

University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

# The Birds and The Beans: Does National Identity Breed Coffee Purchasing Decisions

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Prepared for:

Course Code: PSYC 421

University of British Columbia

Date: 13 April 2021

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## **Executive Summary**

Bird Friendly Coffee (BFC) protects birds and other biodiversity, including Canadian migratory birds. In this study, we hoped to implement a disclosure nudge in our coffee cup design to inform consumers about the benefits of BFC on birds. Specially, we asked if national identity could influence the effects of our disclosure nudge, on purchasing decisions of Bird Friendly Coffee. We hypothesized that people who identify more as Canadian would be more likely to purchase Bird Friendly Coffee when labelled adjacent to a Canadian national identity (i.e. with a Canadian flag). We created a between-subjects survey to test participants' willingness to pay, likeliness to purchase, and how much they believed Bird Friendly Coffee helped birds when presented with disclosure nudges in any of the Canadian, control, or Peruvian conditions. Additionally, we used existing verified measures to determine participants' National Identity. Insignificant results were reported in all of our MANOVA, ANOVA, ANCOVA, and correlation tests. Therefore, our finding was not able to support our hypothesis that stronger Canadian national identity would positively correlate with preferences for BFC when presented with a Canadian disclosure nudge. However, further research could be amended by increasing the sample size.

## **Introduction**

Our clients at the UBC SEEDs sustainability program are interested in making UBC a Bird Friendly coffee (BFC) campus. BFC is certified by the Smithsonian's National Zoo & Conservation Biology Institute (SCBI) to promote shadow growing coffee, which advocates biodiversity and ethical farming. Although BFC farms are absent in Canada, Canada has experienced a great loss of migratory birds since many of them travel to places in South America, where coffee farms are prevalent, during the winter months (NABCI, 2019; SCBI, 2019). Our goal was to test a potential way BFC could be advertised to consumers in order to increase the likelihood of purchase.

Disclosure nudges are to present decision-relevant information in an explicit way and ensure consumers are aware of the salient information prior to purchase (Sunstein, 2014). We wanted to implement a disclosure nudge in our coffee cup design to inform consumers about the benefits of BFC on birds. However, we were also interested in how to maximize the impact of the disclosure nudge on our intended demographic sample. We conducted research on potential psychological insights that we could apply to our study. A consumer behaviour study conducted in both Slovenia and Austria showed that national identity had a strong correlation with preferences for domestic products (Zeugner-Roth et al., 2015). This was a strong inspiration for the study as the same correlation could possibly be remodeled into a smaller UBC setting. A further study presented that 77% of Romanian participants preferred domestic over foreign organic food products (Bojnec et al., 2019). This demonstrates how national identity and veins of psychology adjacent to it are key factors in deciding purchasing factors. All of these studies touched on topics such as social identity theory, and national identity having a positive influence on the in-group bias. The idea of belonging to a certain social group can create a strong emotional attachment to that group and symbols associated with it. As was seen in Zeugner-Roth et al.'s study these feelings of in-group bias can even be observed at a subconscious level leading to selective purchasing behaviours. Verlegh (2007) built on social identity theory in their study and suggested that in-group bias towards one's home country could lead to economic motivation. From this research, we decided to test if using national identity as part of our disclosure nudge design would be a more effective way of influencing customer purchasing behaviour compared to a more generalized disclosure of how BFC helps birds.

## **Research Question and Hypothesis**

For our primary research question, we asked if national identity could influence the effects of our disclosure nudge, on purchasing decisions of Bird Friendly Coffee.

We hypothesized that people who identify more as Canadian will be more likely to purchase Bird Friendly Coffee when labelled adjacent to a Canadian national identity (i.e. with a Canadian flag).

## **Methods**

### **Participants**

The initial power analysis suggested 111 participants would be needed for all 3 conditions of our study (power 0.8, effect size 0.3 and  $\alpha$  0.05). 112 survey results were collected in the end.

The gathered demographic information indicated that the majority of our participants are heavy coffee drinkers and do not have an affiliation with UBC. Our participants mostly consist of young adults with a mean age of 22 years old.

## Conditions

There are three conditions set up for this experiment, one control condition and two experimental conditions, Canada and Peru. The Peruvian condition was chosen in conjunction with the others to observe whether labelling coffee towards random countries rather than no country (in the control) could cause a positive relationship rather than the effect coming from specific countries that aligned with participants' national identity scores.

In each condition, coffee cups with different images and texts are shown. Canadian and Peruvian emblems were chosen rather than flags due to the similarities between the two countries' flags (Appendix A). However, the image of the bird was controlled in all three conditions, because the chosen bird- Canadian warbler is both present in Canada and Peru (Nature Canada, 2019). There are 3 conditions of possible disclosure nudges in total:

- *Control condition*: A picture of a plain coffee cup is shown with a picture of the world, meant to have no country bias, with text saying "Help Save the Birds"
- *Canadian condition*: A Coffee cup with images associated with Canada including a red maple leaf, with text saying "Help Save Canadian Birds".
- *Peruvian condition*: A Coffee cup with images associated with Peru including the Peruvian coat of arms, with text saying "Help Save Peruvian Birds".

Our independent variable was the different coffee cup designs (different examples of disclosure nudges) in our three conditions. We wanted to see how getting one cup over the other would impact participants' responses to the dependent variable questions. To further evaluate our hypothesis that national identity can play a role in who is more susceptible to the disclosure nudge of the Canadian cup, we also included previously validated questions that measured the strength of national identity in our survey (Zeugner-Roth et al. 2015). Zeugner-Roth et al. explained that they found little disagreement in the literature on the measurement of national identity, so they used similar measure items as previous researchers.

## Measures

Our dependent variable was how the participants responded to these three questions after being shown one of the three coffee cup designs:

- How likely are you to purchase this cup of coffee compared to a standard cup of coffee of the same size?
- How much are you willing to pay for this cup of coffee compared to a standard \$4 cup of coffee of the same size?
- To what degree do you think that purchasing Bird Friendly Coffee will help save Canadian birds impacted by coffee farming?

These dependent variable questions were created by the authors of the study in an attempt to measure overall consumer behaviour. The three questions were found to be autocorrelated which supports the idea that they are measuring a common phenomenon.

The aforementioned measure of national identity was a correlate that was used in our data analysis. Our hypothesis is based on the effect that the Canadian identity correlate will show the participants' motivation in the purchase of Bird Friendly Coffee under the three conditions. To test this, we used Zeugner-Roth et al.'s (2015) previously validated national identity measure in our

data analysis. We worded the measures to specify a Canadian national identity to fit our study. This was done without changing the structural components of the questions. We found that these four national identity questions were also autocorrelated.

## **Procedure**

To conduct our research, we created a survey on UBC Qualtrics containing six blocks. The first block was for the consent form, the second, third and fourth blocks were for the three different experimental conditions, before each condition we included the same short description of what BFC was for context. We used the Qualtrics Randomizer for the distribution of the experimental conditions to participants. The fifth block was for our questions on national identity and the sixth block contained some demographics questions. In total each participant had 11 questions to answer on the survey, not including giving consent. Three of the questions were from the experimental block, four were from the national identity block and four were from the demographics block.

Questions 1 and 3 in the experimental block, for all three conditions, were measured with a 5-point Likert scale. The scales ranged from 1 being most likely to purchase/believe the purchase will help birds a great deal, to 5 being not at all likely to purchase/believe the purchase of the coffee will not help birds impacted by coffee farming at all. Question 2 was measured by a text entry response where the participant had to enter a number between 0 and 8, representing the number of dollars they would be willing to pay for the cup of coffee. All four questions in the national identity block had a 7-point Likert scale format, ranging from 1 being “strongly agree” to 7 being “strongly disagree”. In the demographics block, we asked about age (text entry), affiliation with UBC (multiple choice), whether or not they were a coffee drinker (multiple choice), and how many days out of the week they drank coffee (text entry).

In order to collect data, we contacted people we knew asking them to complete to survey after which we provided them with the link. The study ran for about 4 weeks in February and March of 2021.

There were no challenges that were encountered while distributing or conducting the survey. The survey was short which acted as an incentive and that helped with the collection process. Furthermore, the demographics and sample we were analyzing were not strict and therefore finding able participants was very simple.

## **Results**

By using the randomizer in Qualtrics, we obtained 35 participants in the Canadian condition, 43 participants in the control condition, and 34 participants in the Peruvian condition among 112 participants that we recruited. The mean for the purchase likelihood was 3.200 for the Canadian condition, 2.767 for the control condition, and 2.941 for the Peruvian condition. The mean for the willingness to pay was 4.257 for the Canadian condition, 4.395 for the control condition, and 4.618 for the Peruvian condition. In addition, the mean for the variable of helping birds was 3.371 for the Canadian condition, 3.140 for the control condition, and 3.382 for the Peruvian condition. The differences between means of the dependent variables across conditions were also shown through the shape of plots in figure B1. However, these differences were not informative to support our evidence unless they are statistically significant.

A MANOVA test was first generated to compare the differences between three condition groups on the three dependent variables. A p-value of 0.587, much larger than our chosen alpha value 0.05, was reported through the MANOVA-Pillai test. Besides the MANOVA test, three

separate ANOVA tests were conducted on each of the dependent variables. A p-value of 0.307 was obtained from the ANOVA test on purchase likelihood; a p-value of 0.546 was determined from the ANOVA test on willingness to pay, and a p-value of 0.464 was reported through the ANOVA test on the variable of helping birds. All of these p-values were also larger than the alpha value of 0.05, which implied that no significant differences were found across three conditions in any of the three dependent variables.

Because of our specific interest in the relationship between Canadian identities and the three dependent variables, we conducted a series of ANCOVA tests to compare the results from each dependent variable by controlling Canadian identities reported by participants. Before conducting the ANCOVA tests, a Pearson's correlation test was performed to measure the correlation between the four Canadian identity questions. Strong positive correlations, ranging from 0.76 to 0.90, were found between any two of the four Canadian identity questions with p-values less than 0.001. Therefore, these four measurements were grouped together for Canadian identities in the ANCOVA tests. All of the p-values across three conditions and p-values across Canadian identities were reported to be greater than 0.05 (Table B1). In order to exclude any biases from the demographic questions, we then conducted a similar sequence of ANCOVA tests by controlling Canadian identity, age, and if participants were coffee drinkers. In all three conditions, all p-values reported were greater than the alpha value of 0.05 (Table B2), which suggested that no significant differences were found across conditions even after controlling participants' ties with their Canadian identities.

To understand our research question better in addition to the ANCOVA tests, a sequence of Pearson's correlation tests was conducted to test the specific relationship between each of the dependent variables and Canadian identity measurements across three conditions. Very small correlation coefficients (r values) were reported from all nine tests, ranging from -0.2 to 0.2 (Table B3). Most importantly, all of the correlation coefficients were larger than 0.05, which implied that no significant correlations were found between any of the three dependent variables and Canadian identity measurements across conditions. Connecting the correlation results back to our previous MANOVA, ANOVA, and ANCOVA results, we can conclude that our results did not support our hypothesis, and this would be further explained in the discussion section.

Besides the major results reported above, we also conducted a Pearson's correlation test over the three dependent variables. A weak to moderate correlation of 0.457 with a p-value less than 0.001 was reported between the variable of purchase likelihood and the variable of helping birds. A negative weak correlation (-0.306) with a p-value of 0.001 was found between the variables of willingness to pay and helping birds. Similarly, purchase likelihood was negatively correlated (-0.396) to the variable of willingness to pay with a p-value less than 0.001.

## **Discussion**

Based on the final results from the study we can conclude that we found no significant difference between the national identity of a participant and any of our measures that were used. Even when demographic information was controlled for in the ANCOVA test, no significant result was found between Canadian national identity and the results of the three conditions and their measures. Similarly, none of the correlation coefficients between the three dependent variables and Canadian identities were significant, and we did not find any pattern across conditions. This means that having a high sense of national identity (in this case for Canada) does not significantly influence the person's likelihood to purchase the cup of coffee, how much they would spend on it,

or how much they think buying that coffee will actually help birds. This would suggest that including national identity in disclosure nudge that we explored in our study would not be an effective way to promote Bird Friendly coffee or influence potential Bird Friendly Coffee buyers' purchasing decisions. Although our main findings in the context of our hypothesis were all insignificant, we found a negative but relatively weak correlation between the dependent variable of "willingness to pay" and the other two dependent variables, which suggested participants who are more likely to purchase BFC coffee and recognize its importance for the birds might not be willing to pay for a higher price.

There are some limitations to our study. Due to the limited range and scope of the sample size, the average age of participants was 22 years old and mostly university students. This could affect the monetary means to which someone at that age is able to afford coffee that may be perceived as more expensive due to the Bird Friendly label, or less experience buying and pricing coffee products especially in bean form. This could also explain the negative correlation we found between "willingness to pay" and the other two dependent variables. The lower education and awareness surrounding the issues of environmental conservation and general domestic and non-domestic bird knowledge is a further limitation of having a younger participant sample, which could mean that answers were particularly biased towards specific age groups and knowledge bases. Both of these limitations are critical to underscore due to the implications they have on the sample we used. We conducted a posthoc test through G-power by using the effective size of 0.02 obtained from earlier ANOVA tests. The posthoc test showed that the achieved power in our study was 0.05, which was much smaller than our power assumption of 0.80 while calculating participants to recruit during the priori power analysis (fig. B2). It means that if anyone were to repeat our study, they would need to recruit substantially more participants in order to find a significant result, and further expansion of this sample could prove critical to receiving better results in future studies.

## **Recommendations**

While our study did not receive any statistically significant results, what was learnt from conducting the study should prove useful to UBC and UBC clients in further analyzing Bird Friendly Coffee at UBC. Newell (2014) suggested that if we let "failed" nudges sit at the bottom of the file drawer then no one would learn from them. He also suggested that the difference in design between a successful and a failed nudge could be very small sometimes. We would recommend that clients possibly do further exploration of National Identity with Bird Friendly Coffee with the appropriate changes made to the experimental design. We believe that while we were unable to support our hypothesis, that this is a rich topic that can be further explored to provide useful data. This could be achieved through further fine-tuning of our original design and possible pilot studies to better explore the relationship between the measures and the selected conditions. Furthermore, we would recommend that the sample size be significantly altered if this study was to be repeated or improved upon. Based on our posthoc effect size it becomes clear that a greater sample size would be required to observe any effect in our current study. Including a wider sample would vastly improve the study's results and possibly find effects in the condition's interactions with age, education, and awareness as previously hypothesized. This could also be achieved if the study was specifically tailored to UBC students and faculty if the clients wished to continue to explore Bird Friendly Coffee in an explicitly UBC context.

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# Appendix A: SURVEY

Link: [https://ubc.ca/qualtrics.com/jfe/form/SV\\_eKFolrgxyiSbDDM](https://ubc.ca/qualtrics.com/jfe/form/SV_eKFolrgxyiSbDDM)

Bird Friendly Coffee comes from farms using a combination of foliage cover, tree height and biodiversity to provide quality habitat for birds and other wildlife. This statement comes from the Smithsonian's National Zoo and Conservation Biology Institute.

Below is a cup of Bird Friendly Coffee.



How likely are you to purchase this cup of coffee compared to a standard cup of coffee of the same size?

- Extremely likely
- Very likely
- Moderately likely
- Somewhat likely
- Not at all likely

How much are you willing to pay for this cup of coffee compared to a standard \$4 cup of coffee of the same size? Please enter a number between 0 and 8 (the number represents the dollars you are willing to pay).

To what degree do you think that purchasing Bird Friendly Coffee will help save Canadian birds impacted by coffee farming?

- A great deal
- A lot
- A moderate amount
- A little
- None at all

## Canada Condition

Bird Friendly Coffee comes from farms using a combination of foliage cover, tree height and biodiversity to provide quality habitat for birds and other wildlife. This statement comes from the Smithsonian's National Zoo and Conservation Biology Institute.

Below is a cup of Bird Friendly Coffee.



How likely are you to purchase this cup of coffee compared to a standard cup of coffee of the same size?

- Extremely likely
- Very likely
- Moderately likely
- Somewhat likely
- Not at all likely

How much are you willing to pay for this cup of coffee compared to a standard \$4 cup of coffee of the same size? Please enter a number between 0 and 8 (the number represents the dollars you are willing to pay).

To what degree do you think that purchasing Bird Friendly Coffee will help save Peruvian birds impacted by coffee farming?

- A great deal
- A lot
- A moderate amount
- A little
- None at all

## Peru Condition

Bird Friendly Coffee comes from farms using a combination of foliage cover, tree height and biodiversity to provide quality habitat for birds and other wildlife. This statement comes from the Smithsonian's National Zoo and Conservation Biology Institute.

Below is a cup of Bird Friendly Coffee.



How likely are you to purchase this cup of coffee compared to a standard cup of coffee of the same size?

- Extremely likely
- Very likely
- Moderately likely
- Somewhat likely
- Not at all likely

How much are you willing to pay for this cup of coffee compared to a standard \$4 cup of coffee of the same size? Please enter a number between 0 and 8 (the number represents the dollars you are willing to pay).

To what degree do you think that purchasing Bird Friendly Coffee will help save birds impacted by coffee farming?

- A great deal
- A lot
- A moderate amount
- A little
- None at all

## Control Condition

Please indicate how much you agree or disagree with each statement below.

I feel strong ties with Canada.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I see myself as Canadian.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

I am glad that I am Canadian.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Being Canadian is important to me.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

## National Identity Measures

## Appendix B: DIAGRAMS, TABLES, AND FIGURES

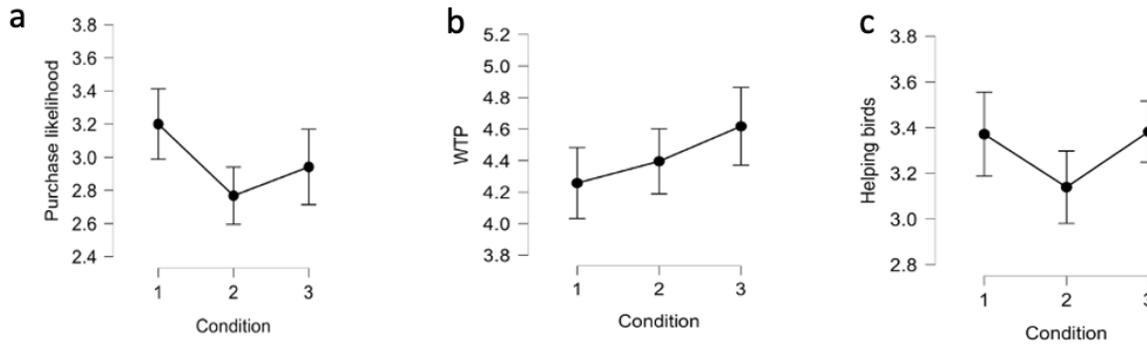


Figure 1. (a) Plot on the most left side, showing the mean results of purchase likelihood across three conditions. (b) Plot in the middle, showing the mean results of willingness to pay across three conditions. (c) Plot on the most right end, showing the mean results of helping birds across three conditions. Condition 1 corresponds to the Canadian condition, Condition 2 corresponds to the control condition, and Condition 3 corresponds to the Peruvian condition.

Dependent variables	P value (conditions)	P value (Canadian identity)
Purchase likelihood	0.259	0.169
Willingness to pay	0.503	0.697
Helping birds	0.452	0.304

Table 1. The summary of p-values from the ANCOVA test. The ANCOVA test was conducted to test the differences across three conditions (Canadian, control, and Peruvian) on each of the three dependent variables after controlling Canadian identity answers. All p-values obtained were greater than the chosen alpha value, 0.05.

Dependent variables	P value (condition)	P value (Canadian identity)	P value (age)	P value (coffee drinking frequency)
Purchase likelihood	0.235	0.384	0.158	0.535
Willingness to pay	0.345	0.254	0.128	0.406
Helping birds	0.937	0.144	0.135	0.395

Table 2. The summary of p-values from the ANCOVA test. This ANCOVA test was conducted to test the differences across three conditions (Canadian, control, and Peruvian) on each of the three dependent variables after controlling answers for Canadian identity, age, and frequency of coffee consumption. All p-values obtained were greater than the chosen alpha value, 0.05.

Correlation	Condition	Pearson's r	P value
Purchase likelihood and national identity	Canadian	0.111	0.532
	Control	0.206	0.192
	Peruvian	0.078	0.666
Willingness to pay and national identity	Canadian	-0.262	0.141
	Control	0.022	0.891
	Peruvian	-0.262	0.141
Helping birds and national identity	Canadian	0.237	0.178
	Control	-0.037	0.818
	Peruvian	0.172	0.338

Table 3. The summary of correlation coefficients (r) with their p-values from a sequence of Pearson's correlation tests. The correlations between each of the three dependent variables (purchase likelihood, willingness to pay, and helping birds) and Canadian identity measurements were tested across all three conditions (Canadian, control, and Peruvian). All correlation coefficients reported were larger than the chosen alpha value, 0.05.

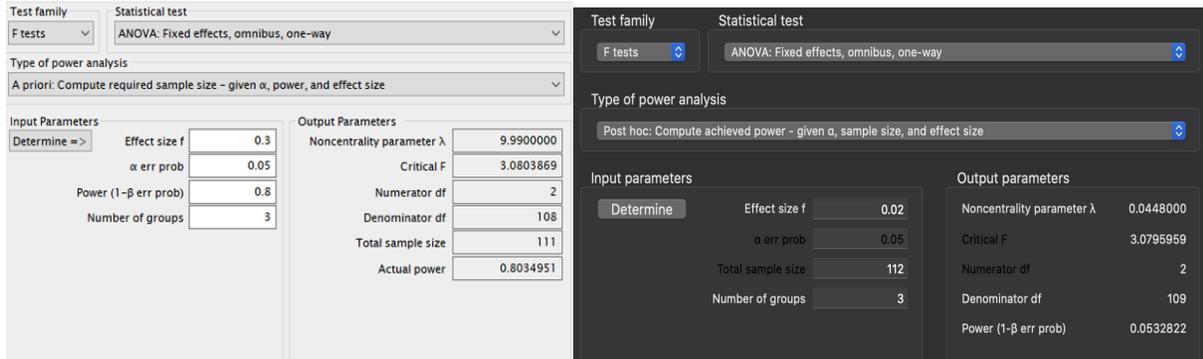


Figure 2. a) Figure on the left showed the set up for the priori power analysis for our study. An effect size of 0.3 and a power of 0.8 was assumed. 111 participants were obtained. b) Figure on the right showed the result from the post-hoc test. By using the effective size (0.2) and sample size (112) from our study, we obtained a power of 0.05.

## **Appendix C: GROUP MEMBER CONTRIBUTIONS**

### **Andong Cao**

- Proposal:
  - Edits and contributions in documents
- Survey:
  - Contributed on survey editing and formatting
  - Helped with the survey questions
- Presentation:
  - Edited the introduction page and presented research questions and hypothesis
- Final Report:
  - Worked on the introduction part
  - Background literature check and drew on broader papers
  - Explained psychological insights from the papers
  - Help with the development of executive summary

### **Jackson Bird**

- Proposal:
  - Contributed across the entire document, edited
  - General brainstorming for experimental design, conditions, etc
  - Focused on measures and anticipated outcomes sections
  - Completed all references and citations.
- Survey:
  - Contributed in the creation and discussion of all questions and conditions.
  - Helped to distribute the survey
  - Organized and structured all of the survey (flow, testing on mobile and desktop)
- Presentation:
  - Helped design and edit the slides. Helped to organized and added graphics
  - Focused on the recommendations and participants sections
  - Narrated recommendations section
- Final Report:
  - Helped to edit and organize across all sections of the report
  - Focused on the discussion, recommendations, introduction, and executive summary sections
  - Did the references page (formatting for APA, organization). Copied the survey to the appendix.
  - Formatted the entire report for APA style.
- Created a Discord server for the group to be able to communicate outside of Zoom.
- Organized times to meet to work on the assignments outside of class time

### **Joy Du**

- Proposal:
  - Contributed to all parts of the proposal
  - Especially helped with:
    - the power analysis
    - Conducting initial background literature review and writing the section

- Conducting initial review on psychological insights
- Survey:
  - Contributed to the creation and the design of the survey
  - Helped with the distribution of the survey
  - Download and analyzed the raw survey results
- Presentation:
  - Found the slide deck template for the presentation
  - Worked on the result section in the presentation (including writing the script and presenting)
  - Gave ideas to other sections, e.g. the flow of the introduction
  - Helped with formatting
- Report:
  - Worked on summary and results section in the final report
  - Conducted statistical tests in JASP (ANOVA, MANOVA, ANCOVA, correlation tests)
  - Analyzed and graphed all of results
  - Made suggestions and edits to all other sections of the report
  - Connecting to literature and adding references
  - Helped with formatting
- Other:
  - Communicated with the professor and TAs about questions and challenges that we encountered during the project

### **Connor Zhou**

- Proposal:
  - gave ideas during the conception of this study. Especially on how the conditions will be set and choosing the independent/dependent variable.
  - Helped in coming up survey questions.
  - Doing several literary research on the field of Bird Friendly Coffee and studies related to our topic
  - Contributed in the Research Question, Psychological Insight and Method sections of the proposal.
- Survey
  - Contributed in the initial design of the survey
  - Helped distributing the survey
- Presentation:
  - Worked on the slides for Method, Condition and Measures section
  - Narrated Method and Condition section during the presentation.
  - General editing and designing of the presentation slides
- Final Report:
  - Worked on Methods and Measures sections in final report/presentation
  - Coming up meaningful summaries of the survey question answers to incorporate into the final report
  - Edits and contributions in documents, added comments helped others editing their own respective sections.

## **Beatriz Barddal Fantini**

- Proposal
  - Brainstormed ideas for the project, did a lot of research of how we could apply psychological insights and came up with the idea that we ended up using about national identity's potential impact on purchasing decisions
  - Found previously validated National Identity measures from Zeugner-Roth et al.'s paper that we could implement into our project
- Survey
  - Used Cup Print website software to design the three cups for our different conditions.
    - Researched and decided on what bird to use on the cups
    - Used draft cup designs used for proposal made by joy as inspiration
  - Helped decide what type of questions to include in the survey (multiple choice, text box, etc.)
  - Helped distribute the survey
  - Kept track of how we were doing with responses and updated group accordingly
- Presentation
  - Worked on measures and implications section in presentation
  - Wrote script and narrated measures and implications section in the presentation
- Final Report
  - Worked on Method and Introduction section in final report
    - Wrote measures and procedure section
    - Co-wrote conditions section
    - Wrote a good part of the introduction explaining our project and how it tied in with the literature that we had read
  - Conducted statistical tests in JASP (ANOVA, MANOVA, ANCOVA, correlation tests)
  - Edits and contributions in documents