A Nudge With Your Fudge:
The Impacts of Negative and Positive Labelling on Psychological Affect

Sustain-edibles

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Executive Summary

As climate change is accelerating[1], more foodservice businesses are using climate-friendly food labels to nudge consumers toward sustainable items[2]. However, no known study has examined the psychological impact of these labels on consumers. Thus, the present study aims to examine whether negative food labels (NFLs) are more effective at nudging consumers toward sustainable items compared to positive food labels (PFLs) and how they impact psychological affect. Data were collected from UBC undergraduates (N=253) via online surveys. Participants were randomly assigned to one of three conditions: the PFL condition, the NFL condition, and the no-label condition. In each condition, participants rated how likely they were to choose each food shown. Afterwards, we measured their shame, guilt, and positive and negative affect. Findings from an ANOVA analysis show that there was no significant difference between the performance of the NFLs and PFLs. Results from a correlational analysis show that NFLs were not associated with increased negative affect, shame or guilt. PFLs were associated with decreased negative affect but not with positive affect, shame or guilt. Our study demonstrates that NFLs should not be avoided on products for fear of negative psychological impact on consumers, and the use of PFLs should be continued.

Introduction

Given that food production accounted for 26% of all global carbon emissions in 2018[3], sustainable food labels are becoming more popular as they can nudge consumers toward climate-friendly options[4]. Many sustainable food labels use the positive or negative aspects of an item to either encourage or discourage the consumption of a product[5]. Negative food labels (NFLs) have been found to perform better than positive food labels (PFLs) in those participants who are moderately and strongly concerned about the environment, whereas PFLs are only effective in those that are strongly concerned about the environment[6]. However, it is unclear what type of psychological impact NFLs have on consumers, as they may induce feelings of anxiety and guilt in consumers. Specifically, little is known in current literature regarding how climate-friendly PFLs and NFLs compare when it comes to their impact on a customer's psychological state. Aligning with the negativity bias, research suggests that negative stimuli are more impactful on motivation and psychological states than positive stimuli[7]. Nevertheless, as negativity bias proposes that people dwell on negative events more than positive ones[8], we expect that NFLs will create more negative emotions than PFLs. This research will highlight whether negative or positive labels are more effective in choosing sustainable food items while evaluating the possible psychological impact these labels have on consumers. Such research is crucial as it may help the food industry in choosing the most effective label with the least amount of negative psychological affect in order to healthily encourage consumers toward climate-friendly food items.

This study will test the effectiveness of a simple food label that indicates whether the food item has led to high or low carbon emissions. It seeks to nudge participants into making climate-friendly choices by targeting their concern for the environment[9]. By making climate salient, labels can serve as reminders to act in line with their pro-climate attitudes and beliefs. Emotions like guilt and pride can motivate consumers' intentions to buy sustainable food[10]. Positive and negative labels in the experimental groups will target these emotions and the desire to alleviate climate anxiety by choosing sustainable foods[11].

Research Question and Hypothesis

We sought to answer the following questions: how will positive versus negative food labels perform in nudging people to make more sustainable food choices? Also, how do positive and negative food labels impact psychological states by eliciting positive or negative affect in participants? We hypothesized that the NFL condition would be more effective in nudging participants towards a sustainable food choice compared to the PFL condition and no label condition. Furthermore, we predicted that the NFL condition would be associated with higher negative affect, shame and guilt and that the PFL condition would be correlated to higher positive affect compared to the control conditions.

Methods

Participants

Our target sample was UBC undergraduate students. According to a power analysis (assuming a minimum effect size=0.25, alpha=0.05, power=0.95), we aimed to recruit a sample of 252 participants with 84 participants per condition. A convenience sample was obtained by sharing the survey through group members' social networks. Out of 313 total responses, 60 were excluded from the analysis as they were incomplete. The final sample was $N = 253$ (69.96%

women, 24.90% men, 2.77% non-binary, 0.40% transgender, 0.40% two-spirit, 1.58% other). 90.91% of our sample were UBC students, and the majority of the sample was White (23.32%) or Asian (30.43%). 70.75% of our sample was liberal-leaning, 18.18% was politically neutral, and 11.07% was conservative.

Conditions

In this experiment, participants were presented with a series of food items in a survey (see Appendix A). The independent variable being manipulated was the presence and type of food label to assess the effectiveness of PFLs and NFLs in nudging sustainable food choices, and their effect on the participants' psychological state.

Participants were randomly assigned to one of three conditions. In each condition, six photos were shown in total; three of the photos were foods high in carbon emissions and the other three were foods low in carbon emissions. In the positive food label condition ($N = 87$), climate-friendly foods were shown with a PFL that indicated low carbon emissions in a green bubble with the text "lower CO_2." In the negative food label condition ($N = 78$), the climate-unfriendly foods were shown with a red bubble with the text "higher CO_2." In the control condition ($N = 88$), photos were presented with no food label (see Appendix A).

Measures

The effectiveness of the food label was operationalized as a consumer food choice. It was measured on a 5-point Likert scale assessing how likely participants were to purchase each food item. The response options ranged from not likely at all (1) to very likely (5). Positive and negative affect were measured as an additional dependent variable to compare the psychological effects of PFLs and NFLs. The State Shame and Guilt Scale (SSGS) was used to measure negative affect[12]. Past research has found this scale to be a reliable measure[13]. The PANAS SF was used to measure positive affect which also has been shown to have acceptable psychometric properties[14]. Sample items from PANAS SF include rating feelings of nervousness and contentment, whereas a sample item from the SSGS is "I want to sink into the floor and disappear."

Procedure

The survey was developed on Qualtrics (https://www.qualtrics.com) and distributed from March 8th to March 24th. After agreeing to a consent form, participants were randomly assigned to a food label condition where they viewed six photos and rated their likelihood of choosing each item. Their positive and negative affect were measured immediately after viewing the images. Lastly, demographic questions regarding student status, year of study, gender and racial identification, views on politics and climate change, economic status, as well as dietary habits were collected.

Recruitment occurred over a 2-week period during which we sent the survey link to friends, posted it on social media groups, sent the survey to UBC clubs, and requested professors to share it with their classes. However, the number of participants plateaued at 182. To overcome this challenge, we walked around campus and asked students to complete our survey by scanning a QR code. This solution was successful as we managed to exceed our target sample size.

Results

We conducted a one-way between-subjects ANOVA with an alpha level of $\alpha = .05$ in order to test our primary hypothesis. We predicted that the NFL condition would be more effective in nudging participants towards a sustainable food choice compared to the PFL condition and no label condition. However, there were no statistically significant differences between the NFL condition ($M = 3.07$, $SD = .81$), the PFL condition ($M = 3.2$, $SD = .72$) (see Appendix B, Table 1) and the no label condition ($M = 3.08$, $SD = .77$, $F(2, 252) = 0.30$, $p > .05$, $\eta^2_p = 0.002$) (see Appendix B, Table 1.1). Figure 1 in Appendix B depicts average food rating for each food label condition.

Our second hypothesis predicted that the NFL condition would be associated with a higher level of negative affect, and the PFL condition would be correlated with greater positive affect compared to the control group. We tested the hypothesis by conducting a correlational analysis for each condition to observe whether there was a relationship between the average food rating and emotional states (positive affect, negative affect, shame, and guilt). In the NFL condition, average food rating was not correlated with negative affect ($r(76) = -0.08$, $p > 0.05$), positive affect ($r(76) = .06$ $p > .05$), shame ($r(76) = 0.08$, $p > 0.05$) or guilt ($r(76) = -0.02$, $p > 0.05$) (see Appendix B, Table 2). In the PFL condition, average food rating was not significantly correlated with positive affect ($r(85) = 0.07$, $p > 0.05$), shame ($r(85) = -.11$, $p > .05$) or guilt ($r(85) = -.18$, $p > .05$), but was moderately negatively correlated with negative affect ($r(85) = -.30$, $p < 0.05$) (see Appendix B, Table 3). Figure 3 in Appendix B shows the negative correlation between average food rating and negative affect. In the control condition, average food rating was not correlated with positive affect ($r(86) = 0.03$, $p > 0.05$), negative affect ($r(86) = 0.04$, $p > 0.05$), shame ($r(86) = -0.12$), $p > 0.05$), or guilt ($r(86) = -0.006$, $p > 0.05$) (see Appendix B, Table 4).

To assess whether there were any differences in the level of positive affect, negative affect, shame and guilt between the three conditions (PFL, NFL and no-label condition), we conducted an ANOVA analysis for each emotion. We found no statistically significant differences for positive affect ($F(2, 250) = 0.36$, $p > .05$, $\eta^2_p = 0.003$) (see Appendix B, Table 5 and 5.1), negative affect ($F(2, 250) = 0.68$, $p > .05$, $\eta^2_p = 0.005$) (see Appendix B, Table 6 and 6.1), shame ($F(2, 250) = 0.06$, $p > .05$, $\eta^2_p = 0.005$) (see Appendix B, Table 7 and 7.1), or guilt ($F(2, 250) = 0.14$, $p > .05$, $\eta^2_p = .001$) (see Appendix B, Table 8 and 8.1).

Aside from our main two hypotheses, we also conducted exploratory correlational analyses between various variables in each condition. In the NFL condition, there were significant correlations between shame and negative affect ($r(76) = .35$, $p < .05$), guilt and negative affect ($r(76) = .31$, $p < .05$), and guilt and shame ($r(76) = .83$, $p < .001$) (see Appendix B, Table 2). In the PFL condition, we found significant correlations between shame and negative affect ($r(85) = -.26$, $p < .05$), guilt and negative affect ($r(85) = .48$, $p < .001$), guilt and shame ($r(85) = .70$, $p < .001$), negative affect and positive affect ($r(85) = -.26$, $p < .05$) (see Appendix B, Table 3). Finally, in the no-label condition, we found significant correlations between shame and negative affect ($r(86) = .70$, $p < .001$), guilt and negative affect ($r(86) = .78$, $p < .001$), shame and guilt ($r(86) = .89$, $p < .001$), positive affect and shame ($r(86) = -.36$, $p < .05$), and positive affect and guilt ($r(86) = -.24$, $p < .05$) (see Appendix B, Table 4).

Discussion

Contrary to our hypothesis, the NFL condition had no significant impact on average food rating, shame, guilt, positive or negative affect compared to the control condition. The PFL condition was not associated with average food rating, shame, guilt, or positive affect. However, average food rating in the PFL condition was negatively correlated with negative affect meaning that viewing PFLs was associated with decreased negative affect. As this correlation was not seen in the NFL or no-label condition, this may be reflective of a reduction in climate anxiety after making a sustainable food choice[15]. Furthermore, there was no significant difference between the NFL, PFL and control conditions in nudging participants towards climate-friendly items.

There are a few explanations as to why our survey yielded predominantly insignificant results. Firstly, participants may have overlooked the label as it only took up a small proportion of the photograph shown. Research shows that the size of a label is a determining factor in whether a consumer pays attention to the label or not[16]. Additionally, the appetizing depiction of food may have led the participants to give the food items higher ratings as a desirable visual display of food can alter one's food choice and consumption behaviour [17].

Secondly, the survey format may not have been ecologically valid. Typically, when a consumer views a menu, all food options are listed in front of them, and they compare options in order to choose a food item. However, our study asked participants to rate the likelihood of choosing a specific product which did not allow for participants to compare factors between items. This format was used in order to increase the sensitivity of our dependent variable. Instead, it may have caused participants to make a decision in a vacuum without allowing for prospect relativity, which refers to the idea that people's decisions depend on their evaluation of the trade-offs between the options available[18].

Thirdly, we chose food items like chicken strips and burgers for the survey which are known to be very popular among students, as identified by our UBC SEEDS clients. Food labels may not be able to sway food choice if the consumer has a strong existing preference towards a specific item, as strong attitudes are more resistant to change[19].

Further research would benefit from having larger and more visible labels to catch participants' attention. Furthermore, future studies should implement a survey design that allows participants to choose between food items by using a menu-like format to simulate real-world food choices. They should also consider not displaying images of the item options in order to avoid showing desirable food images. Popular food items like burgers and chicken strips should be avoided if possible, and a more representative menu that includes a variety of food should be used in future studies. Since our sample was not representative of British Columbia's larger population as 70.75% of our sample was liberal-leaning and 69.96% identified as female, further research should aim to recruit a more representative sample of BC's general population.

Recommendations

Our study found no significant correlations between NFLs and negative emotions. Although this is not consistent with our hypothesis, it may be an important finding as it suggests NFLs need not be avoided for fear of customers experiencing negative psychological reactions. We, therefore, encourage our clients to be more open to using negative food labels. Although previous discussions with clients have highlighted past experiences with backlash from students complaining about negative food labels, our study shows that participants are not

psychologically negatively impacted. These complaints may have been from a small minority of people and may not be representative of the student experience as a whole when looking at negative food labels. Using NFLs may help educate students on foods that are not commonly known to have a negative effect on the environment[20] such as lamb, chocolate or coffee[21]. As positive food labels were negatively correlated to negative affect, we suggest that clients continue to use PFLs on their menus.

We recommend that our SEEDS clients refer to the present research study as they create designs for the climate-friendly food labelling initiative. We encourage and appreciate the SEEDS initiative in continuing their investigation of the dynamics and effective nudges to introduce climate-friendly food at the UBC campus.

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Appendix A: Survey Questions and Conditions

Condition 1: Positive Labels

Part I - Food Preferences

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Roasted Root Vegetable Flatbread

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Portobello Burger

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Southwest Bowl

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Classic Beef Burger

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Chicken Strips

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

BBQ Chicken Flatbread

Part II - Measurement of Participants' Anxiety Levels & Positive Emotions

Please list the extent of your current emotions.

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Guilty	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Ashamed	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Upset	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Hostile	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Nervous	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Determined	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Contented	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Attentive	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Active	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Alert	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**

The following are some statements that may or may not describe how you are feeling right now. Please rate each statement using the 5-point scale below. Remember to rate each statement based on how you are feeling right at this moment.

1	2	3	4	5

Not feeling this way at all   Neutral   Feeling this way strongly

1. I want to break the glass ceiling. 1 ------- 2 ------- 3 ------- 4 ------- 5

2. I feel satisfied, content. 1 ------- 2 ------- 3 ------- 4 ------- 5

3. I feel proud. 1 ------- 2 ------- 3 ------- 4 ------- 5

4. I feel gratification over something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

5. I feel like I am a great person. 1 ------- 2 ------- 3 ------- 4 ------- 5

6. I feel like my mind is lighter and a weight has been lifted off my back.
1 ------ 2 ------- 3 ------- 4 ------- 5

7. I feel glorious, honoured. 1 ------- 2 ------- 3 ------- 4 ------- 5

8. I feel like I've done the right thing and should encourage my peers to do the same
 1 ------- 2 ------- 3 ------- 4 ------- 5

9. I feel valuable, strong. 1 ------- 2 ------- 3 ------- 4 ------- 5

10. I feel good about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

Part III - Post-Test Demographic Questions

Are you a UBC student?

- Yes
- No

What is your level of education?

- 1st-year undergraduate student
- 2nd-year undergraduate student
- 3rd-year undergraduate student
- 4th-year undergraduate student

What gender do you identify yourself with?

- Female
- Male
- Non-binary
- Gender Neutral
- Two-Spirit
- Others, please specify: _____

What is your dietary preference?

- Vegan
- Vegetarian
- Gluten Free
- Dairy/Lactose-Free
- Keto (High fat, Low carbs)
- Dukan (High protein, Low carbs)
- Mediterranean
- No dietary preference
- Others, please specify: _____

How would you consider your political orientation?

- Strongly Liberal
- Liberal
- Moderate
- Conservative
- Strongly Conservative
- Prefer not to say
- Others, please specify: _____

How would you consider your connection to the environment?

- I feel a spiritual connection to our planet. Our planet is sacred.
- I care somewhat about the environment.
- Neutral
- I don't really worry about the environment.
- I don't care at all about the environment.

How would you describe your economic status at the moment?

- I don't really worry about what I buy since I can afford most things.
- I have a stable income yet I do have a budget for my daily consumption.
- I am not sure.
- I stay really close to my budget.
- I live on a budget and it affects my economic decisions such as what I buy deeply.

How much economic turmoil do you face every day?

- Money doesn't affect my day-to-day at all, I just spend it on whatever I like.
- Sometimes I worry about money but it is not a big stressor in my life.
- I am stressed about money most of the time and it affects my decision-making.
- I am overwhelmed with my financial burden.

Part I - Food Preferences

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Classic Beef Burger

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

BBQ Chicken Flatbread

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Chicken Strips

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Portobello Burger

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Roasted Root Vegetable Flatbread

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Southwest Bowl

Part II - Measurement of Participants' Anxiety Levels & Positive Emotions

Please list the extent of your current emotions.

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Guilty	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Ashamed	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Upset	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Hostile	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Nervous	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Determined	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Contented	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Attentive	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Active	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Alert	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**

The following are some statements that may or may not describe how you are feeling right now. Please rate each statement using the 5-point scale below. Remember to rate each statement based on how you are feeling right at this moment.

1	2	3	4	5

Not feeling this way at all   Neutral   Feeling this way strongly

1. I want to sink into the floor and disappear. 1 ------- 2 ------- 3 ------- 4 ------- 5

2. I feel remorse, regret. 1 ------- 2 ------- 3 ------- 4 ------- 5

3. I feel small. 1 ------- 2 ------- 3 ------- 4 ------- 5

4. I feel tension about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

5. I feel like I am a bad person. 1 ------- 2 ------- 3 ------- 4 ------- 5

6. I cannot stop thinking about something bad I have done. 1 ------ 2 ------- 3 ------- 4 ------- 5

7. I feel humiliated, disgraced. 1 ------- 2 ------- 3 ------- 4 ------- 5

8. I feel like apologizing, confessing. 1 ------- 2 ------- 3 ------- 4 ------- 5

9. I feel worthless, powerless. 1 ------- 2 ------- 3 ------- 4 ------- 5

10. I feel bad about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

Part III - Post-Test Demographic Questions

Are you a UBC student?

- Yes
- No

What is your level of education?

- 1st-year undergraduate student
- 2nd-year undergraduate student
- 3rd-year undergraduate student
- 4th-year undergraduate student

What gender do you identify yourself with?

- Female
- Male
- Non-binary
- Gender Neutral
- Two-Spirit
- Others, please specify: _____

What is your dietary preference?

- Vegan
- Vegetarian
- Gluten Free
- Dairy/Lactose-Free
- Keto (High fat, Low carbs)
- Dukan (High protein, Low carbs)
- Mediterranean
- No dietary preference
- Others, please specify: _____

How would you consider your political orientation?

- Strongly Liberal
- Liberal
- Moderate
- Conservative
- Strongly Conservative
- Prefer not to say
- Others, please specify: _____

How would you consider your connection to the environment?

- I feel a spiritual connection to our planet. Our planet is sacred.
- I care somewhat about the environment.
- Neutral
- I don't really worry about the environment.
- I don't care at all about the environment.

How would you describe your economic status at the moment?

- I don't really worry about what I buy since I can afford most things.
- I have a stable income yet I do have a budget for my daily consumption.
- I am not sure.
- I stay really close to my budget.
- I live on a budget and it affects my economic decisions such as what I buy deeply.

How much economic turmoil do you face every day?

- Money doesn't affect my day-to-day at all, I just spend it on whatever I like.
- Sometimes I worry about money but it is not a big stressor in my life.
- I am stressed about money most of the time and it affects my decision-making.
- I am overwhelmed with my financial burden.

Part I - Food Preferences

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Roasted Root Vegetable Flatbread

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Portobello Burger

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Southwest Bowl

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Classic Beef Burger

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

BBQ Chicken Flatbread

"Imagine you are at Open Kitchen in Orchard Commons, starving and decided to buy lunch as you did not bring yours today. How likely are you going to choose the following option?"

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Chicken Strips

Part II - Measurement of Participants' Anxiety Levels & Positive Emotions

Please list the extent of your current emotions.

1	2	3	4	5
Not likely at all	Not Likely	Neutral	Somewhat Likely	Very Likely

Guilty	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Ashamed	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Upset	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Hostile	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Nervous	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Determined	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Contented	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Attentive	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Active	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**
Alert	○ **1**	○ **2**	○ **3**	○ **4**	○ **5**

The following are some statements that may or may not describe how you are feeling right now. Please rate each statement using the 5-point scale below. Remember to rate each statement based on how you are feeling right at this moment.

1	2	3	4	5

Not feeling this way at all   Neutral   Feeling this way strongly

1. I want to sink into the floor and disappear. 1 ------- 2 ------- 3 ------- 4 ------- 5

2. I feel remorse, regret. 1 ------- 2 ------- 3 ------- 4 ------- 5

3. I feel small. 1 ------- 2 ------- 3 ------- 4 ------- 5

4. I feel tension about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

5. I feel like I am a bad person. 1 ------- 2 ------- 3 ------- 4 ------- 5

6. I cannot stop thinking about something bad I have done. 1 ------ 2 ------- 3 ------- 4 ------- 5

7. I feel humiliated, disgraced. 1 ------- 2 ------- 3 ------- 4 ------- 5

8. I feel like apologizing, confessing. 1 ------- 2 ------- 3 ------- 4 ------- 5

9. I feel worthless, powerless. 1 ------- 2 ------- 3 ------- 4 ------- 5

10. I feel bad about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

The following are some statements that may or may not describe how you are feeling right now. Please rate each statement using the 5-point scale below. Remember to rate each statement based on how you are feeling right at this moment.

1	2	3	4	5

Not feeling this way at all   Neutral   Feeling this way strongly

1. I want to break the glass ceiling. 1 ------- 2 ------- 3 ------- 4 ------- 5

2. I feel satisfied, content. 1 ------- 2 ------- 3 ------- 4 ------- 5

3. I feel proud. 1 ------- 2 ------- 3 ------- 4 ------- 5

4. I feel gratification over something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

5. I feel like I am a great person. 1 ------- 2 ------- 3 ------- 4 ------- 5

6. I feel like my mind is lighter and a weight has been lifted off my back.
1 ------ 2 ------- 3 ------- 4 ------- 5

7. I feel glorious, honoured. 1 ------- 2 ------- 3 ------- 4 ------- 5

8. I feel like I've done the right thing and should encourage my peers to do the same
 1 ------- 2 ------- 3 ------- 4 ------- 5

9. I feel valuable, strong. 1 ------- 2 ------- 3 ------- 4 ------- 5

10. I feel good about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

Part III - Post-Test Demographic Questions

Are you a UBC student?

- Yes
- No

What is your level of education?

- 1st-year undergraduate student
- 2nd-year undergraduate student
- 3rd-year undergraduate student
- 4th-year undergraduate student

What gender do you identify yourself with?

- Female
- Male
- Non-binary
- Gender Neutral
- Two-Spirit
- Others, please specify: _____

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- Dairy/Lactose-Free
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- Dukan (High protein, Low carbs)
- Mediterranean
- No dietary preference
- Others, please specify: _____

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- Strongly Liberal
- Liberal
- Moderate
- Conservative
- Strongly Conservative
- Prefer not to say
- Others, please specify: _____

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- I don't really worry about what I buy since I can afford most things.
- I have a stable income yet I do have a budget for my daily consumption.
- I am not sure.
- I stay really close to my budget.
- I live on a budget and it affects my economic decisions such as what I buy deeply.

How much economic turmoil do you face every day?

- Money doesn't affect my day-to-day at all, I just spend it on whatever I like.
- Sometimes I worry about money but it is not a big stressor in my life.
- I am stressed about money most of the time and it affects my decision-making.
- I am overwhelmed with my financial burden.

Table 1

Descriptive Statistics for Average Food Rating in Each Food Label Condition

Food Label Condition	*M*	*SD*	*N*
Control (No Food Label)	3.076	0.771	88
Negative Food Label	3.071	0.807	78
Positive Food Label	3.152	0.717	87

Table 1.1

One-way ANOVA for Average Food Rating in Each Food Label Condition

Cases	Sum of Squares	*df*	Mean Square	*F*	*p*	η^2	η^2_p
Food Label Condition	0.347	2	123	0.297	0.743	0.002	0.002
Residuals	146.004	250	0.584				

Figure 1.

Average Food Choice Rating vs Food Label Condition for One-Way ANOVA

Table 2

Correlational Analysis of Average Food Rating and Emotional Affect in the Negative Food Label Condition

Variable		Average Food Rating	Negative Affect	Positive Affect	Shame Score	Guilt Score
Average Food Rating	Pearson's r	-				
	p-value	-				
Negative Affect	Pearson's r	-0.083	-			
	p-value	0.468	-			
Positive Affect	Pearson's r	0.057	-0.191	-		
	p-value	0.618	0.093	-		
Shame Score	Pearson's r	0.081	0.350	-0.083	-	
	p-value	0.480	0.002	0.468	-	
Guilt Score	Pearson's r	-0.019	0.311	-0.142	0.831	-
	p-value	0.868	0.006	0.215	<.001	-

Figure 2

Scatter Plot of Average Food Rating vs Negative Affect in Negative Label Condition

Figure 2.1

Scatter Plot of Average Food Rating vs Positive Affect in Negative Label Condition
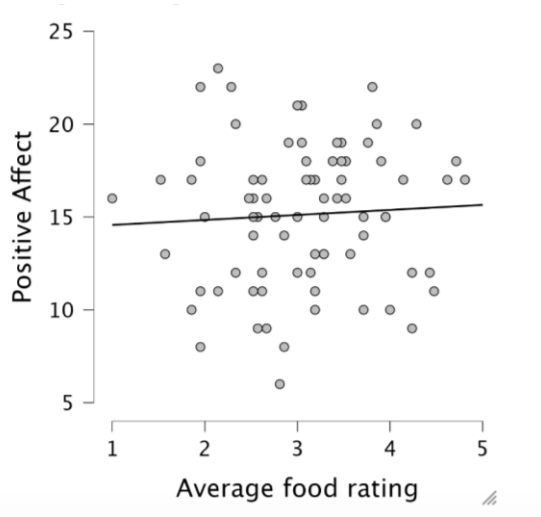
Figure 2.2

Scatter Plot of Average Food Rating vs Shame Rating in Negative Label Condition
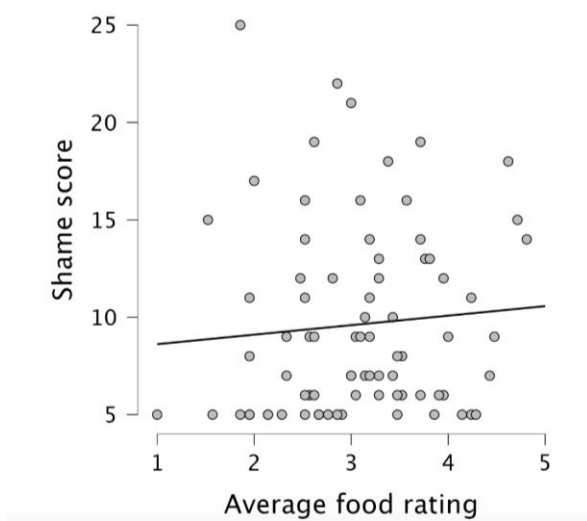
Figure 2.3

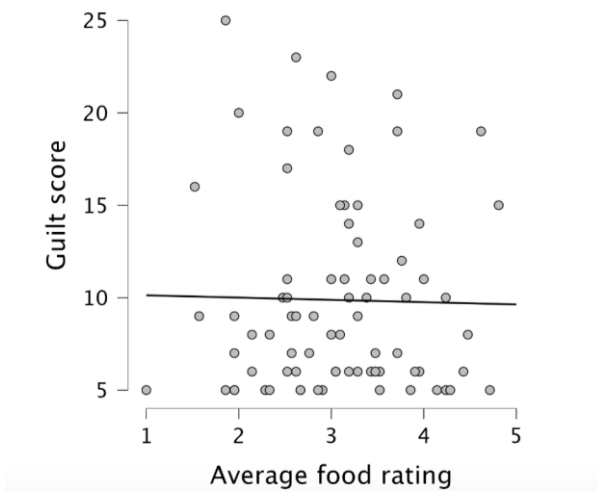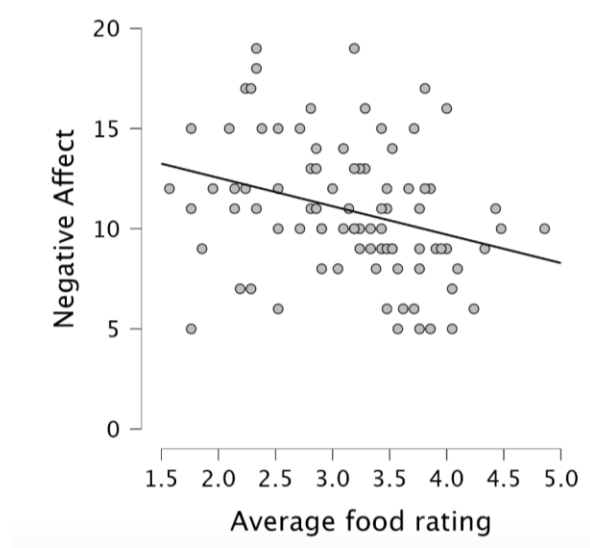*Scatter Plot of Average Food Rating vs Guilt Rating in Negative Label Condition*

Table 3

Correlational Analysis of Average Food Rating and Emotional Affect in the Positive Food Label Condition

Variable		Average Food Rating	Negative Affect	Positive Affect	Shame Score	Guilt Score
Average Food Rating	Pearson's r	-				
	p-value	-				
Negative Affect	Pearson's r	-0.299	-			
	p-value	0.005	-			
Positive Affect	Pearson's r	0.065	-0.257	-		
	p-value	0.547	0.016	-		
Shame Score	Pearson's r	-0.113	0.658	-0.260	-	
	p-value	0.298	<.001	0.015	-	
Guilt Score	Pearson's r	-0.177	0.479	-0.131	0.698	-
	p-value	0.102	<.001	0.225	<.001	-

Figure 3

Scatter Plot of Average Food Rating vs Negative Affect in the Positive Label Condition

Figure 3.1

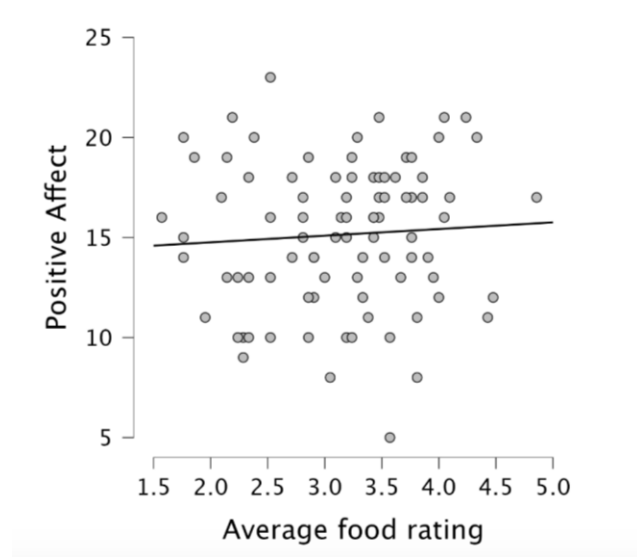*Scatter Plot of Average Food Rating vs Positive Affect in the Positive Label Condition*

Figure 3.2

Scatter Plot of Average Food Rating vs Shame Score in Positive Food Label Condition
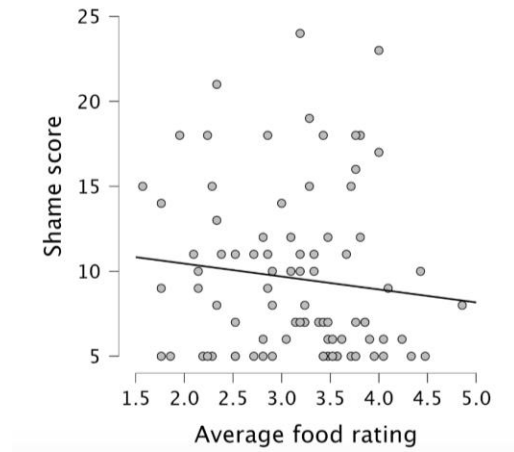

Figure 3.3

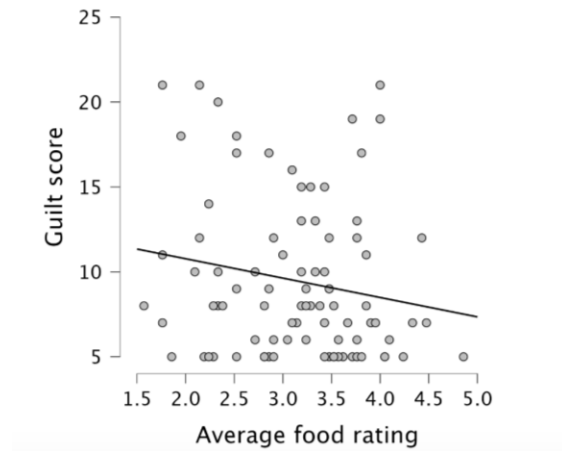*Scatter Plot of Average Food Rating vs Guilt Score in Positive Food Label Condition*

Table 4

Correlational Analysis of Average Food Rating and Emotional Affect in the Control Condition (No Label)

Variable		Average Food Rating	Negative Affect	Positive Affect	Shame Score	Guilt Score
Average Food Rating	Pearson's r	-				
	p-value	-				
Negative Affect	Pearson's r	0.038	-			
	p-value	0.728	-			
Positive Affect	Pearson's r	0.033	-0.089	-		
	p-value	0.757	0.408	-		
Shame Score	Pearson's r	-0.118	0.702	-0.360	-	
	p-value	0.273	<.001	<0.001	-	
Guilt Score	Pearson's r	-0.006	0.682	-0.236	0.886	-
	p-value	0.956	<.001	0.027	<.001	-

Figure 4

Scatter Plot of Average Food Rating vs Negative Affect in the Control Condition (No Label)
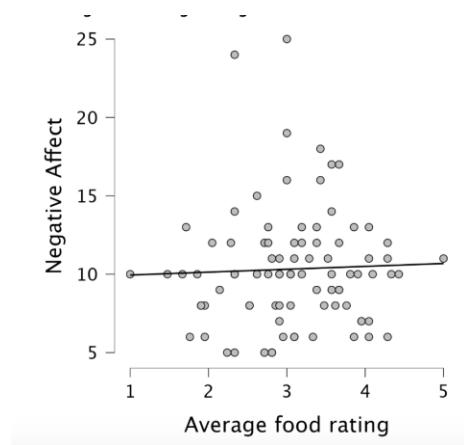
Figure 4.1

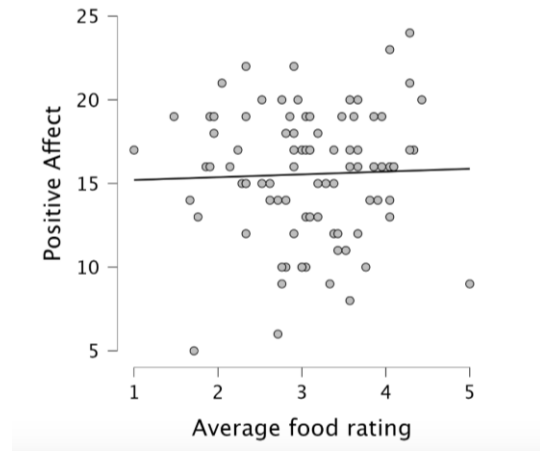*Scatter Plot of Average Food Rating vs Positive Affect in the Control Condition (No Label)*

Figure 4.2

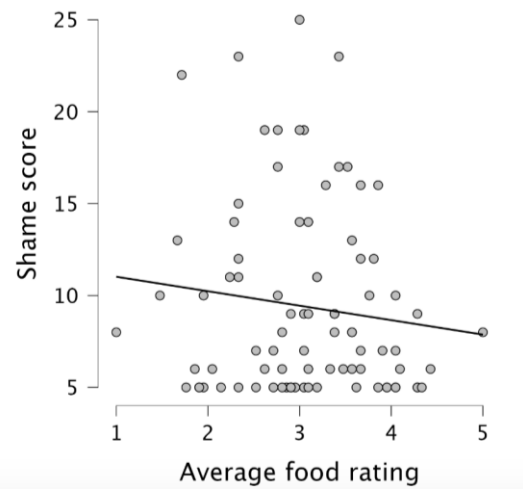*Scatter Plot of Average Food Rating vs Shame Score in the Control Condition (No Label)*

Figure 4.3

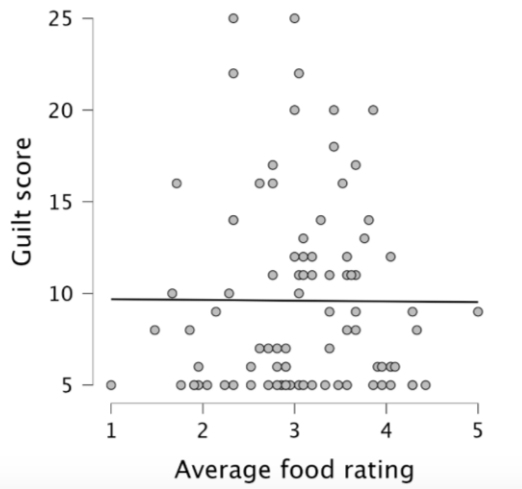*Scatter Plot of Average Food Rating vs Guilt Score in the Control Condition (No Label)*

Table 5

Descriptive Statistics for Positive Affect in Each Food Label Condition

Food Label Condition	*M*	*SD*	*N*
Control (No Food Label)	15.557	3.865	88
Negative Food Label	15.128	3.798	78
Positive Food Label	15.138	3.641	87

Table 5.1

One-Way ANOVA for Positive Affect in Each Food Label Condition

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Food Label Condition	10.296	2	5.148	0.362	0.696	0.003	0.003
Residuals	3550.779	250	14.203				

Figure 5

Positive Affect vs Food Label Condition for One-way ANOVA
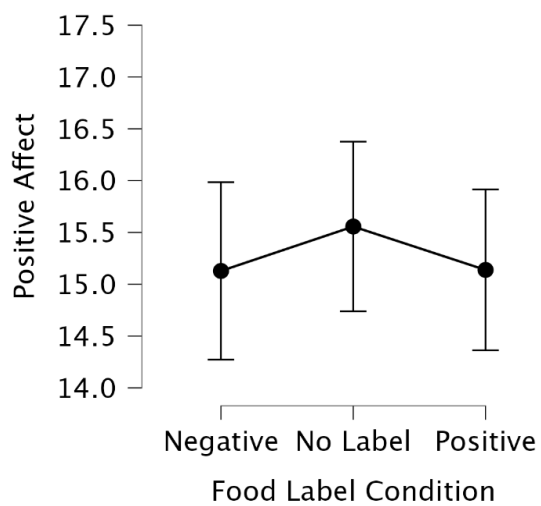
Table 6

Descriptive Statistics for Negative Affect in Each Food Label Condition

Food Label Condition	M	SD	N
Control (No Food Label)	10.330	2.531	88
Negative Food Label	10.564	2.531	78
Positive Food Label	10.908	3.402	87

Table 6.1

One-way ANOVA for Negative Affect in Each Food Label Condition

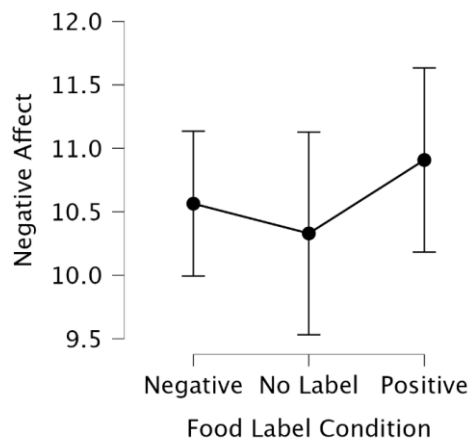| Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Food Label Condition	14.793	2	7.396	0.679	0.508	0.005	0.005
Residuals	2723.887	250	10.896				

Figure 6

Negative Affect vs Food Label Condition for One-Way ANOVA

Table 7

Descriptive Statistics for Measure of Shame in Each Food Label Condition

Food Label Condition	*M*	*SD*	*N*
Control (No Food Label)	9.386	5.136	88
Negative Food Label	9.628	4.854	78
Positive Food Label	9.575	4.831	87

Table 7.1

One-Way ANOVA for Measure of Shame in Each Food Label Condition

Cases	Sum of Squares	*df*	Mean Square	*F*	*p*	η^2	η^2_p
Food Label Condition	2.737	2	1.369	0.056	0.946	4.474e-4	0.005e-4
Residuals	6116.346	250	24.465				

Figure 7

Shame vs Food Label Condition for One-Way ANOVA
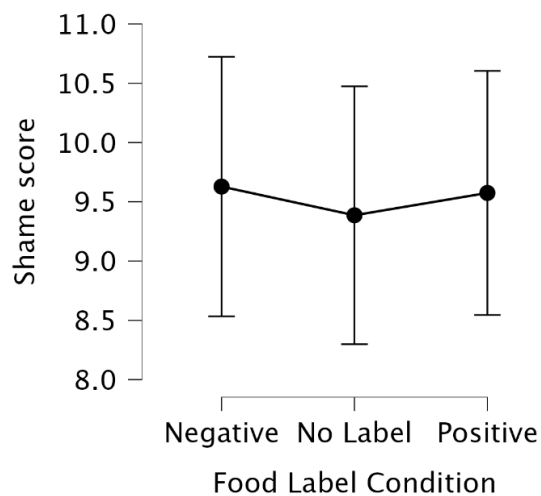
Table 8

Descriptive Statistics for Measure of Guilt in Each Food Label Condition

Food Label Condition	M	SD	N
Control (No Food Label)	9.602	5.192	88
Negative Food Label	9.872	5.193	78
Positive Food Label	9.460	4.630	87

Table 8.1

One-Way ANOVA for Measure of Guilt in Each Food Label Condition

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Food Label Condition	7.139	2	3.569	0.142	0.867	0.001	0.001
Residuals	6265.407	250	25.062				

Figure 8

Guilt vs Food Label Condition for One-Way ANOVA
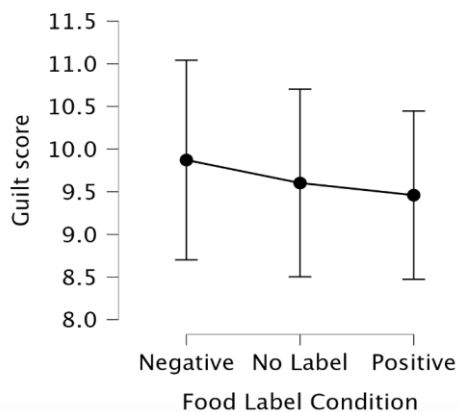
Appendix C: Contribution of Group Members

Our research proposal is written collaboratively by Abhigyan Dasgupta, Pardis Ebadi, Aditi Kumar, Chloe Lam, Olga-Emilia Padilla, and Claire Hein-Salvi. The study's survey, including the questions, labels, and images presented were designed by Chloe Lam and Olga-Emilia Padilla. We have all distributed the survey to the participants. Data organization and analyses were conducted by Aditi Kumar, Chloe Lam, and Pardis Ebadi. The ANOVA and correlation analysis was conducted by Abhigyan Dasgupta and Aditi Kumar.

Our research presentation slides are developed by Chloe Lam and it was presented by all members of the group. Contributions to the final report are as follows: the *Executive Summary* is written by Claire Hein-Salvi. The *Introduction* is written by Pardis Ebadi, Aditi Kumar, and Claire Hein-Salvi. The *Methods* section is written by Aditi Kumar and Olga-Emilia Padilla. The *Results* section by Abhigyan Dasgupta. The *Discussion* section is written by Claire Hein-Salvi. The *Recommendations* are written by Chloe Lam. The *References* section was done by Claire Hein-Salvi. The *Appendices* sections are written by Chloe Lam, Abhigyan Dasgupta, Claire Hein-Salvi and Aditi Kumar. Final revisions and formatting of all sections are done by all members of the group.