Ontario. Jamie is active and tries to go to the gym at least once a week. Jamie also enjoys watching TV, going to concerts and hanging out with friends. Jamie's diet is best described as being an omnivore diet. The food that Jamie eats would be a variety of meat, dairy, grains, fruits and vegetables. Jamie's favorite meal is a chicken burger and french fries

### Version 2: Vegetarian condition

Jamie is an 18 year old student at the University of Western Ontario. Jamie is active and tries to go to the gym at least once a week. Jamie also enjoys watching TV, going to concerts and hanging out with friends. Jamie's diet is best described as being a vegetarian diet. The food that Jamie eats would be a variety of beans, nuts and seeds, dairy, grains, fruits and vegetables. Jamie's favorite meal is a veggie burger and french fries

### Version 3: Vegan Condition

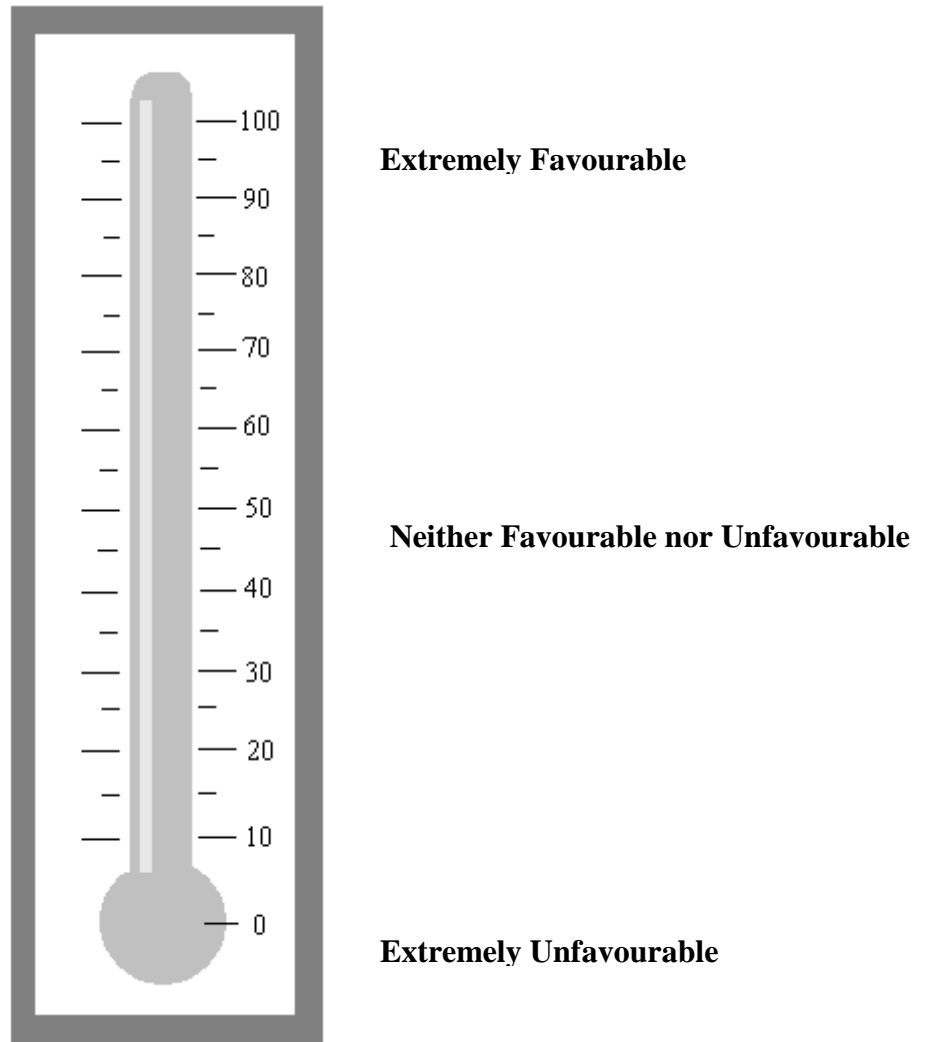
Jamie is an 18 year old student at the University of Western Ontario. Jamie is active and tries to go to the gym at least once a week. Jamie also enjoys watching TV, going to concerts and hanging out with friends. Jamie's diet is best described as being a vegan diet. The food that Jamie eats would be a variety of beans, nuts and seeds, grains, fruits and vegetables. Jamie's favorite meal is a veggie burger and french fries

### Version 4: Plant-based diet condition

Jamie is an 18 year old student at the University of Western Ontario. Jamie is active and tries to go to the gym at least once a week. Jamie also enjoys watching TV, going to concerts and hanging out with friends. Jamie's diet is best described as being a plant-based diet. The food that Jamie eats would be a variety of beans, nuts and seeds, grains, fruits and vegetables. Jamie's favorite meal is a veggie burger and french fries

**Appendix B**

Below you will see a picture of a thermometer. Use it to report your attitude towards (omnivores, vegetarians, vegans, people who eat a plant-based diet). On the thermometer, 100° represent extremely favourable attitudes, zero degrees reflects extremely unfavourable attitudes, and the numbers in between reflect various degrees of favourability or unfavourability. Using this rating scale, write a number between zero and 100° (you may use any number) to reflect your attitude. Please be honest. There are no right or wrong answers and remember that this survey is anonymous.



My attitude toward (omnivores, vegetarians, vegans, people who eat a plant-based diet) is

\_\_\_\_\_°

**Appendix C**

Please fill in the blanks for following statements using the scale listed below

(1= Extremely Immoral, 2= Immoral, 3= Slightly Immoral, 4= Neutral, 5= Slightly Moral, 6= Moral, 7= Extremely Moral,)

1. I would say that I am\_\_\_\_\_
2. If Jaime saw what I normally eat, Jamie would think that I am \_\_\_\_\_.
3. People like Jamie are \_\_\_\_\_.
4. Jamie thinks that most people (on a plant-based diet) (who are; Vegan, Vegetarian, Omnivore) are \_\_\_\_\_.

**Appendix D**

Please rate the following statements on how well they match your own attitudes using the scale listed below.

(1=Strongly Disagree, 2= Disagree, 3 = Slightly Disagree, 4 = Neutral, 5= Slightly Agree, 6= Agree, 7= Strongly Agree)

1. I feel uncomfortable thinking about how meat is produced \_\_\_\_\_.
2. I feel guilty or upset after eating meat \_\_\_\_\_.
3. I enjoy eating meat too much to give it up \_\_\_\_\_.
4. I feel uncomfortable when I am asked to explain my food choices \_\_\_\_\_.
5. I often think about the process that my food goes through to arrive at my plate \_\_\_\_\_.
6. I uncomfortable discussing how much meat I eat \_\_\_\_\_.
7. I enjoy discussing animal rights issues with others \_\_\_\_\_.
8. I avoid looking at or reading about animal rights protests \_\_\_\_\_.

### Appendix E

Please rate the following traits based upon how well they match your perception of Jamie, based on the scale below

(1= Strongly Disagree, 2= Disagree, 3= Slightly Disagree, 4= Neutral, 5= Slightly Agree, 6= Agree, 7= Strongly Agree.)

1. Values health and nutrition \_\_\_\_\_.
2. Outspoken \_\_\_\_\_.
3. Political \_\_\_\_\_.
4. Eccentric \_\_\_\_\_.
5. Trendy, likes for follow fads \_\_\_\_\_.
6. Smug \_\_\_\_\_.
7. Rebellious \_\_\_\_\_.
8. Physically fit \_\_\_\_\_.
9. Open minded \_\_\_\_\_.
10. Old-fashioned \_\_\_\_\_.
11. Lazy \_\_\_\_\_.
12. Friendly \_\_\_\_\_.
13. Closed minded \_\_\_\_\_.
14. Activist \_\_\_\_\_.
15. Liberal \_\_\_\_\_.
16. Do-gooder \_\_\_\_\_.
17. Conservative \_\_\_\_\_.
18. Highly self-disciplined \_\_\_\_\_.

What Gender do you think Jamie is?

- Male
- Female
- Other \_\_\_\_\_.

How similar do you feel to Jamie?

- Not very similar
- Slightly dissimilar
- Neither similar nor dissimilar
- Slightly similar
- Very similar

If there are any traits that you feel that Jamie possessed but weren't listed above, please list them in the space provided.

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## **Appendix F**

### Sign up Poster

#### Diet, Attitudes and Perceptions

This study consists of a total five questionnaires and a vignette. Individuals who participate in this study will be asked to read a vignette describing a person. They will then be asked to complete a series of questionnaires asking about perceptions of the person in the vignette, about some groups of people, and about some issues including food choices.

This study will take less than an hour to complete and is worth 2.5% towards your final Psychology 1000 mark. Psychology 1000 students can receive bonus marks for completing a related assignment. Participants are free to withdraw from the study at any time and still receive credit for the written assignment.