University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Uncovering Determinant Factors in Food Choice

Prepared by: Francesca Chiam, Tianyi Pei, Angell Yao, Jackson Zhong, Julia Zou

Prepared for:

Course Code: PSYC 421

University of British Columbia

Date: 13 April 2021

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Themes: Food Factor, Food Choice

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Executive Summary

This research examines the factors that matter most to people when making a food choice. The hypothesis states that people prioritize factors of nutrition and taste over others in their food choice. One hundred thirteen undergraduate participants (85 females; 27 males; 1 prefer not to say) completed a self-report survey online, which included rating the importance of each factor when making a food choice on a Likert scale from 1 to 7 (1 = *not important at all*; 4 =*neither*; 7 =*extremely important*) and indicating how the 18 factors, to different extents, are important to them when making a food choice. Based on the repeated measures ANOVA test, students rated "Tasty" and "Nutrition" as the top factors valued when making a food choice and did not prioritize any environmental-related factors. It is also noteworthy that demographic factors, except for motivation, did not predispose participants' food choice. The findings are consistent with the quasi-experiment using within-subject design on the prioritization of factors in food choice. Utilizing an environmentally sustainable approach, there should be greater emphasis and action on educating UBC students on food sustainability and the importance of environmentally-friendly food.

Introduction

As consumerist ideology permeates our way of life with the growing availability and access to foods that fulfil more than our basic hunger needs, the notion of food choice has become more inherent to us. A large portion of the literature has focused on the broad spectrum of biological, psychological, social, cultural and political determinants of these food choices to create effective policy changes adjusted towards environmental sustainability and health. Understanding how unconscious biases that stem from these determinants and how it influences decision-making can help policymakers to determine what factors consumers are most responsive to (Leng et al., 2017). Among these broad determinants, demographic factors are shown to have a significant influence on people's food choice. A study found that women were more likely than men to report consuming healthy and nutritious foods that were low-fat, high fiber, and low salt in close to 23 countries (Wardle et al., 2004). Furthermore, Mathios (1996) found that the predilection to purchase high fat unhealthy food that does not have nutrition labels differs across socioeconomic factors. These studies show that there are demographic differences that influence people's food choice. In contrast with the previous study results, Pechey and Marteau (2018) found that there were insignificant main effects of cognitive load or socioeconomic status on consumers choosing a healthier food option compared to a less healthy food option. Another factor influencing healthier food choice is the cognitive processing of nutrition information on food labels. A study by Provencher and Jacob (2016) explored food perceptions by examining the impact of perceived healthiness of food and how it influences food choice and intake. They determined that cognitive factors, including branding strategies and type of food, significantly impact judgmental bias and perceived health, but inconsistently or inconsequentially influence food choice and intake. Moreover, Muturi et al. (2016) found that perceptions of a peer's health concerns and perceptions of healthy food availability within their environment influences food choice. Overall, the current literature explores multiple broad factors that impact food choice and consumption.

Among these broad determinants that influence their food choice, our psychological insight considers two specific and prominent factors people more consciously prioritise in their decision-making. After conducting our literature review, nutrition appears to be one of them. A study conducted on female undergraduate students' choice between a nutritious or a less nutritious snack found that students preferred a nutritious snack over an unhealthy snack (Burger et al., 2010). Similarly, another study that examined older adults with an average age of 68 and younger adults with an average age of 22 decided which of the two panels of nutrition facts was healthier and discovered that older adults valued nutritious food more than younger adults (Miller & Cassady, 2012). Beyond the consideration of health benefits, another prominent criteria that was noted in the literature is the factor of taste in food choice. Correspondingly, Liem and Russell (2016) aimed to explore the impact of taste preferences for lower nutrient foods. They highlighted that due to people being naturally drawn to the taste profile (i.e., salty and sweet) of poorer nutrient foods, a large portion of food choice is geared towards lower-nutrient foods. These studies suggest that taste plays a functional role in determining health-based food choice.

We found that the current literature lacks exploration of how specific factors such as nutrition and taste are prioritised when considered in position with other possible factors of food choice. Thus, we aimed to explore: what factors matter most to people when making a food choice? We hypothesized that people prioritize factors of nutrition and taste over others in their food choice.

Method

Participants

Our study aimed to recruit 159 participants based on an effect size of Cohen's d=.05. We designed a survey on UBC Qualtrics and distributed it to undergraduate students at the University of British Columbia. Although we originally received 118 responses, 5 were excluded due to failure to complete the entire survey. Thus, we had a final sample size of 113 participants (85 females; 27 males; 1 prefer not to say; M_{age} =21.4, SD_{age} = 1.42).

Conditions

We consulted our SEEDS clients regarding existing food factors that they were interested in when developing food labels. Our study consisted of 18 conditions, comprising 18 food factors that we compiled from our client. Students will then rate their importance in terms of making food choices. These conditions are Cheap, Tasty, Low Calories, Nutrition, Low Greenhouse Gas in Animal Products, Low Greenhouse Gas in Food System, Locally Sourced, In-Season, Cow-Free, Plant-based, Biodiversity-friendly, Indigenous Foodways, Culturally Appropriate, Just, Organic, Low Input, Circular Economy, and Zero Waste. We hypothesized that students would give different ratings for each factor.

Measures

Our study is a quasi-experiment and uses a within-subject design. We asked participants to rate the importance of each factor when making a food choice on a Likert scale from 1 to 7 (1 = *not important at all*; 4 =*neither*; 7 =*extremely important*). The Likert scale was appropriate for this study since we want to know how students consider the importance of each factor. The scale will help us uncover the different degrees of importance associated with each factor. Hence participants' ratings of importance for each factor are the dependent variable. As this is a quasi-experiment, we consider the demographic factors to be a naturally occurring independent variable rather than a true independent variable that we can manipulate.

Procedure

After publishing our survey on UBC Qualtrics, participants received a link to the survey. The survey first asked participants to imagine that they are in a grocery store and about to buy food for their dinner. They were asked to indicate to what extent the following 18 factors are important to them when making a food choice. The definitions for each factor were provided and those 18 factors were presented randomly for each participant. After rating each factor, participants then answered some demographic questions (See Appendix A for the entire survey) One challenge we faced during the data analysis was processing and understanding the massive data generated by these excessive 18 factors.

Results

Our primary analysis aimed to find out whether people prioritize certain factors over others when it comes to food choice. To do this, we conducted a repeated measures ANOVA test and found that among the 18 factors, students rated "Tasty" (M= 6.28, SD=0.91) and "Nutrition" (M=5.45, SD=1.26) as the most important factors to be considered while making a food choice. With that said, when being asked what food they will have for dinner tonight, participants would first consider the taste and the nutrition of the food. Thus, this result is consistent with our hypothesis. More importantly, we also found the top five environmental-related factors rated by our participants are: Organic (M=4.44, SD=1.66), In-season (M=4.35, SD=1.70), Just (M= 4.24, SD=1.66), Culturally appropriate (M= 4.12, SD=1.71) and Zero-waste (M= 4.04, SD=1.64) (See Figure 1 and Table 1).

Apart from finding "Taste" and "Nutrition" as the most important factors to our participants, based on our p-value from the post-hoc test (See Table 2), people's ratings for taste and nutrition are significantly different from ratings given to other 16 factors ($p< .05$). This result further illustrated that participants care about taste and nutrition the most. Further, participants also gave a significantly different rating for factor "Cow-free" relative to other factors ($p< .05$). This was reflected by respondents' rating for "Cow-free" (M= 2.32, SD=0.15), as they rated this factor as the least important factor. Moreover, the results above also indicated that students do not care much about those "moderately" important factors, which are environmental-related. In short, when it comes to food choice, students rarely consider factors regarding climate-friendly foods, such as low GHG emission, low-input and plant-based.

Our secondary analysis focused on how different demographic factors influence people's food choice. Those demographic factors we looked at are: SES, age, gender, motivation, and diet type. After we conducted the repeated measures ANOVA by using gender as the between-subject independent variable, we found that age (F (1,17) = 0.64, p = .861, η^2_p = .01) and SES (F (1,17) = 2.83, p =.071, η^2_p = .01) are not reliably related to people's food choice. However, motivation to protect the environment is significantly related to people's food decision-making, F (1,17) = 5.70, p < .001, η^2_p = .01 (see Table 3). We then repeated the same procedure by using diet type as the between-subject independent variable. Again, the result indicated that except motivation (F (1,17) = 5.70, p < .001, η^2_p = .05), neither age (F (1,17) = 1.30, p < .780, η^2_p = .01) nor SES (F (1,17) = 2.69, p < .090, η^2_p = .01) can reliably predict people's food choice (See Table 4). Based on our results, we concluded that only motivation, and no other demographic factors we were interested in, can influence people's food choice.

We then conducted a Principal Component Analysis, which is a data dimension reduction exercise to see if these 18 factors could be reduced to a few components (See Table 5). Our results showed that when these factors are combined together and the relationships between each of them were taken into account, they can be sorted into 6 latent variables. This indicated that they contribute to 6 factors effectively, and these 6 factors will explain the variances in the data we collected. However, this analysis is beyond the scope of this course, so we lack knowledge in explaining this result in-depth.

Discussion

This research showed that UBC undergraduate students prioritize nutrition and taste over other factors when it comes to food choice. Therefore, the result supports our hypothesis. Besides, by analyzing how demographic factors influence people's food choice, we found gender, SES, age and diet type are not predictors of food preferences. This result is inconsistent with literature showing relationships between those different demographic factors and people's food choice. However, our result also indicated that one demographic factor, motivation to protect the environment, is closely related to people's choice of environmentally-friendly food. For example, in our study, participants who rated themselves high on motivation to protect the environment tended to choose foods that are organic and are in season. This finding is not novel as it has been well-established that the food choice of environment-driven consumers was mainly driven by environment-related aspects, such as seasonal availability, greenhouse gas emission information and whether the food is plant-based (Wongprawmas et al., 2021). Nonetheless, our study contributes to a new finding that when it comes to food choice, people do not weigh different factors equally. Instead, they prioritize certain factors including taste and nutrition over others, at least in our UBC undergraduate sample. That means students seem not to care about factors regarding environmentally-friendly foods, such as Low GHG emission, Low-input and Plant-based. Among those environmental-related factors, factors people do care about are: Organic, In-season, Just, Culturally appropriate, and Zero-waste.

However, our study is not without limitations. First of all, because of the current COVID-19 pandemic, in-person research was not allowed. We were unable to see whether our result can be extended into a real-life situation. For instance, we were unable to know when eating in the Open Kitchen or shopping in the Corner Store, will students look at the food label and choose food that is either tasty or nutritious. Maybe they will choose the food product with lower calories? Or it is possible in real life decision-making, there is a relationship between diet type and food choice (i.e., vegetarians tend to choose food that has lower GHG emission), which is not found in our current study? It is suggested that future study can examine people's food choice in real life settings. To test this idea, researchers can observe people's food preference in the restaurant or university dining hall.

Another limitation of our study is that we do not measure long-term decision making. We only asked participants' food choice at the moment they were doing the survey. However, little is known about whether participants will still rate taste and nutrition over other factors in a longer time period. For instance, future research can look at how people give different ratings to those factors when considering food choice for one month, or even one year. It is predicted that in the long-run, compared to making food choices in the short-run, people may consider more about environmental-related factors in their food preferences (Miki et al., 2020).

Additionally, our principal component analysis results give insights to the 6 components driving these 18 factors. Future research could focus solely on these 6 significant components. We recommend future researchers to examine the relationship between factors that are in the same

component category so that the mechanisms behind these 6 components could be explored in-depth.

Our results can be confounded by other factors that we failed to control. People may consider a different combination of factors on different days, or even for different foods. For example, people's priority on food choice may change according to their mood. One study showed that bad mood can lead to greater preference for indulgent foods over healthy foods (Gardner et al., 2014). Future research could extend our study and control participant's mood by randomly assigning participants into two groups. Participants are asked to reflect on a time when they felt happy or sad. Then participants in both groups completed the same questionnaire as used in our study. By controlling for additional factors such as mood, researchers are able to know how participants' ratings will differ based on their current emotions.

Recommendations for Our UBC Client

As shown by Figure 1, the most important environmental-related factors that our participants prioritized are Organic, In-season, Just, Culturally appropriate, and Zero-waste. However, the participants prioritized taste and nutrition as top factors of food choice, which demonstrates that there is low prioritization for factors related to sustaining the environment. With all things considered, this research is important to UBC because it provides an insight into the broad and specific food preferences of the student population, and the values they adopt when making food choices. While it cannot be denied that UBC has put a lot of work towards its sustainability initiatives, such as the UBC Farm, the UBC Campus Gardens, and the UBC Food System Project, UBC Sustainability programs could allocate more time and financial resources to truly understanding what the student population already knows and values about sustainability. This way, educators can construct programs around the student's current knowledge as opposed to implementing programs based on a conjectural assumption of what students know.

Given the findings of our research, the primary recommendation for the client is twofold, which can be divided into short-term and long-term goals for food labelling and education on environmentally sustainable values in food choice. In the short-term, the most pertinent course of action is to focus on the top environmentally sustainable factors that the students consider important by drawing attention to it on our client's food label. In the long term, our clients could consider facilitating workshops or programs to educate students beyond superficial understanding of the environmental-related values indicated on the food labels, such that this label would eventually become more saliently recognised. Hopefully, by further educating students and the general public on what these values mean and how their diet habits can impact the environment, they will be motivated to seek labels that highlight the environmental sustainability qualities of the food they choose. Overall, we propose that with an integration of these short and long-term recommendations, students will not only prioritize the current top five environment-related factors, but also eventually consider *all* of these important factors in food choice. Each consideration factor is just as vital as the other in sustaining our environment and with education much can be done to shift current values of food consumption towards more sustainability-oriented values.

References

Burger, J. M., Bell, H., Harvey, K., Johnson, J., Stewart, C., Dorian, K., & Swedroe, M. (2010). Nutritious or Delicious? The Effect of Descriptive Norm Information on Food Choice. Journal of Social and Clinical Psychology, 29(2), 228-242. doi:10.1521/jscp.2010.29.2.228

Gardner, M. P., Wansink, B., Kim, J., & Park, S. (2014). Better moods for better eating?: How mood influences food choice. *Journal of Consumer Psychology, 24*(3), 320-335. https://doi.org/10.1016/j.jcps.2014.01.002

Leng, G., Adan, R., Belot, M., Brunstrom, J., De Graaf, K., Dickson, S., . . . Smeets, P. (2017). The determinants of food choice. *Proceedings of the Nutrition Society, 76*(3), 316-327. doi:10.1017/S002966511600286X

Liem, D., & Russell, C. (2019). The Influence of Taste Liking on the Consumption of Nutrient Rich and Nutrient Poor Foods. *Frontiers In Nutrition*, 6. https://doi.org/10.3389/fnut.2019.00174

Mathios, A. D. (1996). Socioeconomic Factors, Nutrition, and Food Choices: An Analysis of the Salad Dressing Market. Journal of Public Policy & Marketing, 15(1), 45-54. doi:10.1177/074391569601500104

Miki, A. J., Livingston, K. A., Karlsen, M. C., Folta, S. C., & McKeown, N. M. (2020). Using Evidence Mapping to Examine Motivations for Following Plant-Based Diets. *Current Developments in Nutrition*, *4*(3). https://doi.org/10.1093/cdn/nzaa013

Miller, L. M., & Cassady, D. L. (2012). Making healthy food choices using nutrition facts panels. The roles of knowledge, motivation, dietary modifications goals, and age. Appetite, 59(1), 129-139. doi:10.1016/j.appet.2012.04.009

Muturi, N., Kidd, T., Khan, T., Kattelmann, K., Zies, S., Lindshield, E., & Adhikari, K. (2016). An Examination of Factors Associated With Self-Efficacy for Food Choice and Healthy Eating among Low-Income Adolescents in Three U.S. States. Frontiers In Communication, 1. https://doi.org/10.3389/fcomm.2016.00006

Pechey, R., & Marteau, T. M. (2018). Availability of healthier vs. less healthy food and food choice: An online experiment. BMC Public Health, 18(1). doi:10.1186/s12889-018-6112-3

Provencher, V., & Jacob, R. (2016). Impact of Perceived Healthiness of Food on Food Choices and Intake. Current Obesity Reports, 5(1), 65-71. doi:10.1007/s13679-016-0192-0

Wardle, J., Haase, A. M., Steptoe, A., Nillapun, M., Jonwutiwes, K., & Bellisie, F. (2004). Gender differences in food choice: The contribution of health beliefs and dieting. Annals of Behavioral Medicine, 27(2), 107-116. doi:10.1207/s15324796abm2702_5

Wongprawmas, R., Mora, C., Pellegrini, N., Guiné, R. P., Carini, E., Sogari, G., & Vittadini, E. (2021). Food Choice Determinants and Perceptions of a Healthy Diet among Italian Consumers. Foods, 10(2), 318. doi:10.3390/foods10020318

Appendix A

Survey on UBC Qualtrics

Part One: Rating Factors

Imagine you are in a grocery store to buy food for your dinner tonight. Please indicate to what extent the following factors are important to you when making a food choice:

	1 Not important at all	2	3	4 Neither	5	6	7 Extremely important
The food is zero waste (i.e., all unwanted products and materials will be treated as resources that can be used again, resulting in virtually zero garbage).	○	○	○	○	○	○	○
The food promotes circular economy (i.e., mimics natural systems of regeneration so that waste is feedstock for another cycle).	○	○	○	○	○	○	○
The food is low input (i.e., maximizes on-farm efficiency using advanced farming techniques and reducing off-site inputs such as purchased fertilizers and pesticides).	○	○	○	○	○	○	○
The food is organic (i.e., foods that contain no synthetic fertilizers or pesticides).	○	○	○	○	○	○	○
The food is just (i.e., supports Fair Trade, workers' rights, natures' rights).	○	○	○	○	○	○	○
The food is culturally appropriate (i.e., accessible to people of diverse backgrounds and cultures, familiar and authentic to them, including Halal, right to traditional and authentic food).	○	○	○	○	○	○	○

	1 Not important at all	2	3	4 Neither	5	6	7 Extremely important
The food takes into consideration of indigenous foodways (i.e., food systems that support Indigenous food sovereignty, which enables Indigenous Peoples to respond to their own needs and practice traditional foodways).	○	○	○	○	○	○	○
The food is biodiversity-friendly (i.e., supports biodiversity of ecosystems, species and genes across the supply chain).	○	○	○	○	○	○	○
The food is plant-based.	○	○	○	○	○	○	○
The food is cow-free (i.e., does not contain beef or dairy).	○	○	○	○	○	○	○
The food is in season.	○	○	○	○	○	○	○
The food is locally sourced (i.e., within 400 km of your residence).	○	○	○	○	○	○	○

	Not important at all	2	3	4 Neither	5	6	7 Extremely important
The food results in low greenhouse emission throughout the food system (i.e., steps are taken at each stage of the food chain, from production, processing, transportation, access, consumption to end disposal/recovery, to reduce GHG emissions).	○	○	○	○	○	○	○
The food contains animal products with low greenhouse gas emissions (i.e., contains animal products that release low greenhouse gas (GHG) emissions than ruminants, such as beef and lamb).	○	○	○	○	○	○	○
The food has many nutritional benefits.	○	○	○	○	○	○	○
The food has low calories.	○	○	○	○	○	○	○
The food is tasty.	○	○	○	○	○	○	○
The food is cheap	○	○	○	○	○	○	○

Which diet do you generally follow?

- ◯ Vegan
- ◯ Vegetarian
- ◯ Pescatarian
- ◯ Carnivorous
- ◯ Flexitarian (This includes people who eat mostly vegetarian but occasionally eat meat)
- ◯ Other

How motivated are you to protect the environment?

1 Not motivated at all	2	3	4 Neither	5	6	7 Extremely motivated
◯	◯	◯	◯	◯	◯	◯

Part Two: Demographic Questions

What is your age? (in years)

Which gender do you identify with?

- ◯ Man
- ◯ Woman
- ◯ Transgender
- ◯ Non-binary
- ◯ Other
- ◯ Prefer not to say

Think of this ladder as showing where people stand in their communities.
People define community in different ways. Please define it is whatever way is most meaningful to you.
At the top of the ladder are the people who have the highest standing ini their community.
At the bottom are the people who have the lowest standing in their community.

Now where would you place yourself on this ladder?

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Appendix B: Figure and Tables

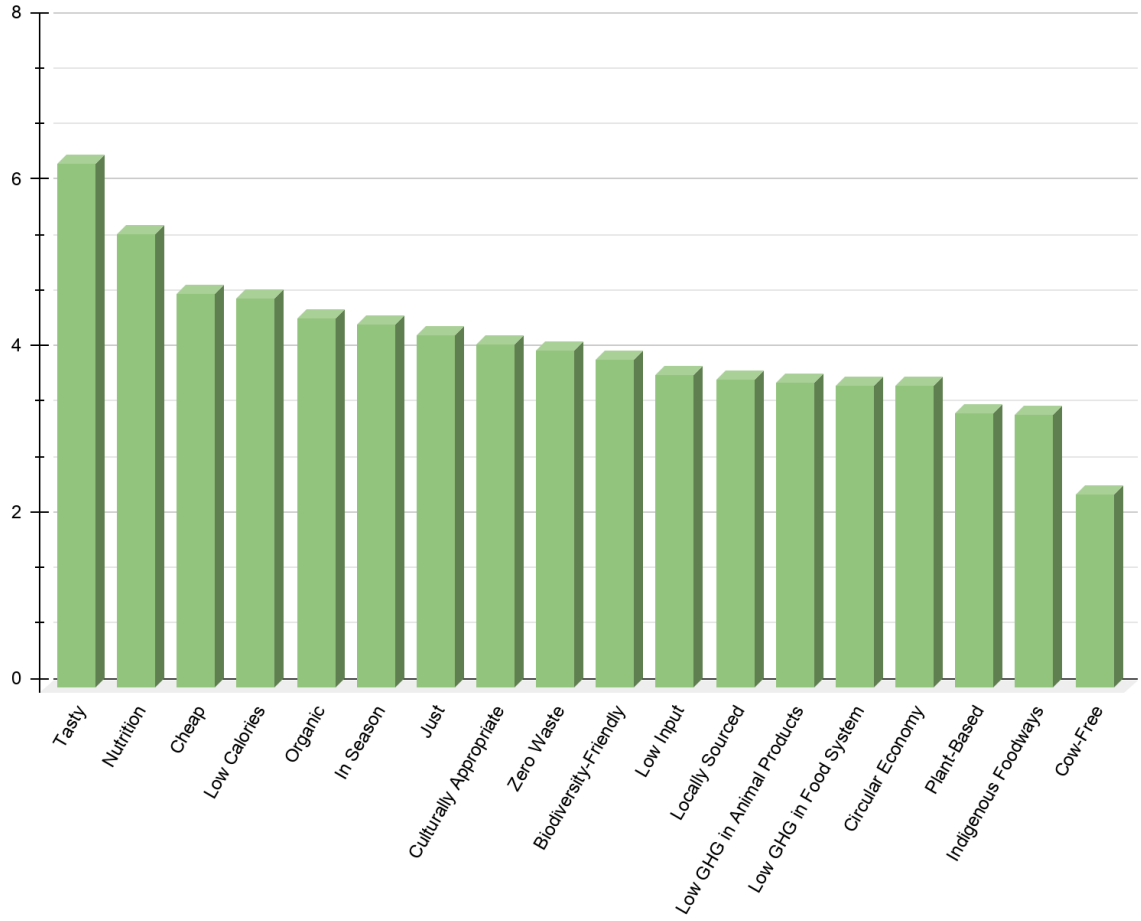

Figure 1. Ratings of the 18 factors

Table 1

Descriptive Statistics

Factors	Mean	Standard Deviation
Nutrition	5.45133	1.26061
Cheap	4.72566	1.47750
Low Calories	4.68142	1.66511
Organic	4.44248	1.66336
In Season	4.35398	1.69516
Just	4.23894	1.65979
Culturally Appropriate	4.12389	1.71200
Zero Waste	4.04425	1.63876
Biodiversity-Friendly	3.94690	1.71569
Low Input	3.75221	1.69311
Locally Sourced	3.69912	1.65769
Low GHG in Animal Products	3.66372	1.65081
Low GHG in Food System	3.62832	1.65397
Circular Economy	3.61947	1.57162
Plant-Based	3.30088	1.90809
Indigenous Foodways	3.27434	1.65426
Cow-Free	2.31858	1.63808
Tasty	6.28319	0.91094

Table 2

Post Hoc Comparisons

Post Hoc Comparisons - RM Factor 1

Comparison			Mean Difference	SE	df	t	p_{holm}
RM Factor 1		RM Factor 1					
Cheap	-	Tasty	-1.55752	0.18508	1904.00000	-8.41533	<.00001
	-	Low Calories	0.04425	0.18508	1904.00000	0.23907	1.00000
	-	Nutritional Benefits	-0.72566	0.18508	1904.00000	-3.92078	0.00685
	-	Animal Product	1.06195	0.18508	1904.00000	5.73772	<.00001
	-	Low Greenhouse gas emission	1.09735	0.18508	1904.00000	5.92898	<.00001
	-	Locally sourced	1.02655	0.18508	1904.00000	5.54647	<.00001
	-	In season	0.37168	0.18508	1904.00000	2.00820	1.00000
	-	Cow-free	2.40708	0.18508	1904.00000	13.00550	<.00001
	-	Plant-based	1.42478	0.18508	1904.00000	7.69811	<.00001
	-	Biodiversity-friendly	0.77876	0.18508	1904.00000	4.20766	0.00224
	-	indigenous foodways	1.45133	0.18508	1904.00000	7.84155	<.00001
	-	culturally appropriate	0.60177	0.18508	1904.00000	3.25138	0.07479
	-	Just	0.48673	0.18508	1904.00000	2.62979	0.48230
	-	Organic	0.28319	0.18508	1904.00000	1.53006	1.00000
	-	Low input	0.97345	0.18508	1904.00000	5.25958	0.00001
	-	Promote circular economy	1.10619	0.18508	1904.00000	5.97679	<.00001
	-	Zero waste	0.68142	0.18508	1904.00000	3.68171	0.01691
Tasty	-	Low Calories	1.60177	0.18508	1904.00000	8.65440	<.00001
	-	Nutritional Benefits	0.83186	0.18508	1904.00000	4.49455	0.00064
	-	Animal Product	2.61947	0.18508	1904.00000	14.15305	<.00001
	-	Low Greenhouse gas emission	2.65487	0.18508	1904.00000	14.34431	<.00001
	-	Locally sourced	2.58407	0.18508	1904.00000	13.96179	<.00001
	-	In season	1.92920	0.18508	1904.00000	10.42353	<.00001
	-	Cow-free	3.96460	0.18508	1904.00000	21.42083	<.00001
	-	Plant-based	2.98230	0.18508	1904.00000	16.11344	<.00001
	-	Biodiversity-friendly	2.33628	0.18508	1904.00000	12.62299	<.00001
	-	indigenous foodways	3.00885	0.18508	1904.00000	16.25688	<.00001
	-	culturally appropriate	2.15929	0.18508	1904.00000	11.66670	<.00001
	-	Just	2.04425	0.18508	1904.00000	11.04512	<.00001
	-	Organic	1.84071	0.18508	1904.00000	9.94539	<.00001
	-	Low input	2.53097	0.18508	1904.00000	13.67491	<.00001
	-	Promote circular economy	2.66372	0.18508	1904.00000	14.39212	<.00001
	-	Zero waste	2.23894	0.18508	1904.00000	12.09703	<.00001
Low Calories	-	Nutritional Benefits	-0.76991	0.18508	1904.00000	-4.15985	0.00269
	-	Animal Product	1.01770	0.18508	1904.00000	5.49865	<.00001
	-	Low Greenhouse gas emission	1.05310	0.18508	1904.00000	5.68991	<.00001
	-	Locally sourced	0.98230	0.18508	1904.00000	5.30739	0.00001
	-	In season	0.32743	0.18508	1904.00000	1.76913	1.00000
	-	Cow-free	2.36283	0.18508	1904.00000	12.76643	<.00001
	-	Plant-based	1.38053	0.18508	1904.00000	7.45904	<.00001
	-	Biodiversity-friendly	0.73451	0.18508	1904.00000	3.96859	0.00577
	-	indigenous foodways	1.40708	0.18508	1904.00000	7.60248	<.00001
	-	culturally appropriate	0.55752	0.18508	1904.00000	3.01230	0.16024
	-	Just	0.44248	0.18508	1904.00000	2.39072	0.86252
	-	Organic	0.23894	0.18508	1904.00000	1.29099	1.00000
	-	Low input	0.92920	0.18508	1904.00000	5.02051	0.00005

Post Hoc Comparisons - RM Factor 1

Comparison			Mean Difference	SE	df	t	p_{holm}
RM Factor 1		RM Factor 1					
	-	Just	-0.53982	0.18508	1904.00000	-2.91668	0.21476
	-	Organic	-0.74336	0.18508	1904.00000	-4.01641	0.00485
	-	Low input	-0.05310	0.18508	1904.00000	-0.28689	1.00000
	-	Promote circular economy	0.07965	0.18508	1904.00000	0.43033	1.00000
	-	Zero waste	-0.34513	0.18508	1904.00000	-1.86476	1.00000
In season	-	Cow-free	2.03540	0.18508	1904.00000	10.99730	<.00001
	-	Plant-based	1.05310	0.18508	1904.00000	5.68991	<.00001
	-	Biodiversity-friendly	0.40708	0.18508	1904.00000	2.19946	1.00000
	-	indigenous foodways	1.07965	0.18508	1904.00000	5.83335	<.00001
	-	culturally appropriate	0.23009	0.18508	1904.00000	1.24317	1.00000
	-	Just	0.11504	0.18508	1904.00000	0.62159	1.00000
	-	Organic	-0.08850	0.18508	1904.00000	-0.47814	1.00000
	-	Low input	0.60177	0.18508	1904.00000	3.25138	0.07479
	-	Promote circular economy	0.73451	0.18508	1904.00000	3.96859	0.00577
	-	Zero waste	0.30973	0.18508	1904.00000	1.67350	1.00000
Cow-free	-	Plant-based	-0.98230	0.18508	1904.00000	-5.30739	0.00001
	-	Biodiversity-friendly	-1.62832	0.18508	1904.00000	-8.79784	<.00001
	-	indigenous foodways	-0.95575	0.18508	1904.00000	-5.16395	0.00002
	-	culturally appropriate	-1.80531	0.18508	1904.00000	-9.75413	<.00001
	-	Just	-1.92035	0.18508	1904.00000	-10.37572	<.00001
	-	Organic	-2.12389	0.18508	1904.00000	-11.47545	<.00001
	-	Low input	-1.43363	0.18508	1904.00000	-7.74593	<.00001
	-	Promote circular economy	-1.30088	0.18508	1904.00000	-7.02871	<.00001
	-	Zero waste	-1.72566	0.18508	1904.00000	-9.32380	<.00001
Plant-based	-	Biodiversity-friendly	-0.64602	0.18508	1904.00000	-3.49045	0.03354
	-	indigenous foodways	0.02655	0.18508	1904.00000	0.14344	1.00000
	-	culturally appropriate	-0.82301	0.18508	1904.00000	-4.44674	0.00079
	-	Just	-0.93805	0.18508	1904.00000	-5.06832	0.00004
	-	Organic	-1.14159	0.18508	1904.00000	-6.16805	<.00001
	-	Low input	-0.45133	0.18508	1904.00000	-2.43853	0.77157
	-	Promote circular economy	-0.31858	0.18508	1904.00000	-1.72132	1.00000
	-	Zero waste	-0.74336	0.18508	1904.00000	-4.01641	0.00485
Biodiversity-friendly	-	indigenous foodways	0.67257	0.18508	1904.00000	3.63389	0.02006
	-	culturally appropriate	-0.17699	0.18508	1904.00000	-0.95629	1.00000
	-	Just	-0.29204	0.18508	1904.00000	-1.57787	1.00000
	-	Organic	-0.49558	0.18508	1904.00000	-2.67760	0.43377
	-	Low input	0.19469	0.18508	1904.00000	1.05192	1.00000
	-	Promote circular economy	0.32743	0.18508	1904.00000	1.76913	1.00000
	-	Zero waste	-0.09735	0.18508	1904.00000	-0.52596	1.00000
indigenous foodways	-	culturally appropriate	-0.84956	0.18508	1904.00000	-4.59018	0.00042
	-	Just	-0.96460	0.18508	1904.00000	-5.21176	0.00002
	-	Organic	-1.16814	0.18508	1904.00000	-6.31149	<.00001
	-	Low input	-0.47788	0.18508	1904.00000	-2.58198	0.53448
	-	Promote circular economy	-0.34513	0.18508	1904.00000	-1.86476	1.00000
	-	Zero waste	-0.76991	0.18508	1904.00000	-4.15985	0.00269
culturally appropriate	-	Just	-0.11504	0.18508	1904.00000	-0.62159	1.00000
	-	Organic	-0.31858	0.18508	1904.00000	-1.72132	1.00000
	-	Low input	0.37168	0.18508	1904.00000	2.00820	1.00000

Post Hoc Comparisons - RM Factor 1

Comparison			Mean Difference	SE	df	t	p_{holm}
RM Factor 1		RM Factor 1					
	-	Promote circular economy	1.06195	0.18508	1904.00000	5.73772	<.00001
	-	Zero waste	0.63717	0.18508	1904.00000	3.44263	0.03943
Nutritional Benefits	-	Animal Product	1.78761	0.18508	1904.00000	9.65850	<.00001
	-	Low Greenhouse gas emission	1.82301	0.18508	1904.00000	9.84976	<.00001
	-	Locally sourced	1.75221	0.18508	1904.00000	9.46724	<.00001
	-	In season	1.09735	0.18508	1904.00000	5.92898	<.00001
	-	Cow-free	3.13274	0.18508	1904.00000	16.92628	<.00001
	-	Plant-based	2.15044	0.18508	1904.00000	11.61889	<.00001
	-	Biodiversity-friendly	1.50442	0.18508	1904.00000	8.12844	<.00001
	-	indigenous foodways	2.17699	0.18508	1904.00000	11.76233	<.00001
	-	culturally appropriate	1.32743	0.18508	1904.00000	7.17215	<.00001
	-	Just	1.21239	0.18508	1904.00000	6.55057	<.00001
	-	Organic	1.00885	0.18508	1904.00000	5.45084	<.00001
	-	Low input	1.69912	0.18508	1904.00000	9.18036	<.00001
	-	Promote circular economy	1.83186	0.18508	1904.00000	9.89757	<.00001
	-	Zero waste	1.40708	0.18508	1904.00000	7.60248	<.00001
Animal Product	-	Low Greenhouse gas emission	0.03540	0.18508	1904.00000	0.19126	1.00000
	-	Locally sourced	-0.03540	0.18508	1904.00000	-0.19126	1.00000
	-	In season	-0.69027	0.18508	1904.00000	-3.72952	0.01441
	-	Cow-free	1.34513	0.18508	1904.00000	7.26778	<.00001
	-	Plant-based	0.36283	0.18508	1904.00000	1.96039	1.00000
	-	Biodiversity-friendly	-0.28319	0.18508	1904.00000	-1.53006	1.00000
	-	indigenous foodways	0.38938	0.18508	1904.00000	2.10383	1.00000
	-	culturally appropriate	-0.46018	0.18508	1904.00000	-2.48635	0.68854
	-	Just	-0.57522	0.18508	1904.00000	-3.10793	0.11853
	-	Organic	-0.77876	0.18508	1904.00000	-4.20766	0.00224
	-	Low input	-0.08850	0.18508	1904.00000	-0.47814	1.00000
	-	Promote circular economy	0.04425	0.18508	1904.00000	0.23907	1.00000
	-	Zero waste	-0.38053	0.18508	1904.00000	-2.05602	1.00000
Low Greenhouse gas emission	-	Locally sourced	-0.07080	0.18508	1904.00000	-0.38251	1.00000
	-	In season	-0.72566	0.18508	1904.00000	-3.92078	0.00685
	-	Cow-free	1.30973	0.18508	1904.00000	7.07652	<.00001
	-	Plant-based	0.32743	0.18508	1904.00000	1.76913	1.00000
	-	Biodiversity-friendly	-0.31858	0.18508	1904.00000	-1.72132	1.00000
	-	indigenous foodways	0.35398	0.18508	1904.00000	1.91257	1.00000
	-	culturally appropriate	-0.49558	0.18508	1904.00000	-2.67760	0.43377
	-	Just	-0.61062	0.18508	1904.00000	-3.29919	0.06419
	-	Organic	-0.81416	0.18508	1904.00000	-4.39892	0.00096
	-	Low input	-0.12389	0.18508	1904.00000	-0.66940	1.00000
	-	Promote circular economy	0.00885	0.18508	1904.00000	0.04781	1.00000
	-	Zero waste	-0.41593	0.18508	1904.00000	-2.24727	1.00000
Locally sourced	-	In season	-0.65487	0.18508	1904.00000	-3.53826	0.02846
	-	Cow-free	1.38053	0.18508	1904.00000	7.45904	<.00001
	-	Plant-based	0.39823	0.18508	1904.00000	2.15165	1.00000
	-	Biodiversity-friendly	-0.24779	0.18508	1904.00000	-1.33880	1.00000
	-	indigenous foodways	0.42478	0.18508	1904.00000	2.29509	1.00000
	-	culturally appropriate	-0.42478	0.18508	1904.00000	-2.29509	1.00000

Post Hoc Comparisons - RM Factor 1

Comparison			Mean Difference	SE	df	t	p_{holm}
RM Factor 1		RM Factor 1					
	-	Promote circular economy	0.50442	0.18508	1904.00000	2.72542	0.38237
	-	Zero waste	0.07965	0.18508	1904.00000	0.43033	1.00000
Just	-	Organic	-0.20354	0.18508	1904.00000	-1.09973	1.00000
	-	Low input	0.48673	0.18508	1904.00000	2.62979	0.48230
	-	Promote circular economy	0.61947	0.18508	1904.00000	3.34700	0.05496
	-	Zero waste	0.19469	0.18508	1904.00000	1.05192	1.00000
Organic	-	Low input	0.69027	0.18508	1904.00000	3.72952	0.01441
	-	Promote circular economy	0.82301	0.18508	1904.00000	4.44674	0.00079
	-	Zero waste	0.39823	0.18508	1904.00000	2.15165	1.00000
Low input	-	Promote circular economy	0.13274	0.18508	1904.00000	0.71722	1.00000
	-	Zero waste	-0.29204	0.18508	1904.00000	-1.57787	1.00000
Promote circular economy	-	Zero waste	-0.42478	0.18508	1904.00000	-2.29509	1.00000

Table 3

Gender as the Independent Variable

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p	η^2_p
RM Factor 1	50.28109	17	2.95771	1.61502	0.05296	0.01487
RM Factor 1 ┬ Motivation	177.52521	17	10.44266	5.70209	<.00001	0.05059
RM Factor 1 ┬ Age	19.96388	17	1.17435	0.64124	0.86104	0.00596
RM Factor 1 ┬ SES	48.14401	17	2.83200	1.54638	0.07076	0.01425
RM Factor 1 ┬ Gender	109.00141	34	3.20592	1.75056	0.00486	0.03168
Residual	3331.26855	1819	1.83137			

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p	η^2_p
Gender	50.25823	2	25.12912	2.19067	0.11683	0.03934
Motivation	278.14481	1	278.14481	24.24770	<.00001	0.18475
Age	0.53173	1	0.53173	0.04635	0.82994	0.00043
SES	0.75639	1	0.75639	0.06594	0.79784	0.00062
Residual	1227.39460	107	11.47098			

Note. Type 3 Sums of Squares

Table 4

Diet Type as the Independent Variable

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p	η^2_p
RM Factor 1	58.95650	17	3.46803	1.93586	0.01214	0.01827
RM Factor 1 ┬ Diet Type	272.95615	85	3.21125	1.79252	0.00002	0.07934
RM Factor 1 ┬ Motivation	173.62373	17	10.21316	5.70100	<.00001	0.05197
RM Factor 1 ┬ Age	22.04940	17	1.29702	0.72400	0.78055	0.00691
RM Factor 1 ┬ SES	45.65155	17	2.68539	1.49899	0.08594	0.01421
Residual	3167.31381	1768	1.79147			

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p	η^2_p
Diet Type	83.53497	5	16.70699	1.45507	0.21097	0.06538
Motivation	265.04205	1	265.04205	23.08346	<.00001	0.18164
Age	3.29674	1	3.29674	0.28712	0.59321	0.00275
SES	0.01911	1	0.01911	0.00166	0.96754	0.00002
Residual	1194.11786	104	11.48190			

Note. Type 3 Sums of Squares

Table 5

Principal Component Analysis

Component Loadings

	Component						
	1	2	3	4	5	6	Uniqueness
Cheap					-0.90024		0.19836
Tasty						0.85472	0.26028
Low Calories			0.87864				0.20943
Nutritional Benefits			0.80708				0.29741
Animal product containing low greenhouse gas emissions	0.47113						0.31086
Low greenhouse gas emission throughout the food system	0.76318						0.23377
Locally sourced				0.72018			0.30071
In season				0.88194			0.22849
Cow-Free		0.87190					0.20426
Plant-based		0.81380					0.17317
Biodiversity-friendly	0.80124						0.22325
Indigenous foodways	0.74330						0.26117
Culturally appropriate	0.58212					0.47549	0.36883
Just	0.75661						0.37477
Organic					0.48476		0.39360
Low input	0.57653						0.33416
Promotes circular economy	0.77542						0.30480
Zero Waste	0.62760						0.29563

Note. 'oblimin' rotation was used

Appendix C

Group Contributions

Tianyi Pei: Contributed to developing the research idea (i.e., the hypothesis and the psychological insight), researching literature to review, doing the result section of the presentation, presenting to our clients, regularly attending both group meetings and meetings with the professor, corresponding with the professor and the TA, contacting the client for more information, finding participants for our study, conducting data analysis (I also met with TA and Dr.Zhao for the data analysis), and designing the questionnaire and putting the questionnaire on the Qualtrics. For the research report, my contributions include writing the method, result, and the discussion sections. I also helped in editing the recommendation and the introduction sections. And I wrote the references for articles that I included in the introduction according to the APA guidelines, formatted the appendix section of the report.

Francesca Chiam: Contributed to developing the research idea and question, researching literature to review and support our study, creating the presentation, refining the presentation script, practiced presenting, presenting to our clients, regularly attending both group meetings and meetings with the professor, corresponded with the professor, helped to design the questionnaire and contacted participants for our study. As for the research report, my contributions include writing the introduction, psychological insight and recommendations for the UBC client, and formatting the paper and references according to APA guidelines. I also helped to make suggestions, edit and review all sections of the paper.

Angell Yao: Contributed to developing research ideas, editing the presentation and practicing the presentation with group members, presenting to our clients, regularly attending group meetings and meetings with the professor, corresponding with the professor, contacting participants for our study and recording their contact information on a google doc, and helping design the questionnaire. For the research report, I contributed to writing the abstract of the research report, researching past studies on our topic, writing the introduction including the literature review, psychological insight, research question and hypothesis, making suggestion on content in the Methods and Discussion section, editing the recommendations for UBC client, formatting the paper and writing the references using APA guidelines.

Julia Zou: Contributed to developing the research idea (i.e., the hypothesis and the psychological insight), researching literature to review, doing the result section of the presentation, presenting to our clients, regularly attending both group meetings and meetings with the professor, corresponding with the professor and the TA, finding participants for our

study, conducting data analysis (I met with the TA and Dr.Zhao for the data analysis), and designing the questionnaire. For the research report, my contributions include writing the method, result, and the discussion sections. I also helped in editing the introduction section, formatting the paper and the appendix according to APA guidelines.

Jackson Zhong: Contributed to developing the research idea through first, developing the initial research question of the project, as well as looking into possible concepts related to the topic. During the drafting of the research report itself, wrote the initial draft of the recommendations for the UBC client by proposing two courses of action, one short-term and another long-term. Additionally, provided suggestions for references that tackled similar subject matter.