

University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Nudging Climate-Friendly Food Choices with Social Norms and Labels

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UBC Social Ecological Economic Development Studies (SEEDS)

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Nudging Climate-Friendly Food Choices with Social Norms and Labels

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University of British Columbia

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Themes: Nudges, Labels, Climate-Friendly Food, Social Norms

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Executive Summary

We, along with our client, the SEEDS sustainability program at UBC, were primarily interested in possible labelling initiatives that can be implemented quickly to encourage students to consume climate-friendly foods. Specifically, we wanted to determine whether a simple, image-based label or a complex, text-based label would be more effective at encouraging students to choose climate-friendly foods. We were also interested in whether the inclusion of positive descriptive social norms may further influence students' food choices when presented with either aforementioned label. We hypothesized that an image-based label would nudge more participants to choose the climate-friendly food item than a text-based label. Furthermore, we hypothesized that the inclusion of a positive descriptive norm would nudge an even greater amount of participants to choose the climate-friendly food item, enhancing the effectiveness of an image-based label. To test our hypothesis, 112 participants were randomly exposed to one of five conditions: control, image-based label, text-based label, image-based label with a positive descriptive social norm, or text-based label with a positive descriptive social norm. Our results do not provide support for our hypothesis, however, we recommend further research on the potential interaction between label type and the use of social norms.

Introduction

Research consistently indicates that food production systems globally emit a significant amount of greenhouse gases (GHG), largely due to livestock production, and that small changes in consumer behaviour may effectively reduce food's environmental impact (Vermeulen et al., 2012; Poore and Nemecek, 2018; Springmann et al., 2017). GHG emissions contribute to global warming, an issue relevant to the environment, human health, and the economy (Environment and Climate Change Canada, 2020). As the human population grows, it is expected that there will be greater demand for animal-based foods (Ex. meat and dairy), increasing GHG emissions (Popp et al., 2010). Research suggests that producers can only reduce environmental impacts to a certain extent and that environmental impacts are most significantly reduced by a dietary change from animal-based to plant-based foods (Poore and Nemecek, 2018; Wynes and Nicholas, 2017). The aforementioned findings suggest that greater responsibility falls onto consumers to make an informed decision and alter their behaviour accordingly to effectively reduce food-related environmental impacts (Poore and Nemecek, 2018). These findings motivate research on how to most effectively inform consumers of the various environmental impacts of food products and encourage dietary change.

Labels are proposed to be an effective method of communication between producers and consumers which may encourage consumers to make informed decisions (Poore and Nemecek, 2018). Further research suggests that labels can significantly influence consumer choices towards healthier or more climate-friendly foods (Roberto et al., 2010; Vanclay et al., 2011; Safi et al., 2020). Specifically, Roberto et al. (2010) found that calorie labels on restaurant food items impacted food choices and reduced caloric intake and that these effects were increased when labels included a recommended daily caloric requirement. Vanclay et al. (2011) found that colour-coded labelling according to products' carbon emissions changed consumer choices to favour products with low carbon emissions, especially when their prices were also lowered. Similarly, Safi et al. (2020) found that participants select fewer food items with high carbon footprints and more food items with low carbon footprints when carbon footprint labels are added onto menus.

Nudges are often used to encourage benevolent behaviours, such as climate-friendly dietary changes (Zhao, 2021; Safi et al., 2020; Vanclay et al., 2011). Nudges are interventions based on behavioural insights that may influence behaviour in a particular and predictable way while maintaining freedom of choice (Zhao, 2021). Descriptive social norms, a kind of nudge, refer to how most people behave in a certain situation (Goldstein et al., 2008). Research has shown that individuals are particularly sensitive to conforming to the majority behaviour, especially when there is a degree of uncertainty involved (Cialdini and Goldstein, 2004). When framed positively, descriptive social norms can be more effective in encouraging individuals to make healthy food choices (Higgs et al., 2019; Mollen et al., 2021). Nudge theory also proposes specific "bottlenecks" that may prevent behavioural changes. Internal cognitive constraints such as limited attention, memory, motivation, self-control, and knowledge may act as 'bottlenecks' which are psychological barriers to behavioural changes (Zhao, 2021). Salient, easy-to-read labels may combat the limited attention and knowledge while social norms may address limited self-control and motivation (Zhao, 2021).

While past research indicates that positive descriptive social norms and environmentally friendly labels can influence behavioural changes, no study has examined the interaction between types of labels and social norms to promote climate-friendly food choices. The aforementioned psychological insight and identified lack of research motivated us to research whether an image-based label or a text-based label would be more effective at influencing food choices and whether there is an interaction between label type and the effectiveness of social norms. We hypothesized that participants exposed to a simple, image-based label would select the climate-friendly food item more often than participants exposed to a complex, text-based label or the control condition. Based on the aforementioned research on positive descriptive social norms, we also hypothesized that the effect would be increased when participants were exposed to a positive descriptive social norm in combination with a simple, image-based label.

Methods

We collaborated with UBC's SEEDS sustainability program to examine the potential interaction between types of labels and social norms. According to their definition, climate-friendly foods are zero waste and resilient (ex. Seasonal, local), have low impact/organic agricultural practices, improve the welfare of animals and people, and reduce UBC's current GHG food-related footprint. The text-based label was based on the definition of climate-friendly foods provided to us by our client.

Participants

We conducted a UBC Qualtrics survey and distributed it through various social media groups. Based on a power calculation, we originally intended to have $N = 130$ responses. Our original sample consisted of $N = 115$. However, 3 responses were excluded due to failure to complete the entire survey. In the end, we had $N = 112$ responses (51.8% female, 42% male, 4.5% unknown), with an average age of 23, 90% of them were students, and the majority of participants reported that they were not on a special diet.

Conditions

Using a list provided to us by our client, we chose two of the most popular food items on campus to use in our study. Controlling for meat, we chose a grilled cheese sandwich and southwest bowl (see Figure 1, Appendix A). In all conditions, respondents were asked to imagine they were on campus and did not bring a meal. They were then presented with the two food items and asked to select their preferred option. There were five conditions in total. Respondents were randomly assigned to one of the five conditions. The first condition was the control condition, where respondents were shown the unaltered pictures of the two dishes. In the second condition (image-based label condition), the southwest bowl picture had a simple, image-based label on the right side (see Figure 2, Appendix A). In the third condition (text-based condition), the southwest bowl picture had a complex, text-based label on the right side (see Figure 3, Appendix A). In the fourth condition (image-based label with the social norm), the southwest bowl picture had an image-based label and a social norm label on the right side (see Figure 4, Appendix A). In the fifth condition (text-based label with the social norm), the southwest bowl picture had a complex, text-based label and a social norm label on the right side (see Figure 5, Appendix A).

Measures

We measured the proportion of participants who chose the “Climate Friendly Food” item (ex. Southwest bowl) instead of the non-climate friendly food item (ex. Grilled cheese) in each condition. Then we conducted a Chi-square test.

Procedure

The survey was distributed via various social media groups from March 1st to March 30th. The first page of the survey presented respondents with the consent form, and participants were required to ‘agree’ with the consent form to do the rest of the survey. Participants were then randomly assigned to one of the five conditions. After that, all participants were asked basic post-test questions related to their demographics (ex. Age, gender, type of diet).

Results

Inconsistent with our hypothesis, a chi-square test revealed an insignificant ($P < .05$) relationship between positive descriptive social norms, label type, and participants’ chosen food items. Based on these results, we did not find support for our hypothesis. $X^2(4, N = 112) = 0.97, p = 0.925044$. The results of our control test revealed that more participants chose the grilled cheese over the southwest bowl. Found again, the results of our image-based label condition revealed that more participants chose the grilled cheese over the southwest bowl. We were not able to draw findings from our text-based condition since there were as many participants who chose the grilled cheese option as there were those who chose the southwest bowl. The results from both our image-based with social norm and text-based with social norm condition showed that more participants chose the grilled cheese over the southwest bowl which was not in support of our hypothesis.

	Control	Image-based	Text-based	Image-based+Norm	Text-based+Norm
Grilled Cheese sandwich	12	15	12	11	12
Southwest Bowl	9	9	12	9	11

Discussion

The results of our study reveal that, regardless of which condition participants were in, participants generally chose the grilled cheese sandwich (the non-climate-food friendly item) more than the southwest bowl (the climate-friendly food item). With regard to our research question, both labels were ineffective at influencing participants to choose the climate-friendly food item. Similarly, the combination of social norms with labels was also ineffective at influencing participants to choose the southwest bowl (the climate-friendly food item). However, our findings are inconsistent with other research. Research has indicated that labels can effectively influence consumers to choose climate-friendly foods (Vanclay et al., 2011; Safi et

al., 2020). Likewise, positive descriptive social norms and other nudges can be effective at influencing consumers to choose healthier or climate-friendly foods (Higgs et al., 2019; Mollen et al., 2021; Campbell-Arvai et al., 2014). Although our results appear to suggest that labels and positive descriptive social norms do not impact consumers' choices, relevant literature suggests that labelling initiatives or nudges can successfully encourage consumers to choose climate-friendly foods.

The results of our study may reflect our study's limitations. The most prominent limitation of our study was the distinctiveness of the food items we chose. In all conditions, participants were asked to choose between a grilled cheese sandwich and a southwest bowl. It would have been more appropriate to choose two more similar dishes (ex. Two similar salads). Another limitation of our study was that we did not control for all dietary preferences. For instance, we attempted to control for non-meat diets by choosing non-meat food items but we did not control for non-dairy diets. Other limitations of our study include the study's small sample size and inadequate conditions. Based on a power calculation, we aimed to survey 130 participants. However, we were only able to survey 112 participants. In regards to inadequate conditions, we did not include a condition where the positive descriptive social norm was presented alone. While the primary focus of our study was to determine whether an image-based or text-based label would be more effective in nudging participants to choose climate-friendly food, the study would be more extensive if we measured the effectiveness of a positive descriptive social norm presented alone.

Recommendations

Our results do not provide support for a conclusion that labels can encourage students to choose more climate-friendly foods. However, we recommend further research with similar hypotheses and better controls to determine the effectiveness of positive descriptive norms and types of labels (ex. Image-based, text-based) in promoting climate-friendly food choices. Our client's goal was to advance climate-friendly food systems at UBC by reducing non-climate friendly food consumption and moving towards a more ecologically sustainable community. We suspect that further research on the potential varying effectiveness of labels and social norms may indicate how consumers can be encouraged to choose climate-friendly foods most effectively, particularly in the UBC population. We recommend that our client refer to the research mentioned in our study and take it into consideration when designing their quick-labelling initiative.

We encourage SEEDS to continue investigating various methods for introducing climate-friendly food labels on UBC's campus and to consider testing different initiatives in food services on campus to most accurately determine how consumers at UBC would respond. We also encourage SEEDS to consider nudge theory while designing their labelling-initiative, as nudges are common interventions for influencing consumer behaviour. Based on our review of relevant literature, we encourage our client to consider using different label designs and experiment with colour coding, text-based and image-based labels. Lastly, we encourage our client to consider using positive descriptive social norms as a supplementary tool placed alongside labels or in on-campus food service areas (ex. Dining halls) to encourage UBC consumers to choose climate-friendly foods.

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Appendix A: Figures



Figure 1. Picture of grilled cheese and southwest bowl



Figure 2. Picture of southwest bowl with image-based label

Climate Friendly Food	
Seasonal	✓
Local (within 400 km of UBC)	✓
Plant-based	✓
Biodiversity-friendly	✓
Fair trade	✓
Organic	✓
Low fertilizer	✓
Zero waste	✓



Figure 3. Picture of southwest bowl with text-based label



Figure 4. Picture of southwest bowl with image-based label and social norm

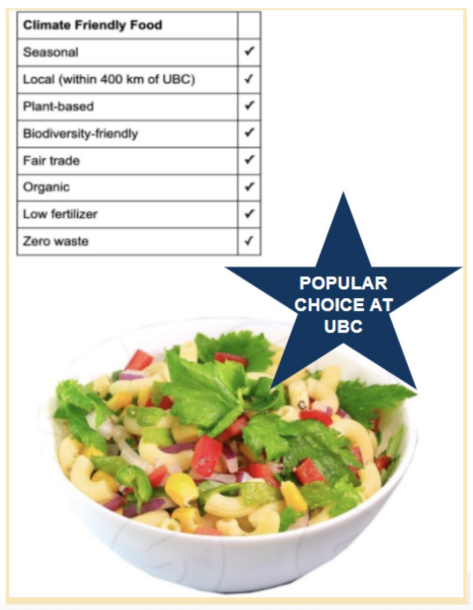


Figure 5. Picture of southwest bowl with text-based label and social norm

Appendix B: Survey questions and conditions*Control condition:*

Imagine that you are on campus and it is lunch time. You did not bring a meal with you and you are hungry, so you go to the nearest food concession. You are presented with two (2) options, what do you order? Both items are the same price. Pick your preferred option.

- Grilled Cheese Sandwich



- Southwest Bowl



Image-based condition:

Imagine that you are on campus and it is lunch time. You did not bring a meal with you and you are hungry, so you go to the nearest food concession. You are presented with two (2) options, what do you order? Both items are the same price. Pick your preferred option.

- Grilled Cheese Sandwich



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- Southwest Bowl



Image-based condition with social norm:

Imagine that you are on campus and it is lunch time. You did not bring a meal with you and you are hungry, so you go to the nearest food concession. You are presented with two (2) options, what do you order? Both items are the same price. Pick your preferred option.

- Grilled Cheese Sandwich



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- Southwest Bowl



Text-based condition:

Imagine that you are on campus and it is lunch time. You did not bring a meal with you and you are hungry, so you go to the nearest food concession. You are presented with two (2) options, what do you order? Both items are the same price. Pick your preferred option.

- Grilled Cheese Sandwich



- Southwest Bowl

Climate Friendly Food	
Seasonal	✓
Local (within 400 km of UBC)	✓
Plant-based	✓
Biodiversity-friendly	✓
Fair trade	✓
Organic	✓
Low fertilizer	✓
Zero waste	✓



Text-based condition with social norm:

Imagine that you are on campus and it is lunch time. You did not bring a meal with you and you are hungry, so you go to the nearest food concession. You are presented with two (2) options, what do you order? Both items are the same price. Pick your preferred option.

- Grilled Cheese Sandwich



- Southwest Bowl

Climate Friendly Food	
Seasonal	✓
Local (within 400 km of UBC)	✓
Plant-based	✓
Biodiversity-friendly	✓
Fair trade	✓
Organic	✓
Low fertilizer	✓
Zero waste	✓

POPULAR CHOICE AT UBC

Basic post-test questions:

What is your age

https://ubc.ca1.qualtrics.com/Q/EditSection/Blocks/Ajax/GetSurveyPrintPreview?ContextSurveyID=SV_3L77IJuZKkCiGRU&ContextLibraryID=UR_5tnmXniW... 11/12

2021/4/8

Qualtrics Survey Software

What gender do you identify with?

- Female
- Male
- Non-binary
- Gender Neutral
- Two-spirit
- Other

Are you a university student?

- Yes, I'm a student at UBC
- Yes, I'm a student at another university
- No, I'm not a university student

Are you on a special diet? If so, what would best describe your diet?

- I'm not on a special diet
- Vegan
- Vegetarian (includes lacto-vegetarian, ovo-vegetarian, lacto-ovo vegetarian, pescatarian)
- Keto (high fat, low carbs)
- Dukan (high protein, low carbs)
- Mediterranean
- Other

Appendix C: Contribution of group members

Our research proposal was written collaboratively by Frederik-Xavier Duhamel (our past group member), Jenny Li, Margaret Livingston, Kian Farah, and Maya Kaufman. The survey for our study, including the questions, labels, and images presented to participants were designed by Jenny Li and Margaret Livingston. We all aimed to distribute the survey. Data collection and data analyses were conducted by Kian Farah, Margaret Livingston, and Jenny Li. The chi-square analysis was conducted by Jiaying Zhao. Our research presentation was developed by Margaret Livingston with contributions from Maya Kaufman, Jenny Li and Kian Farah. It was presented by Jenny Li and Maya Kaufman.

Contributions in the final report were as follows: The *Executive Summary* and *References* were written by Margaret Livingston. The *Introduction* was written by Margaret Livingston with contributions from Maya Kaufman and Kian Farah. The *Methods* section and *Appendices* were written by Jenny Li. The *Results* were written by Maya Kaufman. The *Discussion* and *Recommendation* sections were written by Kian Farah, Margaret Livingston and Jenny Li. Final edits and revisions of all sections were by Margaret Livingston and Jenny Li.