Understanding and Influencing Cognitive and Practical Motivators and Barriers Underlying Reusable Cup Usage

Prepared by: Francesca Berthiaume, Leonardo Giannoni, Judy Park, Nutchanat Thanamtieng, Karin Yamakawa, Justin Zhou

Prepared for: AMS Sustainability

PSYC 421
The University of British Columbia
April 2024

Cover Photo: Bernd Dittrich on Unsplash

Disclaimer: UBC SEEDS Sustainability Program provides students with the opportunity to share the findings of their studies, as well as their opinions, conclusions and recommendations with the UBC community. The reader should bear in mind that this is a student research project and is not an official document of UBC. Furthermore, readers should bear in mind that these reports may not reflect the current status of activities at UBC. We urge you to contact the research persons mentioned in a report or the SEEDS Sustainability Program representative about the current status of the subject matter of a report.

SEEDS Sustainability Program

Executive Summary

Introduction

No study to date has fully captured the factors that underlie the user experience of reusable cups. Hence, given the inefficacy of past initiatives, we conducted two studies: Study 1 endeavours to identify the motivators and barriers to using reusable cups, and Study 2 tests the effectiveness of three possible interventions.

Research Question

What are the motivators and barriers to using reusable cups?

Methods

Study 1 asked 111 participants why they used or didn't use reusable cups, with pre-identified reasons in multiple-choice format and an open-ended text entry option for entering reasons that were not covered in the multiple choices. Study 2 tested three variations of a cup-share program that address barriers and motivators from Study 1.

Results

In study 1, we found that the most reported benefits were reducing environmental impacts and avoiding paying $0.25 single-use cup fees, while forgetfulness and not wanting to carry around a reusable cup were the most reported barriers. In study 2, data from 257 participants showed no significant increase in program support, likeliness to use the program, and likeliness to return cups—although high support was seen across all the programs.

Recommendations

Our research suggests that UBC should consider taking steps beyond raising awareness of disposable cup waste and the positive effects of using personal mugs. UBC should conduct a pilot study with increased access to pick-up and drop-off sites. When devising the pilot study, UBC should consider increasing transparency about the cleaning process and avoiding terms such as "shared" that carry connotations of contamination. We also recommend maintaining a deposit system for reusable cups to encourage individuals to return the cups.

Table of Contents

Introduction

As a part of its Zero Waste Action Plan, the University of British Columbia (UBC) aims to reduce 80 percent of its disposable cup usage by 2030[1]. Sustainability initiatives on the Vancouver campus have involved raising awareness about disposable cup waste through posters and slogans such as "Choose to Reuse"[1]. UBC's Social Ecological Economic Development Studies (SEEDS) have also conducted student-led empirical studies to devise effective interventions. However, even with the municipal by-law that introduced a 25-cent fee on disposable cups in 2019, the effects have been ambiguous as evidenced by the council ruling to annul the fee beginning May 2024[2]. Further initiatives by non-UBC affiliated companies like ShareWare and Mugshare have taken place on campus; yet, the utilization rates of the programs are obscure after the businesses temporarily halted service during the COVID-19 pandemic[3]. Despite the introduction of initiatives designed to raise awareness of disposable cup waste and encourage reusable cup use, the effectiveness of such messages to the general public remains indeterminate.

Existing literature heavily focuses on designing and testing interventions[4,5,6] with limited insight into factors that discourage and motivate the transition to reusable cups. That is not to say they are baseless; their interventions are grounded in past literature such as social learning theory that have shown social norms to be an important predictor of pro-environmental behaviour[7]. Social-norm-based interventions mainly involve surcharging single-cup take-outs, information posters, and selling reusable cups[7], and show short-term and long-term effectiveness in their data. In addition, no research to date has fully captured the fundamental factors and interactions between them that cause the aforementioned efforts to be effective. Therefore, we must analyze the current user experience of reusable cups before designing an appropriate intervention. Some studies, including SEEDS projects, have explored motivators and barriers to using reusable cups. They report inconvenience and minimal financial incentive are critical barriers to using reusable cups[8], and that whilst awareness of the environmental impacts of single-use cups is low, it is a leading motivator[3]. Although such exploratory literature states what the leading factors are, they lack a dynamic understanding of the interaction between factors that discourage and motivate usage.

Such a gap in the literature opens the possibility of conducting an exploratory study on the motivators and barriers behind reusable cup usage (or lack thereof), before designing and testing an intervention to motivate reusable cup use, and we split our research accordingly. Study 1 inquires what are the motivators and barriers to using reusable cups, and Study 2 asks what intervention design can motivate reusable cup use.

Based on past SEEDs studies[3,8], we hypothesize for Study 1 that a) the most reported motivator will be to avoid paying the 25-cent surcharge on disposable cups, and b) the most reported barrier will be forgetting to bring a reusable cup. For Study 2, we hypothesize that participants introduced to the cup-share program, which addresses *both* motivators and barriers, (i.e., Program B) will report the highest support and willingness, followed by Program A and Control, respectively. For our study, we define willingness as the likelihood to use the program and the likelihood to return the cups if they were to use the program.

Methodology

Participants

We conducted both studies on the UBC campus and social media from February to March 2024. Our participants were mainly UBC students and affiliates, and the data were collected through two online surveys mediated via Qualtrics. For Survey 1, we aimed for 100 participants. For Survey 2, we needed 246 participants to achieve 80% power, determined through G*Power based on a One-Way ANOVA ($f = 0.20$, $\alpha = .05$). We also collected data on gender, age, political orientation, and affiliation to UBC.

For Survey 1, we received 123 responses but removed 12 with incomplete data. Our sample was largely undergraduate students (91%), female (65%), and liberal (48%), with a mean age of 21.4 ($SD = 2.9$) (see Appendix A). For Survey 2, we had 259 participants but excluded two as they did not provide consent. Our sample was largely undergraduate (89%), female (71%), and liberal (45%) with a mean age of 22.5 ($SD = 16.2$) (see Appendix B).

Conditions

Study 1 used an exploratory design to identify possible motivators and barriers to using reusable cups. In Study 2, participants were randomized into one of three conditions: Control ($n = 81$), Program A ($n = 88$), and Program B ($n = 88$). The Control followed a current cup-sharing program with two drop-off sites and a deposit fee. Program A introduced an economic incentive motivator while Program B included both the economic incentive motivator and removed an inconvenience barrier (see Appendix C).

Measures

In Survey 1, participants were given two multiple-choice questions with the option to select more than one answer for each. The questions included “What are your reasons for using a reusable cup at a cafe?” and “What are your reasons for NOT using a reusable cup at a cafe?”. Based on past literature, we provided 8 options for possible motivators and barriers (see Appendix D). We measured the number of participants who chose each motivator and barrier.

In Survey 2, participants were asked three questions to measure their support and willingness to utilize the program. The responses were measured through Likert scales (see Appendix C). Firstly, we gauged program support by asking respondents to rate the statement, "To what extent would you support this policy?". Additionally, participants rated their likelihood of utilizing the program and returning reusable cups, responding to questions "How likely are you to use the program if this policy were implemented?" and "How likely are you to return a reusable cup to the drop-off site?" (see Appendix C).

Procedure

We utilized snowball and convenience sampling techniques by approaching individuals on the UBC Vancouver campus in person, presenting in undergraduate courses, and posting survey links on social media platforms (e.g., Discord, Instagram and Piazza).

In Survey 1, participants consented before responding to the two previously mentioned questions. Subsequently, they could offer further insights in an optional open-ended comment box and complete demographic queries (see Appendix D).

For Survey 2, participants started by consenting to partake in the study, after which they were randomly assigned to one of the three conditions. Each group then reviewed the proposed program and answered the measures on support, likelihood to use, and likelihood to return. The survey concluded with an optional demographic section (see Appendix C).

Results

Study 1

The frequency data of the exploratory survey responses yielded insights into the barriers and benefits leading to the adoption and use of reusable cups. The most reported benefits to using reusable cups were reducing environmental impacts (59%) and avoiding paying $0.25 single-use cup fees (58%), while forgetting (78%) and not wanting to carry around a reusable cup (69%) were the most reported barriers (see Appendix E).

Braun and Clarke's (2013) thematic analysis methodology served as the framework for examining responses to open-ended questions, specifically focusing on eliciting additional insights (see Appendix F). All coders in this study were authors and underwent a familiarization process with the dataset through a comprehensive review. One coder systematically operationalized the dataset by carefully examining the dataset and identifying possible codes. This approach was replicated by an additional five coders to maintain consistency. Through collaborative discussions, the coding results were compared and refined to achieve a high level of inter-coder reliability and accuracy in the findings. The coders iteratively found 11 codes: *Economic Incentive, Convenience, Preferences and Personal Choice, Environmental Awareness, Social Norms, Cleanliness Concerns, Lack of Accessibility, Environmental Cost, Lack of Awareness*, and *Forgetfulness*. The finalized codebook was applied to the dataset to identify networks of meaning. Four main themes resulted from the thematic analysis: “Practical Motivators”, “Practical Barriers”, “Cognitive Motivators”, and “Cognitive Barriers” (see Appendix F for additional notes).

Study 2

An examination of the descriptive statistics showed generally high levels of support across all measures. Support for the program was high across Program A (M = 4.0, SD = 1.0, n = 88), Program B (M = 4.1, SD = 0.9, n = 88), and the Control (M = 4.0, SD = 0.9, n = 88). The respective means and standard deviations for the likelihood of using the program were moderately elevated across Program A (M = 3.4, SD = 1.2, n = 88), Program B (M = 3.6, SD = 1.2, n = 88), and the Control (M = 3.4, SD = 1.1, n = 81). While the likelihood of return was also similarly elevated across conditions, it displayed a different pattern with Program A (M = 3.6, SD = 1.3, n = 81) scoring lower than Program B (M = 4.0, SD = 1.0, n = 88) and the Control (M = 4.0, SD = 1.2, n = 88) (see Appendix G).

Three one-way ANOVAs were used to analyze the data for each measure: support for the program, likelihood to use the program, and likelihood to return reusable cups. Each measure was analyzed across the three different conditions: Program A, Program B, and the Control. The results for the support for program scale showed no significant difference between conditions, $F(2, 254) = 0.20$, $p = .819$, $\eta^2 = .002$. Similarly, there was no significant difference between conditions for the likelihood of using the program, $F(2, 254) = 1.15$, $p = .318$, $\eta^2 = .009$. Differences between conditions for the likelihood to return reusable cups measure were also not significant, $F(2, 254) = 2.31$, $p = .102$, $\eta^2 = .02$ (see Appendix H for the ANOVA table). The hypothesis was not

supported; however, the lack of significant results may be explained by supplementary qualitative data.

Braun and Clarke's (2013) thematic analysis was again used to analyze any responses to open-ended questions using the same methodology as Study 1. Coders iteratively found 6 codes: *Hygiene Concerns, Cup Design Concerns, Drop-off Site Accessibility, Environmental Impact, Incentive to Return,* and *Personal Responsibility*. Some participants provided unprompted ideas and perspectives extending beyond the themes of the study which were coded under *Additional Insights,* and were not factored into main themes. After applying it to the dataset, two main themes emerged: "Hygiene and Health Considerations" and "Concerns About Implementation and Practicality" (see Appendix I for additional notes).

Discussion

The current study explores reasons for and against using reusable cups and the dynamic interactions between the factors, while past studies have examined specific factors individually. We also assessed the effectiveness of three variations of a cup-share program that could serve as an intervention to reduce single-use cup waste.

Results of Study 1 reveal that economic incentives and sustainability awareness are the most common motivators, while forgetfulness and the inconvenience of carrying a cup are the most common barriers. When designing the intervention, we found that approximately 56% of participants simultaneously selected *both* "I don't want to bring it" and "I forget to bring it". This led us to infer that interventions addressing forgetfulness alone would not be effective, as the inconvenience of bringing cups would persist. Additionally, participants who reported they do not want to carry the cup around also selected avoiding paying the 25-cent fee on disposable cups (40%) and reducing environmental impacts (39%) as their motivators. Thus, it is evident that multiple factors interact to create a dynamic user experience. These findings can inform why past initiatives, such as UBC's "Choose to Reuse" campaign and the City of Vancouver's 25-cent surcharge on disposable cup orders have failed to achieve efficacy[1,2]. Future studies should further examine the dynamic relationship between motivators and barriers to design an intervention that is most accessible and thus effective.

All three conditions in Study 2 are statistically insignificant, suggesting there are minimal differences between programs. However, there is generally high support across all three conditions. While participants in Program A and Control conditions show high support, they provided additional insights suggesting more drop-off sites to increase accessibility. Considering these results, Program B should have higher support, yet this was not reflected in the findings. We theorize at least two underlying factors leading to the insignificant results: between-subjects design and lack of hygiene clarity. Due to the study's between-subjects design, participants were not presented with all three program variations. A within-subjects design would provide participants with a point of reference to compare and rank order all three programs. This may give more valuable insight into users' priorities. Moreover, 19 out of 67 open-text responses for Survey 2 expressed concern for hygiene. For instance, concerns included the sanitization process of reusable cups, the sharing of reusable cups, and the spread of disease (see Appendix I). Not mentioning all dimensions of the program—such as the cleaning processes, handling of cups, and cup design—could have raised respondents' concerns. The ambiguity could have contributed to the similarity of willingness and support ratings between conditions. Future studies should provide a more elaborate description of the design of the survey to ensure clarity among participants. Additionally, Survey 2 did not explicitly describe the logistics of drop-off sites (e.g., whether they are in the same building as the cafe or distributed across campus). Future studies can provide specific drop-off locations to ensure clarity.

Ultimately, both studies are non-representative of the diverse range of demographics on the UBC Vancouver campus. There is a notable overrepresentation of liberal, undergraduate, and female populations. To improve statistical validity, future studies should aim for a holistic representation of its population. Furthermore, the program descriptions in the survey contained pro-sustainability terms which could have primed participants into reporting high willingness and support for

sustainable initiatives. Therefore, future studies should frame the program description using neutral language.

Recommendations

Our research suggests that UBC, as part of its Zero Waste Action Plan, should consider taking steps beyond raising awareness of disposable cup waste and the positive effects of using personal mugs. Our findings indicate strong interest and support for cup-share programs; however, to evaluate their potential effectiveness, UBC should conduct a pilot study with increased access to pick-up and drop-off sites.

Concerns over cleanliness were raised in both studies. When devising the pilot study, UBC should consider increasing transparency about the cleaning process and avoiding terms such as “shared” that carry connotations of contamination.

Another category of concern lies in the likelihood of students not returning cups. Devising an incentive to return would be in line with the concerns of students. We recommend maintaining a deposit system for reusable cups to encourage individuals to return the cups.

In conclusion, while the quantitative results were statistically insignificant, our qualitative feedback offers valuable insights into the dynamic interactions between factors that underlie the user experience of reusable cups.

References

1. UBC Campus & Community Planning. (2019). *Zero Waste Action Plan: Towards a Circular Economy*. https://planning.ubc.ca/zero-waste-action-plan
2. City of Vancouver. (2023). *Vancouver's single-use cup by-law and cup fee repealed effective May 1*. Retrieved April 9, 2024, from https://vancouver.ca/news-calendar/vancouver-s-single-use-cup-by-law-and-cup-fee-repealed-effective-may-1.aspx#:~:text=Vancouver%20City%20Council%20enacted%20a,on%20single%2Duse%20beverage%20cups.
3. Heo, B., Li, J., Yang, S. T., & Xu, N. (2020). Analysis and Recommendations for UBC's Zero Waste Coffee Culture Transition. *UBC Social Ecological Economic Development Studies (SEEDS) Student Report*. http://dx.doi.org/10.14288/1.0392735
4. Loschelder, D. D., Henrik Siepelmeyer, Fischer, D., & Rubel, J. A. (2019). Dynamic norms drive sustainable consumption: Norm-based nudging helps café customers to avoid disposable to-go-cups. Journal of Economic Psychology, 75, 102146–102146. https://doi.org/10.1016/j.joep.2019.02.002
5. Poortinga, W., & Whitaker, L. (2018). Promoting the Use of Reusable Coffee Cups through Environmental Messaging, the Provision of Alternatives and Financial Incentives. Sustainability, 10(3), 873–873. https://doi.org/10.3390/su10030873
6. Novoradovskaya, E., Mullan, B., Hasking, P., & Uren, H. V. (2021). My cup of tea: Behaviour change intervention to promote use of reusable hot drink cups. Journal of Cleaner Production, 284, 124675–124675. https://doi.org/10.1016/j.jclepro.2020.124675
7. Wokje Abrahamse, & Steg, L. (2013). Social influence approaches to encourage resource conservation: A meta-analysis. *Global Environmental Change*, *23*(6), 1773–1785. https://doi.org/10.1016/j.gloenvcha.2013.07.029
8. Wong, F., Ribeiro, T., Molina, Y., & Tong, N. (2023). Reducing Waste, Promoting Reusables : The Role of Environmental Citizenship in creating a Sustainable UBC Campus. *UBC Social Ecological Economic Development Studies (SEEDS) Student Report*. http://dx.doi.org/10.14288/1.0435823

Appendices

Appendix A: Study 1 Demographics

Figure A1

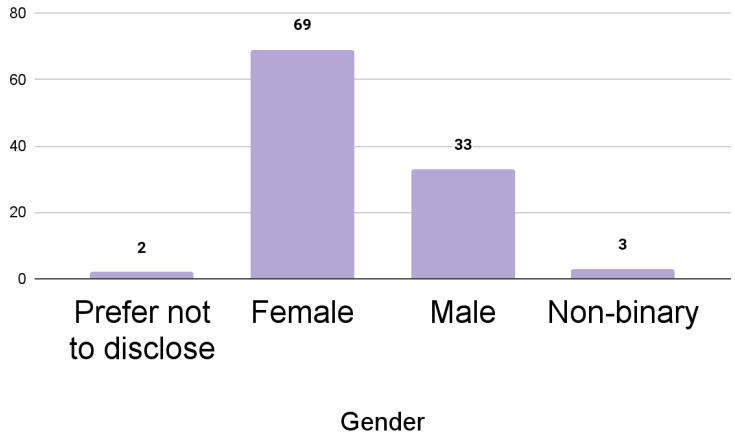


Figure A2

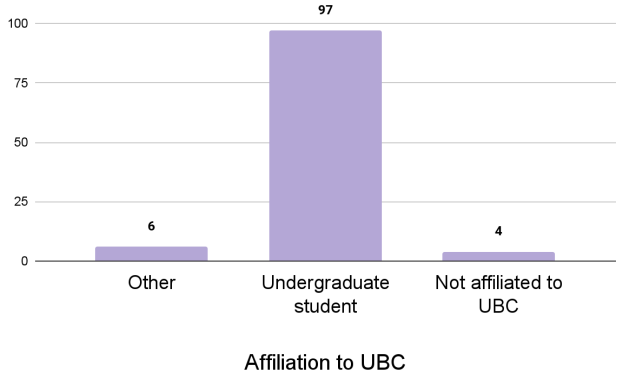
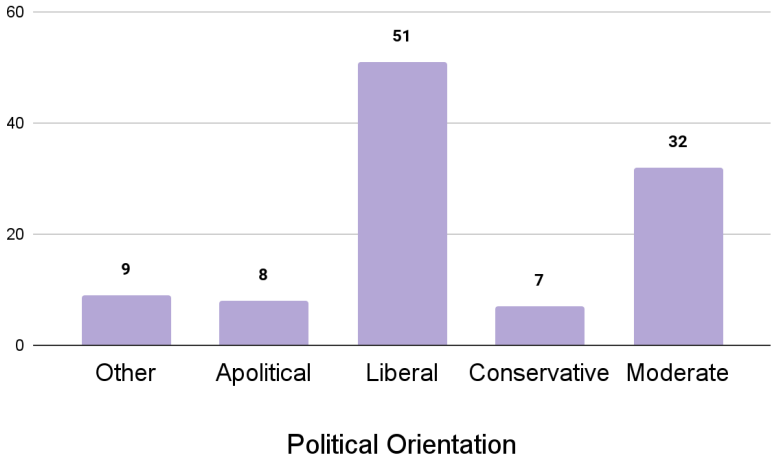


Figure A3



Appendix B: Study 2 Demographics

Figure B1

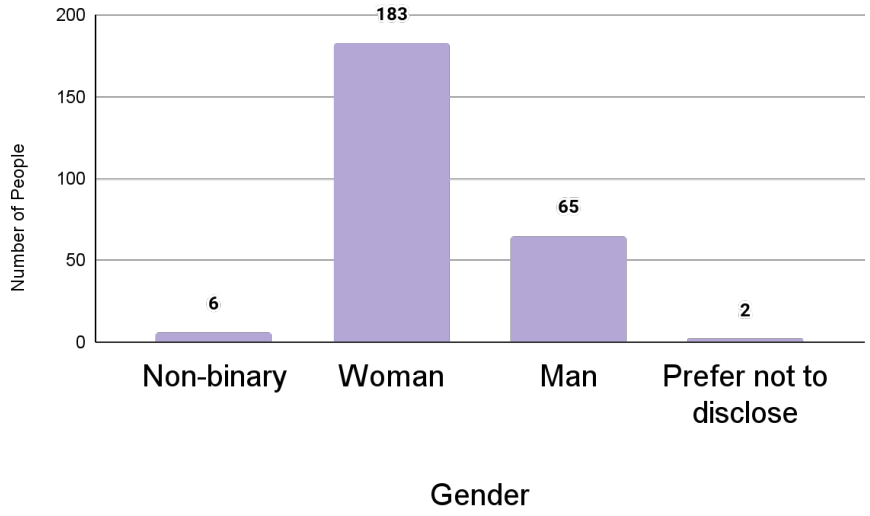


Figure B2

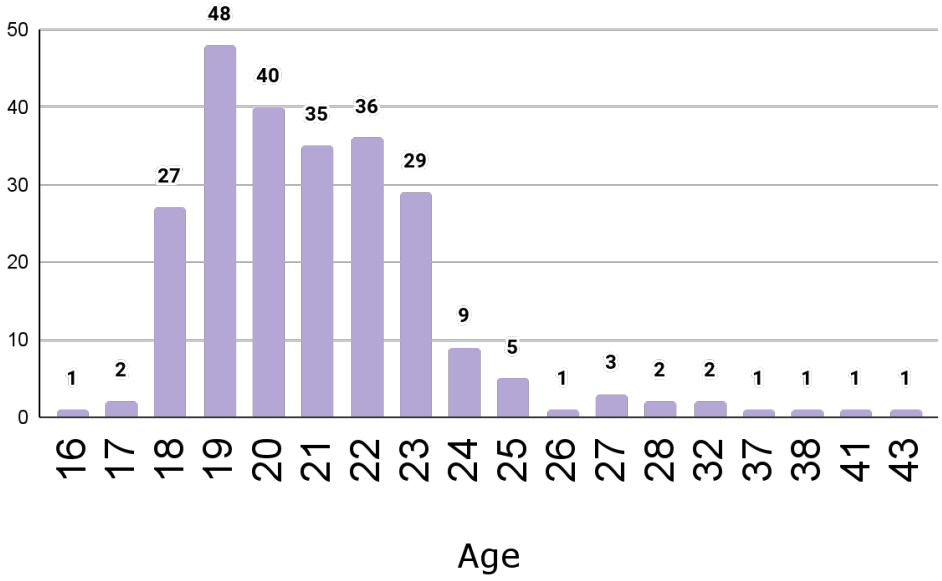


Figure B3

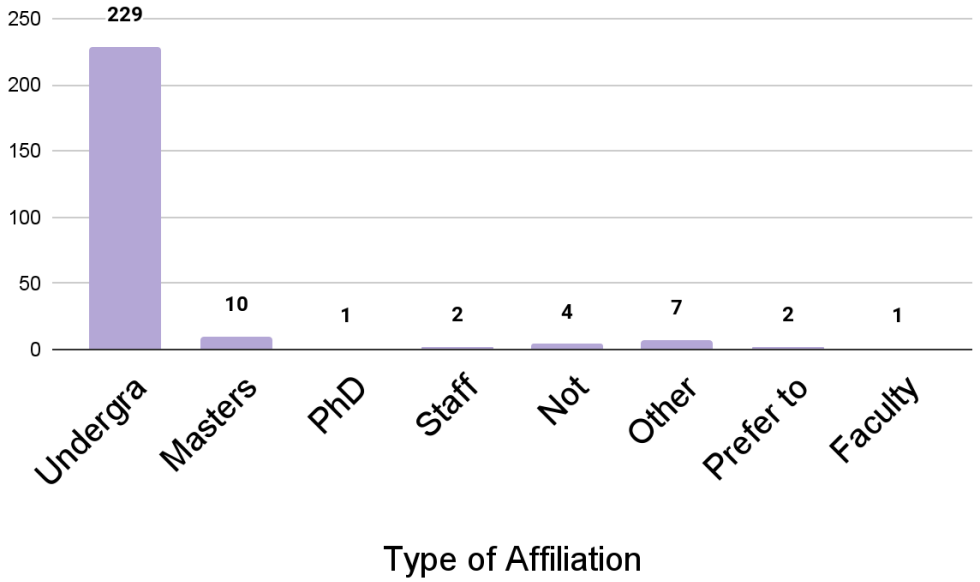
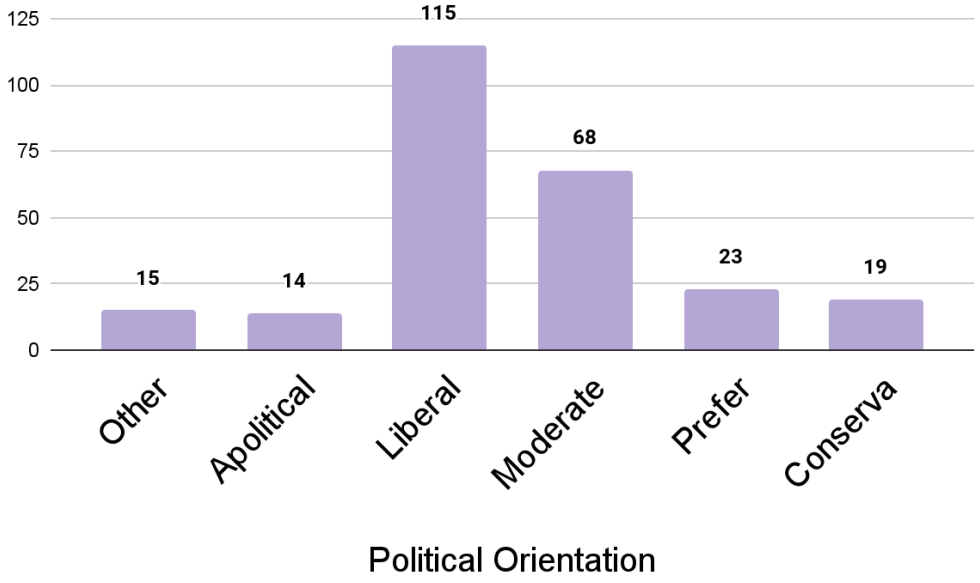


Figure B4



Appendix C: Survey II on UBC Qualtrics

[Consent Form]
By clicking "I consent" you are consenting to the conditions above.
Choice 1 I consent
Choice 2 I do not consent
↳ IF answer to Question is Choice 2: skip to end of survey

Participants are randomly assigned to one of A, B, and control program conditions:
[Program A]
Imagine UBC introduced a sustainability initiative to encourage the use of reusable cups. You have the option to order a takeout drink in a reusable cup at cafés on the UBC campus and return it at a drop-off site when you're done. Here is the proposed program:

- Pick up a FREE reusable cup at one of the 2 partnered cafés at UBC
- The reusable cup can be used across campus
- Return the reusable cup at either of the 2 drop-off sites at UBC

[Program B]
Imagine UBC introduced a sustainability initiative to encourage the use of reusable cups. You have the option to order a takeout drink in a reusable cup at cafés on the UBC campus and return it at a drop-off site when you're done. Here is the proposed program:

- Pick up a FREE reusable cup at any of the 10 partnered cafés at UBC
- The reusable cup can be used across campus
- Return the reusable cup at any of the 10 drop-off sites at UBC

[Control Program]
Imagine UBC introduced a sustainability initiative to encourage the use of reusable cups. You have the option to order a takeout drink in a reusable cup at cafés on the UBC campus and return it at a drop-off site when you're done. Here is the proposed program:

- A $5.00 cup deposit is charged upon purchasing the takeout drink in a reusable cup at one of the 2 partnered cafés at UBC
- The reusable cup can be used across campus
- Cups can be returned to the two drop-off sites on campus for a $5.00 refund at either of the 2 drop-off sites at UBC

Each condition were displayed the below graphic of an example reusable cup below the bullet-point descriptions:

[Willingness]

Each condition is asked following three identical questions on the same page as the program description:

Q1 To what extent would you support this policy?

Choice 1 Strongly oppose
Choice 2 Somewhat oppose
Choice 3 Neutral
Choice 4 Somewhat favour
Choice 5 Strongly favour

Q2 If this policy were in place, how likely are you to use the program?

Choice 1 Extremely unlikely
Choice 2 Unlikely
Choice 3 Neutral
Choice 4 Likely
Choice 5 Extremely likely

Q3 If you were to use a reusable cup, how likely are you to return it to the drop-off site?

Choice 1 Extremely unlikely
Choice 2 Unlikely
Choice 3 Neutral
Choice 4 Likely
Choice 5 Extremely likely

[Demographics]

Q4 What is your gender?

Choice 1 Male
Choice 2 Female
Choice 3 Non-binary
Choice 4 Other [text entry]
Choice 5 Prefer not to disclose

Q5 Which of the following groups are you?

Choice 1 Faculty
Choice 2 Undergraduate student
Choice 3 Masters student
Choice 4 PhD student
Choice 5 Staff
Choice 6 Not affiliated to UBC
Choice 7 Other
Choice 8 Prefer not to disclose

Q6 What is your age?

[Text entry – content type limited to number]

Q7 Regarding your political beliefs, would you consider yourself to be:

Choice 1	Liberal
Choice 2	Moderate
Choice 3	Conservative
Choice 4	Apolitical
Choice 5	Other [text entry]
Choice 6	Prefer not to disclose

Q8 Do you have any additional insight or concern regarding the UBC Vancouver Campus implementing a reusable cup share program you would like to share?

[Essay text box]

Appendix D: Survey I on UBC Qualtrics

[Consent Form]
Question By clicking “I consent” you are consenting to the conditions above.
Choice 1 I consent
Choice 2 I do not consent
↳ IF answer to Question is Choice 2: skip to end of survey

[Definition]
Text For the purposes of our study, we will use the term "reusable cups" to encompass any mugs, cups, or containers which could hold a beverage purchased from a cafe or coffee house that does not include water (for example, coffee, tea latte, hot/cold/iced drinks).

[Benefits of Bringing Reusable Mugs]
Q1 Multiple Answer Question
What are your reasons for using a reusable cup at a cafe? (select all that apply)
Choice 1 To reduce environmental impacts
Choice 2 To keep the temperature of the drink
Choice 3 To avoid paying $0.25 single-use cup fee
Choice 4 To prevent spills and leaks
Choice 5 The size of mugs offered at cafes is not ideal
Choice 6 Because I like my own cup
Choice 7 Because of social norms (e.g., my friends use it)
Choice 8 I have never used a reusable cup
Choice 9 Other [text entry]

[Barriers to Bringing Reusable Mugs]
Q2 Multiple Answer Question
What are your reasons for NOT using a reusable cup at a cafe? (select all that apply)
Choice 1 The reusable cup is not clean
Choice 2 I don’t want to carry the cup around
Choice 3 I forget to bring one
Choice 4 It’s difficult to find facilities to clean reusable cups
Choice 5 Reusable cups are expensive
Choice 6 I don’t own a reusable cup
Choice 7 The environmental footprint of a reusable cup is too large
Choice 8 Other [text entry]

[Additional Question]
Q3 Do you have any additional insight on your experience of using reusable cups on UBC Vancouver Campus you would like to share?
Essay text box

[Demographics]
Q4 What is your gender?
Choice 1 Male

Choice 2 Female
Choice 3 Non-binary
Choice 4 Other
Choice 5 Prefer not to disclose

Q5 Which of the following groups are you?
Choice 1 Faculty
Choice 2 Undergraduate student
Choice 3 Masters student
Choice 4 PhD student
Choice 5 Staff
Choice 6 Not affiliated to UBC
Choice 7 Other

Q6 What is your age?
Text entry; content type limited to number

Q7 Regarding your political beliefs, would you consider yourself to be:
Choice 1 Liberal
Choice 2 Moderate
Choice 3 Conservative
Choice 4 Apolitical
Choice 5 Other

Q8 How many days in a week do you go to cafes/coffee-shops? (type in a digit, e.g., “3”
Text entry; content type limited to number

Appendix E

Figure E1

Reported Benefits of Using Reusable Cups

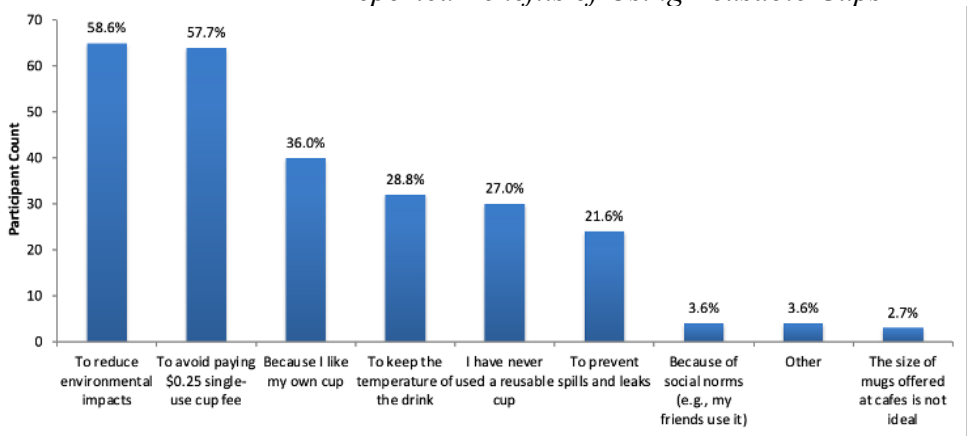
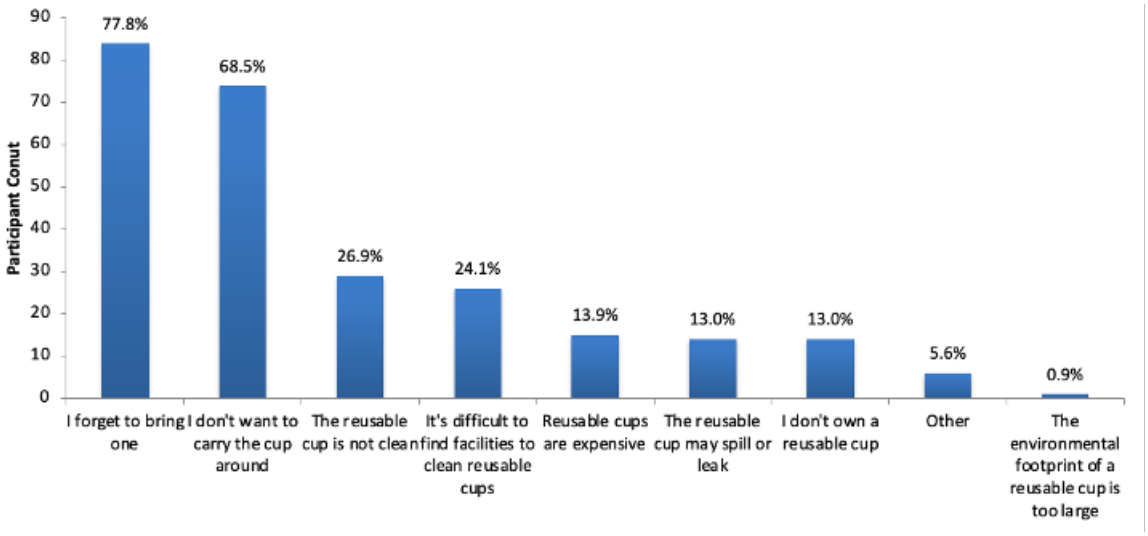


Figure E2

Reported Barriers to Using Reusable Cups



Appendix F: Study 1 Thematic Analysis Results

THEME	DESCRIPTION	
Practical Motivators	This theme is identified by factors that encourage people to act due to tangible, real-world advantages or benefits. This includes concrete benefits and motivators that lead individuals to use reusable cups which is reflected in their behaviour.	
Codes	*Description*	*Significant Statement Example*
Preferences and Personal Choice	Decisions and inclinations driven by subjective likes or dislikes, such as quality or aesthetics.	"To keep the temperature of my drink."
Economic Incentive	Avoiding the financial costs that accrue with disposable cups or viewing reusable cups as more cost-effective or economically advantageous.	"I think that charging a steep reusable cup fee would convince ppl to bring their own cups and therefore reducing the footprint."
Convenience	Use of reusable cups based on practical ease, cleanliness, efficiency, and increased personal opportunity.	"I used to fill up my water bottle with juice from the cafeteria from 1st year and drink it through the day. it was nicer times."
Practical Barriers	Practical barriers are obstacles that make it challenging for individuals to adopt and consistently use reusable cups. These barriers can deter individuals from using reusable cups because they introduce complications or extra steps that may be perceived as inconvenient or troublesome in their daily routines.	
Codes	*Description*	*Significant Statement Example*
Cleanliness Concerns	Reservations about the hygiene and sanitation of reusable cups and their usage	"…having to give a cup and have someone else handle it takes extra time and gets in the way of cleanliness."
Forgetfulness	The tendency of individuals to neglect to bring a reusable cup or the potential loss elsewhere due to a lapse in memory.	"Not personally, but the amount of water bottles left in classes is quite surprising some days. There's usually 1-2, but everyday is crazy."
Lack of Accessibility	Challenges obtaining or using reusable cups due to items such as purchasing costs, convenience, or difficulty in finding facilities that support their use.	"I haven't used reusable cups because I find that it's not very practical. Since we're not talking about water, having to give a cup and have someone else handle it takes extra time and gets in the way of efficiency."

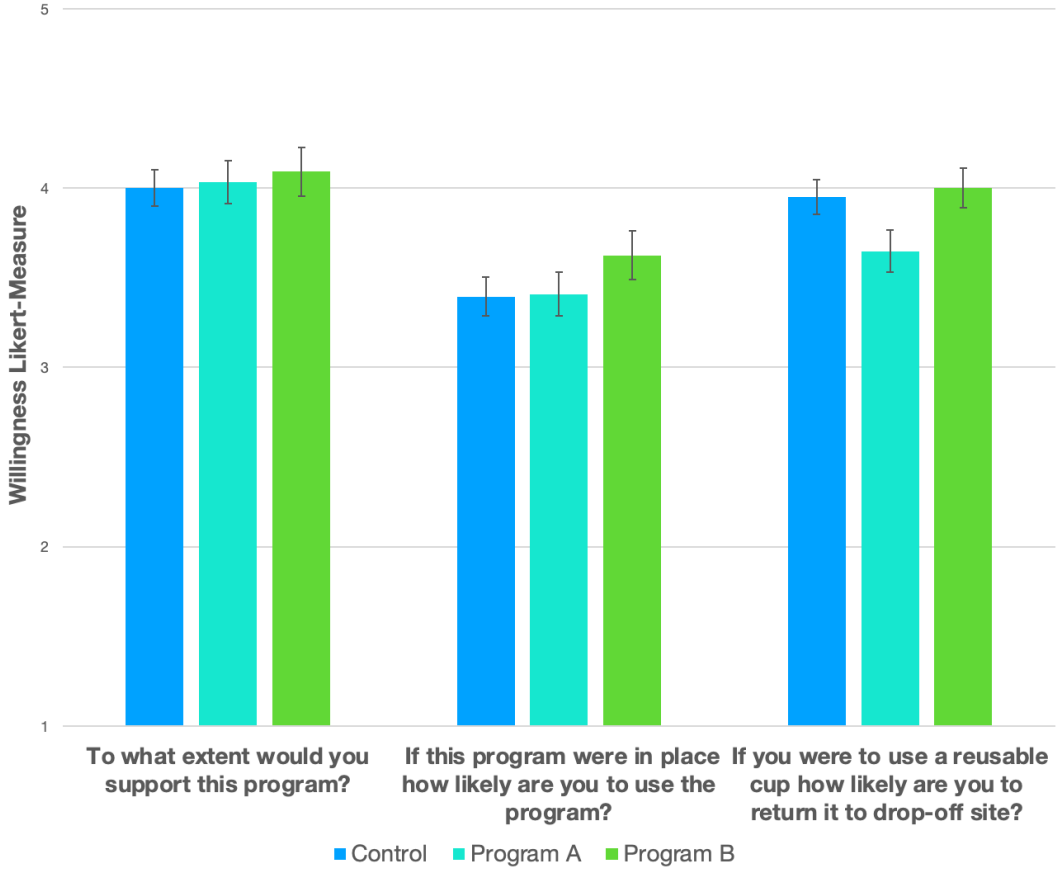
Cognitive Motivators	Cognitive motivators are internal drivers based on personal beliefs, knowledge, and attitudes that encourage individuals to use reusable cups. Cognitive motivators are connected to one's values of the ecological and social implications of their actions, as well as their preferences and habits.	
Codes	*Description*	*Significant Statement Example*
Environmental Awareness	Understanding and awareness of the ecological impact associated with reusable cups and disposable cup usage	"I think it's better to use reusable cups for the environment and for sustainability as well."
Social Norms	To follow societal expectations, practices, and standards regarding environmental consciousness, either to avoid shame or gain acceptance.	"It would be great if cafes stopped giving single use cups (like how stores stopped giving bags). It would force a change to happen, instead of "promoting" the change by charging a small cup fee."
Preferences and personal choice	Decisions and inclinations driven by subjective likes or dislikes, such as quality or aesthetics.	"Reusable cups are cool."

Cognitive Barriers	This theme is identified by mental roadblocks that stem from an individual's belief system, attitudes, knowledge, and habitual thinking patterns, which prevent them from adopting the use of reusable cups	
Codes	*Description*	*Significant Statement Example*
Environmental Cost	Concerns about the ecological impact associated with using reusable cups, such as their manufacturing.	"The environmental footprint of a reusable cup is too large."
Lack of Awareness	Limited knowledge or understanding of the environmental benefits and practical advantages of using reusable cups or disadvantages of using disposable cups. Lack of knowledge or understanding of where to access or how to use reusable cups.	"Some of the cafes don't know what to do with reusable cups but some of them clean it and give it to you"

Appendix G

Figure G1

Means of Measured Dependent Variables for Study 2



Appendix H: One-Way Analysis of Variance (ANOVA) Table

Table 1
One-Way Analysis of Variance

				Control		Program A		Program B	
Dependent Variable	$F(2, 254)$	p	η^2	*M*	*SD*	*M*	*SD*	*M*	*SD*
Support for Program	0.20	0.819	0.002	4.0	0.9	4.0	1.0	4.1	0.9
Likelihood to Use	1.15	.318	0.009	3.4	1.1	3.4	1.2	3.6	1.2
Likelihood to Return Cups	2.31	.102	0.02	4.0	1.2	3.6	1.3	4.0	1.0

Note. Type III Sum of Squares. Significant at $p < .05$ level.

Appendix I: Study 2 Thematic Analysis Results

THEME	DESCRIPTION	
Hygiene and Health Considerations	This theme encompasses responses related to concerns about general cleanliness, potential contamination, bacterial spread, and disease transmission associated with shared cup usage. The sentiment shared amongst participants suggests that the perceived level of effort needed to maintain hygiene standards could influence the adoption and consistent use of reusable cups.	
Codes	*Description*	*Significant Statement Example*
Hygiene Concerns	Concerns surrounding the cleanliness of reusable cups, including ease of maintenance, exposure to germs, and adequacy of washing facilities.	"Having seen how poorly the green to go containers and mug share cups are washed/treated while in people's possession, I'm hesitant to use them in the future."
Concerns About Implementation and Practicality	This theme encompasses responses related to concerns about the feasibility, effectiveness, and practicality of implementing a reusable cup program on campus. Participants express worries about various logistical aspects, including cup design, drop-off accessibility, the incentive to return reusable cups, and the overall feasibility of the program in encouraging sustainable behaviour.[f1]	
Codes	*Description*	*Significant Statement Example*
Cup Design Concerns	Issues related to the design of reusable cups, including usability, aesthetics, and functionality.	"I think the term "shared" especially for a cup that would be having physical contavt with several individuals doesn't appeal despite it'll be clean or not. Though the intention seems pretty cool."
Drop-off Site Accessibility	Concerns about the accessibility and convenience of drop-off locations for returning reusable cups.	"Sounds like a great idea but not a lot of people will put in the effort to go and return the cup to a designated place. Maybe some sort of cup drop boxes placed around the campus so whenever you are done using it you can drop it at one of the boxes. That way you don't have to specially go there."

Environmental Impact	Concerns about the ecological consequences of manufacturing and disposing of reusable cups.	"I think people are busy and they will not likely to drop off their reusable cups, which cause worse environmental issue."
Incentive to Return	Concerns about the potential theft or unauthorized removal of reusable cups, emphasizing the need for deposit systems or incentives to encourage their return	"I think it's a good idea, but I would recommend having as many drop-off sports as possible to encourage people to give them back (and maybe some sort of incentive)."
Personal Responsibility	Emphasis on individual accountability and responsibility in using personal reusable cups.	"I think people should be bringing their own reusable cups."
Additional Insights	Supplementary information provided by participants including ideas and perspectives extending beyond the themes of the study.	"Increase motivation to participate by increasing the tax of single-use containers."