

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Affective influence of injunctive messaging on donation behaviour

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Executive summary

We investigated how affect influences the relationship between injunctive and descriptive norms and pro-environmental behaviour. We predicted that positive injunctive norms would induce positive affect; that negative injunctive norms would induce negative affect; and that both positive and negative norm-induced affect would increase pro-environmental behaviour. We presented UBC students ($N = 156$) with the NRS-6, a sustainability measure, then randomly assigned participants to receive a sustainability score comparing them to other UBC students in one of three conditions. The neutral condition consisted of a descriptive message indicating that the participant's score was about average among UBC students, the negative condition consisted of a negative injunctive and descriptive message, and the positive condition consisted of a positive injunctive and descriptive message. We then assessed our dependent variable by asking participants how much they would be willing to donate to the UBC SEEDS sustainability program as a measure of pro-environmental behaviour. No significant differences in donation behaviour were found between conditions. However, we found that those assigned to the negative condition donated slightly more - and experienced significantly less shame - compared to both the positive and control group. We propose a dignity restoration effect by which shame-inducing injunctive norms can induce pro-environmental behaviour.

Affective influence of injunctive messaging on donation behaviour

Past research establishes a relationship between injunctive and descriptive norm messages and pro-environmental behaviour change^{1,2}; however, we lack an understanding of the mechanism by which injunctive messages influence this behaviour. One promising avenue may be through social desirability: Injunctive messages convey a degree of social judgement^{2,3} which can induce heightened positive or negative affect⁴, such as shame and pride which themselves stem from social desirability. Furthermore, various positive and negative emotional responses have been shown to influence pro-environmental behaviours^{6,7,15,16} and public response to climate change policy¹⁷. For example, Chatelain and colleagues⁶ suggest that inducing positive affect has an ameliorating effect in the decrease of reoccurrence in pro-environmental behaviour and increases the likelihood of doing a second pro-environmental deed. Moreover, Schneider and colleagues¹⁴ have specifically shown how making salient anticipated pride (vs. anticipated guilt) can increase pro-environmental decision making, such as in various consumer decisions. In addition to this, much of previous literature has focused on the influence of shame. Panagopoulos⁵ for example, suggests that shame may be more effective than pride on average, as he found that while pride motivates only high-propensity voters, shame mobilizes both high and low-propensity voters. Amatulli et al¹⁹ strengthens this notion as they suggest that negatively-framed messages are more effective than positively framed ones in prompting consumers to engage in pro-environmental behaviours. More importantly, they report finding that anticipated shame is the emotion responsible for the effect. Roeser¹⁸ emphasizes particularly for the effectiveness of using emotional strategies to engage people with climate change as opposed to presenting them with statistics. Despite this, no research has directly addressed the intersection of affect on the relationship between injunctive and descriptive norm messaging and pro-environmental behaviour.

Research Question and Hypothesis

How does affect influence the relationship between injunctive and descriptive norm messaging and pro-environmental behaviour? To explore this research question, we proposed two hypotheses. We firstly hypothesized that injunctive and descriptive norms would influence pro-environmental behaviour. We secondly hypothesized that the injunctive and descriptive norms' impact on pro-environmental behaviour is influenced by affect. Specifically, we hypothesized that positive injunctive norms would induce positive affect; that negative injunctive norms would induce negative affect; and that both positive and negative norm-induced affect will influence injunctive and descriptive norm messaging and pro-environmental behaviour.

Methods

Participants

We first ran a pilot study with $N = 9$ UBC students (4 male, 4 female, 1 queer) selected by convenience sampling from the AMS NEST building. Initially, we used the original Nature Relatedness Scale (NRS)⁸. However, for the main study, we decided to use the NR-6 instead of the NRS to shorten the length of the study whilst maintaining a valid scale for measuring baseline sustainability. Our main study's participants were $N = 156$ UBC students (67 male, 88 female, 1 other) selected by convenience sampling from the AMS NEST ($n = 78$) and UBC LIFE ($n = 78$) buildings at the UBC Vancouver Campus between March 6th and 22nd, 2019. All participants consented to participation in the study.

Measures

Nature Relatedness Scale (NR-6)⁹ Short Form. Participants were given a 6-item questionnaire measuring their connectedness to nature. The NRS-6 has also been shown to correlate with sustainability, especially with the desire for environmental action⁹.

Willingness to Donate (Dependent Variable; DV). Participants were asked how much they were willing to donate to the UBC SEEDS Sustainability Fund using a six-point Likert scale ranging from \$0 to \$10.

Scale of Positive and Negative Affect (SPANE)¹⁰. Participants were asked to complete a 14-item SPANE to assess their positive and negative affect. We modified the original scale to include: “Ashamed” and “Proud” to measure shame and pride.

Conditions

After presenting participants the NR-6 as a sustainability test, we manipulated the normative sustainability score that participants believe they received (Independent Variable; IV) by randomly assigning participants into one of three conditions. In the positive condition ($n = 54$), participants were given a descriptive norm message that their sustainability score was higher than the average score of most UBC students. This descriptive-norm message was accompanied by an injunctive message with a positively-valenced emoticon: a plain smiley face. In the negative condition ($n = 50$), participants were given the descriptive-norm message that their sustainability score was lower than the average score of most UBC students. This message was accompanied by a negative injunctive message: a plain sad face emoticon. In the third (neutral) condition ($n = 51$), participants were given a message that their sustainability score was about the average score of most UBC students. This message was not accompanied by an injunctive message.

Procedure

We approached participants and asked them if they would be interested in completing a sustainability survey for a Psychology course on an iPad or a laptop. After reading and accepting the consent form, participants were presented with the short-form Nature Relatedness Scale (NR-6)⁹. To help participants believe that their NR-6 scores were being calculated, they were then presented with a loading icon gif for three seconds. The next screen displayed a randomly assigned sustainability score from one of three conditions, which was either “Higher than average” (positive), “Lower than average” (negative) or “Average” (neutral), presumably compared to the sustainability scores of other UBC students. We also presented participants in each condition with either a smiley face for the positive (descriptive and injunctive) condition, sad face in the negative (descriptive and injunctive) condition, or no face at all for the neutral condition. On the next screen, we asked participants to indicate how much were they willing to donate to the UBC’s SEEDS Sustainability program. We then presented our modified Scale of Positive and Negative Affect (SPANE)¹⁰ and concluded with a demographic survey and a debrief page which was accompanied by a verbal debrief from the experimenter (in which they were informed of the deception caused by the randomly assigned sustainability score results).

Results

Among the 156 participants who completed the survey, 52 participants were randomly assigned to the positive condition, 48 participants to the negative condition and 49 to the neutral condition. We started conducting manipulation checks after 44 participants to evaluate whether participants remembered their sustainability score. Overall, our check suggests that participants did significantly remember their sustainability score, $t(108) = 12.08, p < .01, r = 0.76$.

Point-biserial correlations were used to examine whether donation intention was correlated with gender or survey location. As Table 1 suggests, gender was significantly correlated ($r_{pb} = -0.23, p = 0.004$) with donation intention, where female participants reported higher donation intention ($M = 4.39, SD = 0.15$) than male participants ($M = 3.67, SD = 0.20$). However, since participants were randomly assigned to all three conditions, gender was not accounted for in later tests. There was no significant relationship between the location of the survey and donation intention ($r_{pb} = 0.04, p = 0.60$).

Affect was separated into three factors: positive and negative affect, shame, and pride. Positive and negative affect was calculated using the unmodified 12-item SPANE¹⁰, with possible score ranging from -24 to 24. Larger numbers represent more positive affect whereas smaller numbers represent more negative affect. Shame and pride were both calculated using one-item subscale that were asked similarly to the other measures in SPANE, and asked participants how often they felt ashamed or proud respectively in the last four weeks. Scores ranged from (1) Very rarely or never to (5) Very often or always.

A one-way ANOVA was used to examine the differences in intention to donate (DV) and the differences in affect between the three conditions (IV). As Table 2 suggests, donation intention and the emotion pride did not differ significantly between the three conditions. Although we only observed a marginally significant effect of the negative injunctive message on positive affect as measured on the SPANE, there was a significant difference in the emotion shame between the three groups. A post-hoc Tukey's test suggested that although the neutral and positive conditions did not differ significantly, both the positive ($p = 0.04$) and neutral condition ($p = 0.05$) reported significantly more shame than the negative condition (see Figure 1). Despite this, another Post-hoc Tukey's test also found that the negative condition reported higher positive affect than both positive ($p = 0.06$) and neutral conditions ($p = 0.45$), whilst the positive condition reported less positive affect than the neutral condition ($p = 0.53$).

Pearson's correlation was used to test the relationship between affect and intention to donate. As table 2 suggests, there was no significant difference in all correlations (positive affect, $p = 0.65$; shame, $p = 0.53$; pride, $p = 0.40$). In addition, Pearson's correlation was also used to test the relationship between scores on the NR-6 and the amount participants were intending to donate (Table 2) where we found a small significant positive correlation ($p = 0.05$). Lastly, there was no significant correlation between the NR-6 scores and positive affect.

Discussion

This study was conducted to examine the influence of affect on the relationship between injunctive norms and pro-environmental behaviour (donation intention); we predicted this influence would manifest in how injunctive norms impact pro-environmental behaviour. However, broadly, our findings were not consistent with our predictions.

Our first hypothesis, that injunctive norms will influence pro-environmental behaviour, was not supported. There are multiple possible explanations for this finding. Firstly, our overall manipulation may not have been salient enough to participants. In particular, a number of participants anecdotally reported that they did not notice that they were assigned a sustainability score. Nevertheless, the manipulation check suggested that most participants did correctly recall the manipulation; however, because of technical issues we did not manage to carry this check out for all participants. A future study should therefore fully implement manipulation checks. The descriptive and injunctive message was strong enough to marginally significantly induce increased positive affect in the negative injunctive condition, which was associated with increased levels of pro-environmental intention. Additionally, the significant relationship we

observed between NR-6 scores and donation intention provides further validation for the NR-6's ability to predict pro-environmental behaviours.

Our second hypothesis, that the injunctive norms' impact on pro-environmental behaviour is influenced by affect, is partly supported - we did observe a marginally significant relationship between positive affect and the negative injunctive norm (although not between positive affect and donation intention). To explain this apparent value-action gap between affect and behaviour, we propose a *dignity restoration effect*. Broadly, we propose that a negative injunctive message is associated with increased donation behaviour; in turn, a larger donation reduces shame and increases positive affect (as measured on the SPANE) because participants restore their dignity through the donation after having been poorly judged on their below-average sustainability score. However, as we did not counterbalance the order of the donation question and the SPANE, we cannot isolate the influences of affect and the injunctive message on pro-environmental behaviour. As such, a future study should counterbalance these two measures. We could also investigate the mechanisms by which injunctive norms and affect could interact to influence pro-environmental behaviour, ideally using a unified analysis such as a mediation model. The current study had a number of broader limitations. For example, although we believe that the current study can be applied to other pro-environmental behaviours, such as energy consumption, future research should explore the potential boundary conditions of textual descriptive and visual injunctive norms, which are straightforward and inexpensive to implement in online and offline contexts. In particular, the hypothetical financial commitment required in this study may have engaged financial concerns as well as sustainability concerns in students. As such, future studies should examine how injunctive norms and pro-environmental behaviour interact in a non-financial context. Additionally, our study was carried out on a convenience sample of UBC students. There are two main considerations here. Firstly, our sample had more females than males, which may have skewed the generalizability of our results. Secondly, UBC is a campus known internationally for having high levels of sustainability; as a result, the baseline level of sustainability among UBC students may have been above average. However, our participants' mean NR-6 score ($M = 21.1$) was similar to the community norm score on the same scale ($M = 20.6$) reported by Nisbet, Zeleneski, and Murphy¹¹, suggesting that our sample was similar to a broader population on measures of sustainability. Nevertheless, replications of our study on other university campuses, as well as in urban and rural contexts, may give us more insight into how people in less sustainability-focused cultures would have their pro-environmental behaviour influenced by descriptive and injunctive norms. Lastly, although our dependent variable aptly captures the intention to donate, a gap between people's actions and intentions has been identified in the literature²⁰. As such, we suggest that future studies focus on donation action as opposed to donation intention. This could be accomplished by including an actual donation as part of the study. Such studies would provide more insight into how policymakers could craft effective policies to encourage sustainable behaviours in a variety of geographical and socioeconomic contexts. The current study had a number of broader limitations. For example, although we believe that the current study can be applied to other pro-environmental behaviours, such as energy consumption, future research should explore the potential boundary conditions of textual descriptive and visual injunctive norms, which are straightforward and inexpensive to implement in online and offline contexts. In particular, the hypothetical financial commitment required in this study may have engaged financial concerns as well as sustainability concerns in students. As such, future studies should examine how injunctive norms and pro-environmental behaviour interact in a non-financial context.

Additionally, our study was carried out on a convenience sample of UBC students. There are two main considerations here. Firstly, our sample had more females than males, which may have skewed the generalizability of our results. Secondly, UBC is a campus known internationally for having high levels of sustainability; as a result, the baseline level of sustainability among UBC students may have been above average. However, our participants' mean NR-6 score ($M = 21.1$) was similar to the community norm score on the same scale ($M = 20.6$) reported by Nisbet, Zeleneski, and Murphy¹¹, suggesting that our sample was similar to a broader population on measures of sustainability. Nevertheless, replications of our study on other university campuses, as well as in urban and rural contexts, may give us more insight into how people in less sustainability-focused cultures would have their pro-environmental behaviour influenced by descriptive and injunctive norms. Such studies would provide more insight into how policymakers could craft effective policies to encourage sustainable behaviours in a variety of geographical and socioeconomic contexts.

Implications

We believe that our study's findings have useful implications for better understanding the sometimes unexpected ways in which affect and action interact. Indeed, our results suggest a potential value-action gap between affect (as induced by injunctive norms) and pro-environmental behaviour that could add another dimension to our understanding of the outcomes of injunctive messages in marketing campaigns to UBC students. At UBC, injunctive messages are already being used in campaigns encouraging pro-environmental behaviour (for example, in UBC's Healthy Beverage Initiative¹²). Future campaigns using injunctive messages should be sensitive to the multiple pathways to pro-environmental behaviour that these messages might induce; for example, inducing shame in participants may be effective in encouraging increased donation behaviour. We also propose for future studies to explore particular mechanisms that relieve shame as a promising avenue to increase pro-environmental intention. We believe that in order to encourage UBC students to be more sustainable in a variety of campus contexts, it is important to continue crafting sustainability-focused campaigns that responsibly leverage injunctive norms to encourage increased pro-environmental behaviour.

Recommendations

- Encourage donation behaviour by incorporating dignity restoring messages into online or physical donation platforms. For example, one could combine a negative injunctive message, such as a picture of an animal verbally delivering an injunctive message that would lead people to relieve shame if they take action (similar to those used by UBC Campus and Community Planning to encourage appropriate composting behaviours¹³) with a call to action, such as "thanks for visiting our site! If you care about the environment, please consider supporting our sustainability efforts through a donation. Thank you!". This message could easily be delivered on a physical or online donation platform.
- Frame sustainable behaviours (such as donating to a pro-environmental charity) as connecting people more with nature, leveraging the links between self-rated nature elatedness and pro-environmental behaviour.

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Tables

Table 1

Correlation (Point Biserial) between donation intention and gender and survey location; correlation (Pearson's r) between donation intention and positive affect, shame, proud and Natural Relatedness Scale, and between Natural Relatedness Scale and Affect

	Gender (r_{pb})	Survey Location (r_{pb})	Positive Affect	Shame	Pride	NRS ^a
Donation intention	-0.23**	0.04	-0.04	-0.05	-0.07	0.16*
Positive Affect	-	-	-	-		0.02

Note. The positive affect was measured using SPANE¹⁰, the total score could range from -24 to 24, while smaller number represented higher level of negative affect and larger number represented higher level of positive affect.

^a Natural Relatedness Scale score

* $p > .05$, ** $p > .01$

Table 2

Difference (One-way ANOVA) between conditions on willingness to donate, positive/negative affect, shame and proud

	<i>M</i>	<i>SD</i>	<i>F</i> (2, 153)	<i>p</i>	η^2
Willingness to donate			0.47	0.63	0.006
Positive Injunctive (<i>n</i> = 54)	3.07	2.82			
Negative Injunctive (<i>n</i> = 51)	4.00	3.14			
Neutral (<i>n</i> = 51)	3.41	3.11			
Positive Affect			2.66	0.07	0.034
Positive Injunctive	3.85	6.34			
Negative Injunctive	6.80	6.37			
Neutral	5.23	6.96			
Shame			3.89	0.02*	0.048
Positive Injunctive	2.39	0.92			
Negative Injunctive	1.92	1.00			
Neutral	2.37	0.98			
Pride			0.74	0.48	0.010
Positive Injunctive	2.89	0.84			
Negative Injunctive	3.08	0.80			
Neutral	2.92	0.91			

Note. The positive affect was measured using SPANE¹⁰, the total score could range from -24 to 24, while smaller number represented higher level of negative affect and larger number represented higher level of positive affect.

* *p* > .05

Figures

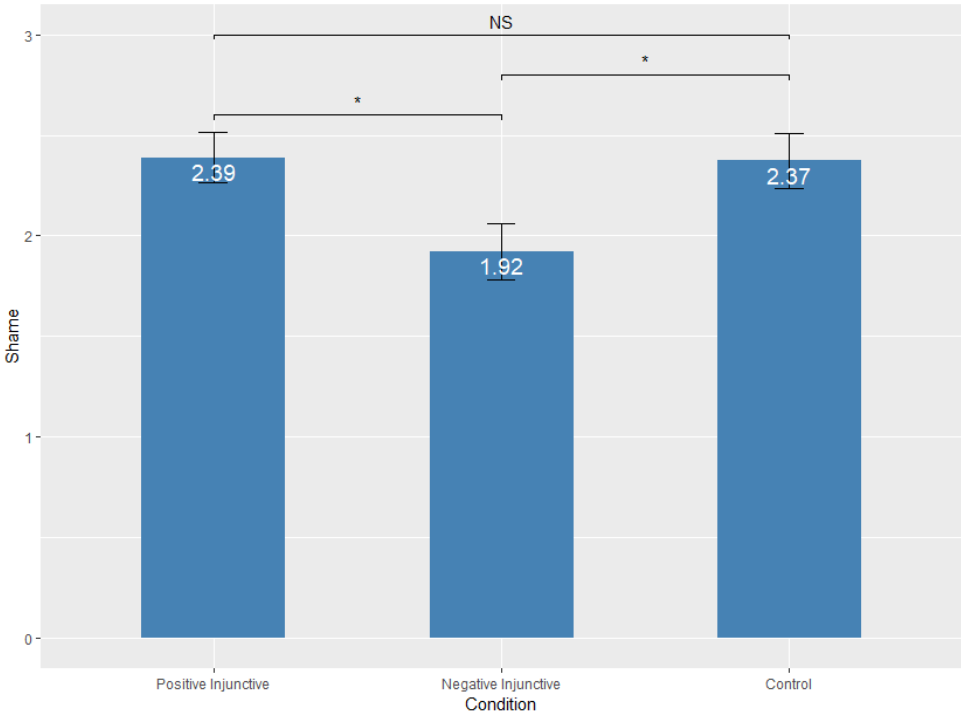


Figure 1. Post-hoc Tukey's test on shame between the three conditions.

Appendix

Appendix A: Survey

321 Affect Study - 349 B-Line

Start of Block: **ID and Condition**

ID Participant ID

Q54 Location

- NEST (1)
- LIFE (2)

End of Block: ID and Condition

Start of Block: **Six-Item Nature Relatedness Scale (NR-6)**

Q59 For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think "most people" feel.

NR_Q4 My ideal vacation spot would be a remote, wilderness area.

- Disagree Strongly (1)
- Disagree a Little (2)
- Neither Agree nor Disagree (3)
- Agree a Little (4)
- Agree Strongly (5)

NR_Q5 I always think about how my actions affect the environment.

- Disagree Strongly (1)
- Disagree a Little (2)
- Neither Agree nor Disagree (3)
- Agree a Little (4)
- Agree Strongly (5)

NR_Q7 My connection to nature and the environment is a part of my spirituality.

- Disagree Strongly (1)
- Disagree a Little (2)
- Neither Agree nor Disagree (3)
- Agree a Little (4)
- Agree Strongly (5)

NR_Q9 I take notice of wildlife wherever I am.

- Disagree Strongly (1)
- Disagree a Little (2)

- Neither Agree nor Disagree (3)
- Agree a Little (4)
- Agree Strongly (5)

NR_Q17 My relationship to nature is an important part of who I am.

- Disagree Strongly (1)
- Disagree a Little (2)
- Neither Agree nor Disagree (3)
- Agree a Little (4)
- Agree Strongly (5)

NR_Q21 I feel very connected to all living things and the earth.

- Disagree Strongly (1)
- Disagree a Little (2)
- Neither Agree nor Disagree (3)
- Agree a Little (4)
- Agree Strongly (5)

End of Block: Six-Item Nature Relatedness Scale (NR-6)

Start of Block: Loading Screen



End of Block: Loading Screen

Start of Block: **Manipulation**

Display This Question:

If Condition = 1

Cond_1_desc We've automatically calculated your sustainability score. Your sustainability score is higher than the average score of most UBC students.



Display This Question:

If Condition = 2

Cond_2_desc We've automatically calculated your sustainability score. Your sustainability score is lower than the average score of most UBC students.



Display This Question:

If Condition = 3

Cond_3_desc We've automatically calculated your sustainability score. Your sustainability score is about the average score for most UBC students.

End of Block: Manipulation

Start of Block: **Donation**

Donation_1 In the next month, how much money would you be willing to donate to the UBC SEEDS Sustainability Fund, a UBC fund that supports the development of innovative sustainability projects on campus?

- \$0 (1)
- \$2 (2)
- \$4 (3)
- \$6 (4)
- \$8 (5)
- \$10 (6)

End of Block: Donation

Start of Block: **Scale of Positive and Negative Experience (SPANE)**

SPANE_instructions Please think about what you have been doing and experiencing during the past four weeks. Then report how much you experienced each of the following feelings, using the scale below.

SPANE_Q1 Positive

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)
- Often (14)
- Very Often or Always (15)

SPANE_Q2 Negative

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)
- Often (14)
- Very Often or Always (15)

SPANE_Q3 Good

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)
- Often (14)
- Very Often or Always (15)

SPANE_Q4 Bad

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)

- o Often (14)
- o Very Often or Always (15)

SPANNE_Q5 Pleasant

- o Very Rarely or Never (11)
- o Rarely (12)
- o Sometimes (13)
- o Often (14)
- o Very Often or Always (15)

SPANNE_Q6 Unpleasant

- o Very Rarely or Never (11)
- o Rarely (12)
- o Sometimes (13)
- o Often (14)
- o Very Often or Always (15)

SPANNE_Q7 Happy

- o Very Rarely or Never (11)
- o Rarely (12)
- o Sometimes (13)
- o Often (14)
- o Very Often or Always (15)

SPANNE_Q8 Sad

- o Very Rarely or Never (11)
- o Rarely (12)
- o Sometimes (13)
- o Often (14)
- o Very Often or Always (15)

SPANNE_Q9 Afraid

- o Very Rarely or Never (11)
- o Rarely (12)
- o Sometimes (13)
- o Often (14)
- o Very Often or Always (15)

SPANNE_Q10 Joyful

- o Very Rarely or Never (11)
- o Rarely (12)
- o Sometimes (13)
- o Often (14)
- o Very Often or Always (15)

SPANES_Q11 Angry

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)
- Often (14)
- Very Often or Always (15)

SPANES_Q12 Contented

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)
- Often (14)
- Very Often or Always (15)

SPANES_Q13 Ashamed

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)
- Often (14)
- Very Often or Always (15)

SPANES_Q114 Proud

- Very Rarely or Never (11)
- Rarely (12)
- Sometimes (13)
- Often (14)
- Very Often or Always (15)

End of Block: Scale of Positive and Negative Experience (SPANES)

Start of Block: **Manipulation Check**

Q60 What was your sustainability score?

- Lower than Average (1)
- Higher than Average (2)
- Average (3)

End of Block: Manipulation Check

Start of Block: **Demographics**

Demo_instruct We would like to ask you some basic demographic questions.

Demo_student Are you a student (at UBC or any other college or university)?

- Yes (1)
- No (3)

Demo_ethnicity What is your ethnicity? Please check all that apply.

- White (21)
- East Asian (24)
- South Asian (25)
- Black (22)
- Aboriginal (23)
- Other (26)

Demo_gender What gender do you identify as?

End of Block: Demographics