

University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

The Impact of Framing of Upcycled Foods on Willingness to Purchase

Prepared by: Kirin Kaur, Phoebe Fulton Buckle, Rishika Aggarwal, Tanvi Kaur,
Yutong (Ritornia) Zheng

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The Impact of Framing of Upcycled Foods on Willingness to Purchase

“The Recyclers”

Kirin Kaur, Phoebe Fulton Buckle, Rishika Aggarwal, Tanvi Kaur, Yutong (Ritornia) Zheng

Department of Psychology, The University of British Columbia

PSYC 421 001: Environmental Psychology

Dr Jiaying Zhao

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Executive Summary

This study aimed to determine how framing upcycled foods as “economical” and “environmentally responsible” impacts the consumer’s willingness to buy those foods. The research question is: How does framing upcycled foods as “economical” and “environmentally responsible” impact the consumer’s willingness to buy those foods compared to those with no framing? We hypothesized that framing upcycled foods as environmentally responsible or economical will increase people’s willingness to buy upcycled food. We conducted a between-group research study by randomly assigning 231 participants who were either UBC or non-UBC students to the economical condition, the environmentally responsible condition or the control condition. An online survey measured participants' intentions to purchase the upcycled food items.

Using one-way ANOVA, our study discovered no statistically significant differences across the three conditions of the participants’ intentions to purchase the upcycled food items, which doesn't support our hypothesis. However, the environmentally responsible framing had the highest purchase intent, which provides some insight into the recommendations. No significant correlations were discovered between purchase intent and concern for sustainability; between purchase intent and concern for grocery prices; and between environmentally responsible framing and purchase intent. Based on our result, we recommended UBC food services focusing on raising awareness of environmental responsibility and price consciousness. Overall, these actions will help UBC reach its sustainability goals.

The Impact of Framing of Upcycled Foods on Willingness to Purchase

Introduction

Upcycled food, aimed at reducing food waste and creating value-added products, is gaining popularity in the food industry (Moshtaghian et al., 2021). Upcycling refers to the process of converting surplus ingredients into value-added food products (Aschemann-Witzel et al., 2022). It positively impacts food availability and can address the supply pillar of food security (Bhatt et al., 2021). Consumer acceptance, however, plays a crucial role in its success, although there is a lack of information on consumer perception and willingness to try upcycled products (Moshtaghian et al., 2021). Previous studies reveal that only a small percentage of consumers in the US and China are aware of upcycling, with limited knowledge of its concept (Moshtaghian et al., 2021). The study found that initial self-reported knowledge of upcycled foods was low in both countries, with only 20% of US and 30% of Chinese consumers being aware of upcycling (Moshtaghian et al., 2021). Therefore, consumers may rely on peripheral cues, such as product information, benefit appeal, and packaging design, when evaluating upcycled foods (Aschemann-Witzel et al., 2022). Demographic and psychographic characteristics, including beliefs, attitudes, and values, are also relevant factors that can influence consumer acceptance of upcycled foods (Grasso et al., 2023).

Limited research has focused on consumer purchase behaviour and willingness to pay for upcycled foods, but it is suggested that communication about the food waste avoidance aspect can improve consumer perception and increase purchase intention (Grasso et al., 2023). Supermarket shoppers have shown openness to upcycled foods in store assortments, but price sensitivity may be higher compared to conventional foods along with quality concerns acting as a barrier to acceptance (Grasso et al., 2023). Rejection and scepticism towards upcycled food may stem from food neophobia and technophobia, which are the avoidance of new or unfamiliar foods and fear of food technology or processed food, respectively (Grasso et al., 2023).

To improve consumer acceptance and knowledge of upcycled foods, communication and education are suggested to be essential (Bhatt et al., 2021). It is also recommended to use healthy and minimally processed ingredients in upcycled food production to combine sustainability and health, facilitating consumers' decision-making (Bhatt et al., 2021). Previous research proposed the use of an upcycled logo with specific design elements as a positive visual cue in consumers' evaluation of upcycled foods, which could increase consumer acceptance (Aschemann-Witzel et al., 2022). However, more research is needed to understand the right promotional mix and other cues that consumers use in evaluating food products (Aschemann-Witzel et al., 2022).

Based on the existing literature, the research question for this study is: How does framing upcycled foods as "economical" and "environmentally responsible" impact consumers' willingness to buy these foods compared to no framing? We hypothesize that framing upcycled foods as environmentally responsible or economical will increase people's willingness to buy upcycled food compared to food with no framing.

Methods

Participants: Based on our power analysis assuming a minimum effect size=0.2, alpha=0.05, and power=0.95, a minimum of 390 participants would be needed for our study. We used UBC Qualtrics to design our survey. Initially, our participant sample only consisted of UBC students which we collected using convincing sampling such as direct messages to friends and using social media to reach out to acquaintances. However, since the UBC dining halls offer service to various other non-student groups such as parents, visitors and other UBC affiliates, we opened up our survey to non-UBC participants such as parents of UBC students. We had a total of 285 participants who responded to our survey, however, with the help of our attention check question to collect robust data (see Appendix C, Q. 10), we excluded 54 participants to have a total of N = 231. Demographic questions were optional. Based on the participants who answered the demographic questions, 52.71% identified as men, 43.67% as women, 1.31% as non-binary, 0.44% as transgender and 0.87% as other (see Appendix A, Figure A1). We had a wide variety of age groups answer the survey where 46.32% were under the age of 25 and 53.68% were 25 and above (1.30% were under 18, 45.02% were between 18-25, 11.69% were between 25-34, 12.99% were between 35-44, 24.68% were between 45-54, 3.90% were between 55-64 and 0.43% were 65+) (see Appendix A, Figure A2). In the sample, 47.60% were undergraduate students whereas 52.40% were not students (see Appendix A, Figure A3).

Conditions: As the experiment hypothesized that framing upcycled foods as environmentally responsible or economical will increase people's willingness to buy upcycled food compared to food with no framing, the same dish, a Southwest Bowl, was presented in all three conditions, but the framing of the dish was different for each condition. *Economical Condition:* The southwest bowl was presented as the upcycled meal. Information on the economic advantages of upcycled meals, including cost-effectiveness was given to participants in the economic condition. They discovered how upcycling lowered the total cost of food production, making upcycled meals a more affordable choice for customers. Participants also learnt how upcycled meals could lower grocery bills and result in long-term financial savings (see Appendix B, Figure B1). *Environmentally responsible condition:* The southwest bowl was presented as the upcycled meal. Participants in the Environmentally responsible condition were provided with information about the ecological and environmental benefits of upcycled meals, including the preservation of the environment. They discovered how promoting upcycled meals may help encourage sustainable habits, how upcycling decreases food waste, and the positive effects of upcycling on the environment(see Appendix B, Figure B2). *Control Condition:* No specific information regarding upcycled meals was given to participants in the Control condition. Instead, after a quick rundown of the southwest bowl, participants were asked to rate their likelihood of making a purchase. This condition served as a baseline for comparison to measure the effects of the framing conditions on participants' willingness to buy upcycled meals (see Appendix B, Figure B3).

Measures: Each participant was given a survey and was asked to rate their likelihood of purchasing the Southwest Bowl on a Likert scale of 1 to 7, with 1 denoting “extremely unlikely” and 7 denoting “extremely likely”, and this response served as the study’s measure. This question was used as the study's dependent variable because it allowed researchers to measure the effect of framing on participants' willingness to purchase upcycled food. The survey, which was given to participants in each of the three situations, had 11 questions. General demographic questions like “When shopping for groceries, what do you do?”, “How concerned are you about sustainability and recycling in your daily life?” and “How familiar are you with the term upcycled food?” were designed to gauge respondents' views on sustainability, upcycling, their

general habits, and knowledge about upcycled food. The independent variable of the study was the framing of the upcycled food, which was manipulated into three conditions - Economical, Environmentally responsible, and control. Researchers were able to assess the impact of framing on participants' willingness to purchase upcycled food based on the study's extensive metrics. Future studies on upcycling and sustainability may benefit from the insights into participants' attitudes and behaviours that were revealed by the survey's questions.

Procedure: The survey was released on March 8, 2023, and was closed for responses on April 1, 2023. It was distributed by all members of the team through private messages on social media and messaging applications such as Instagram, Discord and WhatsApp to gain the maximum number of responses possible. Once the participants opened the link, they were directed to the consent form (see Appendix C, Q. 1). If they selected “Yes, I consent”, they would continue with the rest of the experiment. If they selected “No, I do not consent”, they would be taken to the end of the survey, terminating their participation. After the consent form, they would be randomly assigned to one of the three conditions – the economical condition, the environmentally responsible condition, or the control condition. They would be presented with an image of a southwest bowl with a description of the framing condition they were randomly assigned to. Under the image, they would be asked “How likely you are to purchase this item” with a seven-point Likert scale ranging from Extremely Unlikely to Extremely Likely (see Appendix C, Q. 2, 3, 4). They would then be directed to optional questions about their concern for grocery prices and concern about sustainability and recycling in their daily lives (see Appendix C, Q. 5, 6). These questions were followed by optional demographic questions about their age, gender, status as a student, an attention check question, if they have dietary restrictions and their familiarity with the term ‘upcycled food’ (see Appendix C, Q. 7-13). To ensure that there were no demand characteristics present, questions about concern for sustainability and recycling in their daily lives and familiarity with the term ‘upcycled food’ were asked after the participants were asked about their willingness to purchase upcycled foods with the randomly assigned conditions.

Results

A one-way ANOVA test was performed to test the between-group differences of framing upcycled foods as environmentally responsible, economical, or without framing (control condition). This test showed that the results were not statistically significant ($p = 0.259$) based on the one-way ANOVA test. The descriptive statistics (see Appendix D Table D1) and descriptives plot (see Appendix D Figure D1) showed that the environmentally responsible framing had the highest purchase intent with a mean value of 4.573 ($SD = 2.043$). Comparatively, the economical framing condition had a mean value of 4.169 ($SD = 2.056$), and the control condition had a mean value of 4.077 ($SD = 1.972$). While the purchase intent for the environmentally responsible framing and the economical framing was higher compared to no framing, the p -value (0.259) indicated no significant statistical effect.

Additionally, participants expressed higher concern for sustainability in their daily lives ($M = 3.85$) (see Appendix D Figure D2) and a lower concern for grocery prices ($M = 4.55$) (see Appendix D Figure D3). Moreover, a Pearson's r test was conducted to examine the correlation between purchase intent and concern about sustainability, as well as purchase intent and concern for grocery prices. Results for the correlation between purchase intent and concern for sustainability were revealed to be non-significant ($p = 0.294$) (see Appendix D Table D2). The correlation between purchase intent and concern for sustainability showed a weak negative association ($r = -0.102$) (see Appendix D Table D2). Results for the correlation between

purchase intent and concern for grocery prices were also revealed to be non-significant ($p = 0.192$) (see Appendix D Table D3). The correlation between purchase intent and concern for grocery prices revealed a weak negative association. ($r = -0.126$) (see Appendix D Table D3). Furthermore, as seen in the bar graph (see Appendix D Figure D4), 57.98% of participants reported being not familiar with upcycled foods at all.

Discussion

The results of the study did not support the hypothesis that framing upcycled foods as environmentally responsible or economical would increase willingness to purchase compared to no framing, as the one-way ANOVA test showed no statistically significant differences ($p = 0.259$) between the framing conditions. The descriptive statistics indicated that the environmentally responsible framing had the highest mean purchase intent value (4.573), followed by the economical framing (4.169), and the control condition (4.077). While the purchase intent for the environmentally responsible and economical framing conditions was higher compared to no framing, the lack of statistical significance suggests that the framing did not have a significant impact on consumer willingness to purchase upcycled foods. The study also found that participants expressed higher concern for sustainability in their daily lives compared to grocery prices, as indicated by the higher mean score for concern about sustainability compared to concern for grocery prices. However, the correlation between purchase intent and concern for sustainability was not significant ($p = 0.294$), and the correlation between purchase intent and concern for grocery prices was also not significant ($p = 0.192$). Both correlations were weak and negative, indicating that higher concern for sustainability or grocery prices did not necessarily translate to higher purchase intent for upcycled foods. Furthermore, the study found that a majority of participants (57.98%) reported being not familiar with upcycled foods at all, indicating a weak knowledge of upcycled foods among participants. This lack of familiarity with the concept of upcycled foods could have contributed to a misunderstanding of the idea of upcycled foods, which may have influenced their willingness to purchase.

There are several limitations to our study that should be considered when interpreting the results. First, the study was conducted using an online survey, which may limit the generalisability of the findings to the broader population. The majority of the sample was also limited to participants from a single university, which may not fully represent the diversity of the general population. Additionally, the small sample size of 231 participants could impact the statistical power of the study and limit the generalisability of the findings. The study relied on self-reported measures, which are subject to social desirability bias and may not always accurately reflect participants' true behaviours and intentions. Participants' willingness to buy upcycled foods in a hypothetical scenario may not necessarily reflect their actual purchasing behaviour in real-life situations. The attention of participants during the survey may have been focused too heavily on the image displayed rather than the description, which may have impacted the significance of the results. One challenge encountered during the study was recruiting an adequate sample size. Initially, the survey was only open to UBC students, but to increase the sample size, the survey was later opened up to non-UBC participants. However, this may have introduced additional variability in the sample and may limit the generalisability of the findings. Another challenge was the reliance on self-reported measures, which may be influenced by participants' subjective opinions and may not fully capture their actual behaviours. Additionally, the study focused on framing upcycled foods as "environmentally responsible" and

"economical," but other framing strategies or cues that consumers use in evaluating food products were not explored.

To overcome the limitations and challenges encountered in this study, future research could consider using a larger and more diverse sample that includes participants from different regions, age groups, and demographic backgrounds to increase the generalisability of the findings. Using experimental designs that manipulate multiple framing strategies or cues, and measuring actual purchasing behaviour rather than self-reported intentions could provide a more comprehensive understanding of consumer acceptance of upcycled foods. Further research could explore factors that may influence consumers' acceptance of upcycled foods, such as taste perception, healthiness perception, and perceived risk, as well as the role of marketing and communication strategies, such as the use of specific logos, product information, and benefit appeals, in influencing consumer perception and purchasing decisions.

The findings of this study have implications for environmental sustainability and human well-being. By understanding how different framing strategies impact consumers' willingness to buy upcycled foods, food industry stakeholders and policymakers can develop effective marketing and communication strategies to promote the adoption of upcycled foods, reduce food waste, and improve food availability. Emphasizing the environmental benefits of upcycled foods, such as reducing food waste and promoting sustainability, may be a more effective approach compared to emphasizing economic benefits in influencing consumers' purchasing decisions.

In conclusion, while the environmentally responsible and economical framings showed higher purchase intent compared to no framing, the results did not reach statistical significance. The study found weak or non-significant correlations between purchase intent and concern for sustainability or grocery prices and a lack of familiarity with upcycled foods among participants. These findings suggest that framing alone may not be sufficient to significantly impact consumer willingness to purchase upcycled foods, and other factors such as knowledge, familiarity, and individual concerns may also play a role. Further research with larger sample sizes and controlled variables may be needed to better understand the impact of framing on consumer behaviour towards upcycled foods.

Recommendations

Our UBC clients are from Campus Vision 2050, UBC Wellbeing, and Executive Chef at UBC Food Services. Consuming upcycled food minimizes the use of natural resources and reduces landfill and greenhouse gas emissions. Our descriptive statistics show that environmentally responsible framing has the highest mean purchase intent value, with a weak to moderate correlation between purchase intent and concern for sustainability. Therefore, promoting environmental responsibility is the correct direction to focus on in order to increase consumers' willingness to purchase upcycled food. The Foundation for Environmental Education supported that raising awareness of environmental responsibility has shown success in influencing the young generation's behaviour. Between 1994 and 2019, the program reached more than 19 million students and 1.4 million teachers in 52,000 schools in 68 countries. They organized tree painting days, created signs and posters in schools and educated pro-environment in class ("*How to cultivate environmental awareness in schools*", 2022). As a result, the actions not only encourage environmental awareness but also inform on environmentally-conscious behaviour. Grain Farmers of Ontario and the Canadian Agricultural Partnership supported The

Upcycled Food Festival in 2021. The Festival promotes event signage, social content and meal kit packaging (“*Ontario launches Canada's first-ever upcycled Food Fest*”, 2021). Therefore, We suggest that there should be a note on the menu of upcycled food explaining the benefits for the environment. Posters in the dining hall and Cafeteria would also increase the awareness of protecting our mother earth and the intention of purchasing upcycled food.

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Appendix A

Participants

Figure A1: Age

Age

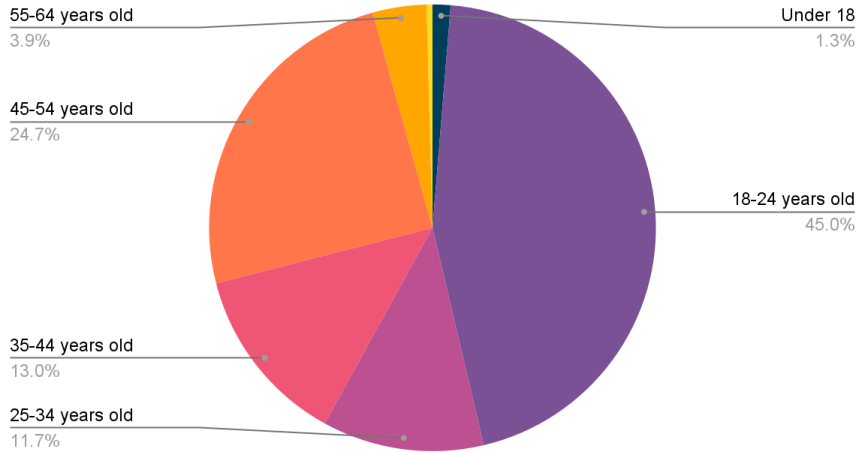


Figure A2: Gender

Gender

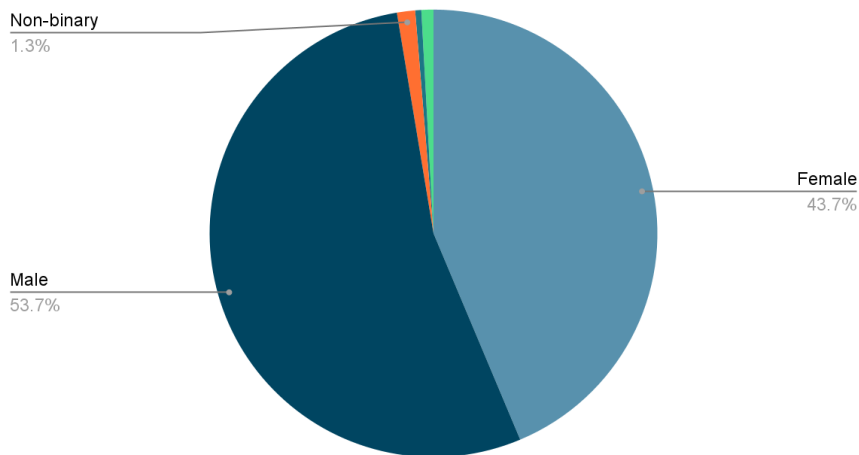
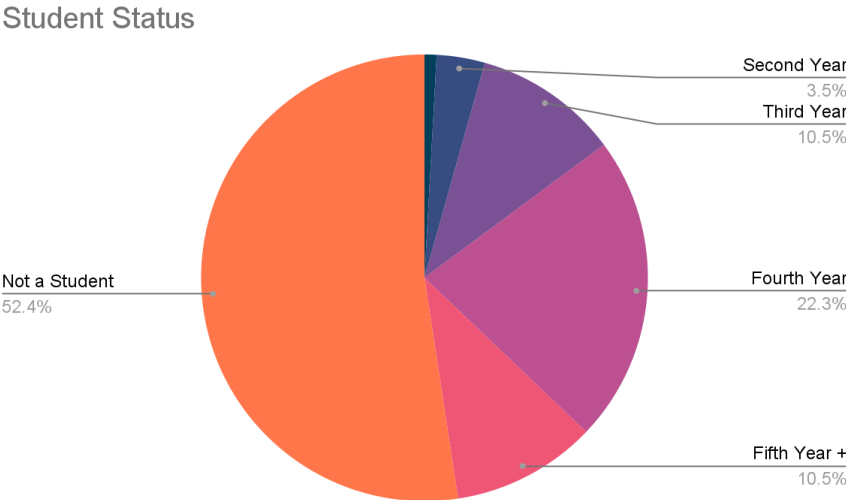


Figure A3: Student Status



Appendix B

Conditions

Figure B1: Economical Condition



Figure B2: Environmentally Responsible Condition



Figure B3: Control Condition



Southwest Bowl

A pleasant blend of warm grains and cold pico de gallo and sweet potato made with up-cycled vegetables. Crunchy tortilla chips and a little kick of spice bring the whole dish together to create a tasty meal.

Appendix C

Survey on UBC Qualtrics

1. Do you consent to participate in this experiment?



UNIVERSITY OF BRITISH COLUMBIA

Department of Psychology
University of British Columbia
Vancouver, BC, V6T 1Z4
Phone: 604-822-2755
Fax: 604-822-6923

Consent Form

Class Research Projects in PSYC 421 - Environmental Psychology

Principal Investigator: Dr. Jiaying Zhao
Course Instructor
Department of Psychology
Institute for Resources, Environment and Sustainability
Email: jiayingz@psych.ubc.ca

Introduction and Purpose

Students in the PSYC 421 – Environment Psychology class are required to complete a research project on the UBC campus as part of their course credit. In this class, students are required to write up a research proposal, conduct a research project, collect and analyze data, present their findings in class, and submit a final report. Their final reports will be published on the SEEDS online library (<https://sustain.ubc.ca/teaching-applied-learning/seeds-sustainability-program>). Their projects include online surveys and experiments on a variety of sustainability topics, such as waste sorting on campus, student health and wellbeing, food consumption and diet, transportation, biodiversity perception, and exercise habits. The goal of the project is to train students to learn research techniques, how to work in teams and work with UBC clients selected by the UBC SEEDS (Social Ecological Economic Development Studies) program.

Study Procedures

If you agree to participate, the study will take about 10 minutes of your time. You will answer a few questions in the study. The data will be strictly anonymous. Your participation is entirely voluntary, and you can withdraw at any point without any penalty. Your data in the study will be recorded (e.g., any answer you give) for data analysis purposes. If you are not sure about any instructions, please do not hesitate to ask. Your data will only be used for student projects in the class. There are no risks associated with participating in this experiment.

Confidentiality

Your identity will be kept strictly confidential. All documents will be identified only by code number and kept in a locked filing cabinet. You will not be identified by name in any reports of the completed study. Data that will be kept on a computer hard disk will also be identified only by code number and will be encrypted and password protected so that only the principal investigator and course instructor, Dr. Jiaying Zhao and the teaching assistants will have access to it. Following the completion of the study, the data will be transferred to an encrypted and password protected hard drive and stored in a locked filing cabinet. Please note that the results of this study will be used to write a report which is published on the SEEDS library.

Remuneration

There is no remuneration for your participation.

Version 4: June 20, 2022 (Ethics ID: H17-02929)

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UNIVERSITY OF BRITISH COLUMBIA

Department of Psychology
University of British Columbia
Vancouver, BC, V6T 1Z4
Phone: 604-822-2755
Fax: 604-822-6923

Contact for information about the study

This study is being conducted by Dr. Jiaying Zhao, the principal investigator. Please contact her if you have any questions about this study. Dr. Zhao may be reached at (604) 827-2203 or jiayingz@psych.ubc.ca.

Contact for concerns about the rights of research subjects

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

Consent: Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time. You also may postpone your decision to participate for 24 hours. You have the right to choose to not answer some or any of the questions. By clicking the “continue” button, you are indicating your consent to participate; hence, your signature is not required. The researchers encourage you to keep this information sheet for your records. Please feel free to ask the investigators any additional questions that you have about the study.


Ethics ID: H17-02929

Version 4: June 20, 2022 (Ethics ID: H17-02929)

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- Yes, I consent.
- No, I do not consent.

2. How likely are you to purchase this item?



Southwest Bowl

A pleasant blend of warm grains and cold pico de gallo and sweet potato made with up-cycled vegetables makes the dish cost-effective and affordable. Crunchy tortilla chips and a little kick of spice bring the whole dish together.

- Extremely Unlikely
- Moderately Unlikely
- Slightly Unlikely
- Neither Likely nor Unlikely
- Slightly Likely
- Moderately Likely
- Extremely Likely

3. How likely are you to purchase this item?



Southwest Bowl

A pleasant blend of warm grains and cold pico de gallo and sweet potato made with up-cycled vegetables that help minimize waste and promote sustainability. Crunchy tortilla chips and a little kick of spice bring the whole dish together to create an environmentally responsible meal.

- Extremely Unlikely
- Moderately Unlikely
- Slightly Unlikely
- Neither Likely nor Unlikely
- Slightly Likely
- Moderately Likely

- Extremely Likely

4. How likely are you to purchase this item?



- Extremely Unlikely
- Moderately Unlikely
- Slightly Unlikely
- Neither Likely nor Unlikely
- Slightly Likely
- Moderately Likely
- Extremely Likely

Demographic Questions Below Conditions

5. When shopping for groceries, what do you do?

I buy the cheapest food 1 2 3 4 The amount of money I spend doesn't bother me 5 6 7



6. How concerned are you about sustainability and recycling in your daily life?

Very Concerned 1 2 3 4 5 Not Concerned at all 6 7



7. How old are you?

- Under 18 years old

- 18-24 years old
 - 25-34 years old
 - 35-44 years old
 - 45-54 years old
 - 55 to 64 years old
 - 65+ years old
8. Which gender do you identify as?
- Female
 - Male
 - Non-binary
 - Transgender
 - Two-spirited
 - Other (Please Specify)
9. Which year are you in?
- First Year
 - Second Year
 - Third Year
 - Fourth Year
 - Fifth Year +
 - Not a Student
10. If you have made it this far, please select 'Very familiar'.
- Not Familiar At All
 - Slightly Familiar
 - Moderately Familiar
 - Very Familiar
 - Extremely Familiar
11. Do you have any dietary restrictions?
- Yes
 - No
12. If yes, what are your dietary restrictions?
- Lactose Intolerance
 - Gluten Intolerance
 - Vegetarian
 - Vegan
 - Other (Please Specify)
13. How familiar are you with the term 'upcycled food'?
- Not Familiar At All
 - Slightly Familiar
 - Moderately Familiar
 - Very Familiar

- Extremely Familiar

Appendix D

Results from JASP and Qualtrics

Figure D1. Descriptives plot for willingness to purchase.

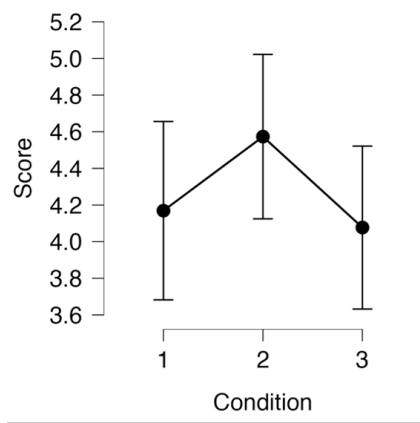


Figure D2. Bar graph depicting the concern for sustainability

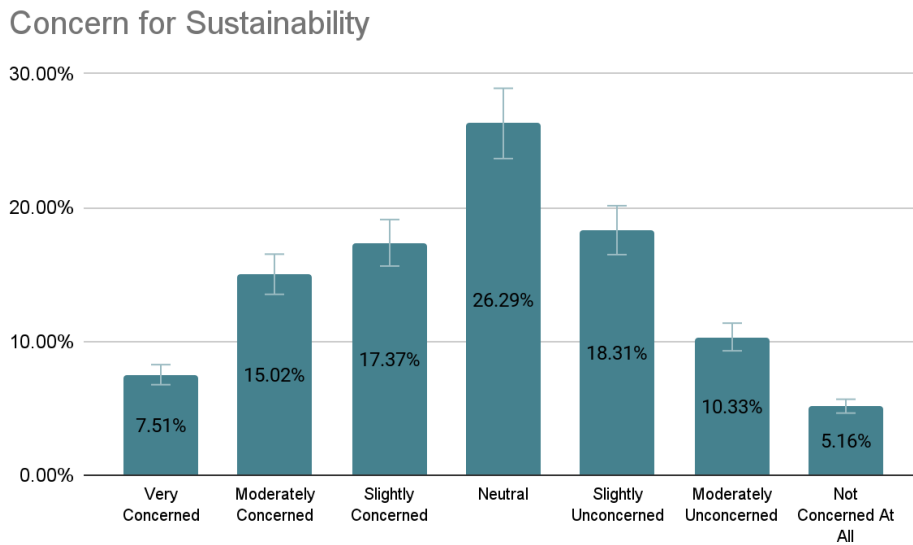


Figure D3. Bar graph depicting the concern for grocery prices.

Concern for Grocery Prices

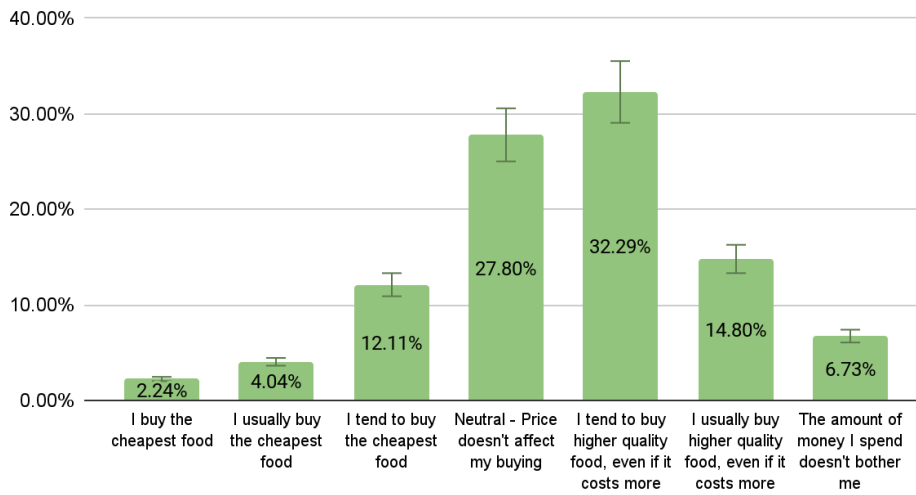


Figure D4. Bar graph depicting participants' knowledge of upcycled foods.

Knowledge of Upcycled Foods

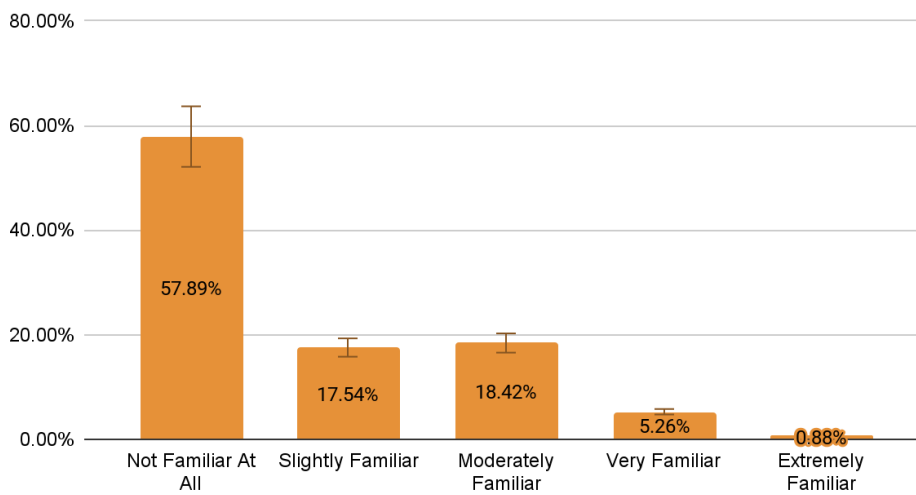


Table D1. Descriptive and ANOVA for willingness to purchase.

ANOVA - Score						
Cases	Sum of Squares	df	Mean Square	F	p	η^2
Conditio n	11.139	2	5.569	1.36 0	0.25 9	0.01 2
Residual s	933.571	22 8	4.095			

Note. Type III Sum of Squares

Table D2. Pearson's correlation for purchase intent and concern for sustainability.

Pearson's Correlations			
Variable		Score	Sustainability
1. Score	Pearson's	—	
	r		
	p-value	—	
2. Sustainability	Pearson's	-	—
	r	0.102	
	p-value	0.294	—

Table D3. Pearson's correlation for purchase intent and concern for grocery prices.

Pearson's Correlations			
Variable		Score	Grocery
1. Score	Pearson's	—	
	r		
	p-value	—	
2. Grocery	Pearson's	-	—
	r	0.126	
	p-value	0.192	—

Contribution of Each Team Member

Kirin Kaur: Kirin completed the statistics section and participants section of the proposal. Kirin ran the power test. Throughout the semester, Kirin ran all statistics through JASP. Kirin learned how to run JASP and prepared the preliminary data for the statistics meeting. Kirin reached out to obtain participants for the study. Kirin ran all tests through JASP after data collection was complete, and for the presentation, presented the results, main findings, and whether the hypothesis was supported. Kirin wrote her script for the presentation. For the final report, Kirin completed the results section.

Phoebe Fulton Buckle: Phoebe conducted the background literature review for the research proposal which help develop the research idea. This research was utilized in the project presentation to provide background information. Phoebe wrote the introduction and discussion sections of the final report, proofread and edited the report, and provided feedback to improve readability and consistency. Additionally, she contributed to reducing the length of the paper and provided feedback on other group members' sections.

Rishika Aggarwal: Designed the survey questions and created accompanying images and descriptions. Formatted and edited the project proposal for clarity. Created the presentation, and graphs to showcase descriptive statistics, implications, and suggestions. Incorporated research question, hypothesis, and participant data into the presentation. Detailed participants and procedures in the methods section in the final report. Included Appendices A, B, and C, which contain relevant information, including descriptive statistics with supporting graphs and charts in Appendix D. Cleaned and organized data to produce results.

Tanvi Kaur: Tanvi helped develop the methodologies and metrics for the research proposal. In particular, she focused on the creation of a clear and concise description of each of the three experimental conditions. Tanvi contributed to the creation of the study's experimental design, measurement section, and conditions part of the final report as well as the presentation's script. She was present for all in-person and Zoom meetings. She assisted with the paper's layout and distributed questionnaires to gather data. She also contributed to the brainstorming process and assisted in identifying solutions when the group ran into problems.

Yutong (Ritornia) Zheng: When writing the proposal Yutong contributed to the measure and anticipated outcomes section. In the proposal meeting with Dr Zhao, she recorded questions we should bring up to the professor. She also helped with formatting the paper and ensuring that it was under the limit of one page. During data collecting, she made sure that our group had enough participants by popularizing in UBC groups, among students and on Facebook and WeChat blogs. In the presentation, Yutong did the measure, implications and suggestions. She wrote the script and presented pages 9, 17 and 18. In the final report, Yutong mainly worked on the executive summary and recommendation.