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Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Trash-or-Treat: The Power of Logo Framing on Upcycled Foods' Purchase Intent

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Trash-or-Treat: The Power of Logo Framing on Upcycled Foods' Purchase Intent

The Vintage Food Upcyclers

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Executive Summary

In this project, we aim to test whether language framing in logos can influence consumers' purchase intent of upcycled food in UBC dining halls. To explore this question, we designed a logo for upcycled food. The plain logo was used as the control condition, the logo with an informative descriptor of upcycled food as the informational condition, and the logo with an emotive descriptor of upcycled food as the emotional condition. It was hypothesized that the informational condition would have the strongest effect in convincing consumers to purchase upcycled food, followed by the emotional and control conditions. Carried out as an online survey, 246 participants completed the experiment, giving us enough statistical power. Participants were shown the logos corresponding to the conditions they were randomly assigned, then asked to rate their purchase intent on a 9-point Likert scale based on the logo they saw. No significant difference among all three groups regarding purchase intent ($p = .08$) was found. However, excitement was found as significantly higher in the emotional condition than in the control condition ($p = .02$). This result indicates that more research is necessary to examine logos' effects in different scenarios where consumers might encounter upcycled food.

Keywords: upcycled food, logos, language framing, purchase intent, emotional, informational

Introduction

In 2021, The Food and Agriculture Organization of the United Nations (FAO) reported that the global hunger crisis has worsened over the past few years. However, recent research has also shown that at least a third of global food is wasted (Hegnsholt et al., 2018). In order to protect our environment and improve sustainability, food upcycling - a newly emerging concept - has attracted particular attention among all solutions proposed to tackle the food waste problem. According to The Upcycled Foods Definition Task Force (2020), upcycled food refers to products made from societally undesirable products that are typically discarded, such as damaged or imperfect food, food by-products, or food preparation scraps. Therefore, the production of upcycled food can help reduce waste in the food supply chain before human consumption. Furthermore, it would be conducive if scholars could explore ways to motivate consumers to buy upcycled food even when they have alternative options.

Current academic research has found that: it is ethical concerns that motivate consumers the most to purchase up-cycled food (Moshtaghian et al., 2023); rational messaging is more effective than emotional messaging in promoting customers' acceptance of upcycled food (Bhatt et al., 2020); and a circular, descriptive and green logo can increase perceived quality and, in turn, consumers' willingness to buy upcycled food (Bhatt et al., 2021). However, this research has only been conducted among more generalized populations focusing on the grocery shopping scenario. Since this project intends to improve sustainability on UBC's campus, we want to specifically examine how people on UBC's campus perceive upcycled food, especially in the dining hall scenario. This project is inspired by Bhatt and colleagues' studies that show that rational messaging (2020), and a certain logo design (2021) motivates consumers to purchase upcycled food the most.

Research Questions and Hypothesis

Based on this previous research, our project aimed to explore the question: *How does language framing in logos influence the purchase intent of upcycled food?* We hypothesized that the informational logo would promote participants' purchase intent the most, followed by the emotional logo and then the control logo.

Methods

Participants

Our study aimed to recruit a minimum of 246 participants (82 per condition) after conducting a power analysis calculation for a between-subject design study ($f = 0.20$, $\alpha = 0.05$, $p = 0.80$, see Appendix B). Over a two-week recruitment period, 300 total participant responses were collected. However, 52 participants were excluded for not completing the survey, as this indicated that participants were not attentive or did not take the survey seriously. Our final sample achieved 248 participants, with 91 in the emotional condition, 83 in the informational condition and 74 in the control condition. This between-condition size discrepancy was caused by participant removal. Of the 248 participants, 68% identified as female, 25.9% as male, 3.2% as non-binary, and 3.2% preferred not to say. The mean age was 21.6 years, and 91.3% were UBC students.

Conditions

Our independent variable (IV) was the type of language used in upcycled food logos, operationalized through three conditions: the control condition, the emotional condition, and the informational condition. Participants were randomly assigned to one of the conditions. All conditions featured the same circular, green, logo with the word upcycled (Appendix B). The

control condition featured this same circular green logo without any written description below it (Appendix B.1). The emotional condition featured this same circular green logo with a written description of upcycled food below it. This description used emotional words, such as “rescued” and “good,” with the intent to elicit emotion (Appendix B.2). The informational condition featured this same circular green logo with a written description of upcycled food below it. This description used informational words, such as “surplus” and “prevent,” with the intent to provide information which should *not* elicit emotion (Appendix B.3). To ensure there were no other factors of the description influencing participants, the descriptions were made to be as similar as possible - they conveyed the same message, used the same punctuation, and used a similar number of words. Our hypothesis suggested that the informational condition would result in the highest purchase intent, followed by the emotional condition and, finally, the control condition.

Measures

Our dependent variable (DV) was purchase intent, operationalized as a 9-point Likert scale score. Our Likert scale was adapted from Bhatt et al.s’ purchase intention scale (2021), which measures three items (participant self-rank of likelihood, probability, and willingness to purchase a food product) on a 9-point Likert scale. We adapted the scale in two ways, first, by only measuring one of the three items: likelihood to purchase food” to “likeliness to purchase a food product with this logo” (Appendix A). The Likert-scale response options for this question ranged from an extremely low likelihood (1) to an extremely high likelihood (9) of food product purchase intent. To assess the impact of the emotionally worded descriptor on emotional arousal and emotional valence, we utilized a 9-point Likert scale adapted from Russell et al.’s Affect Grid (1989). Participants answered four 9-point Likert-scale questions, each measuring a specific emotion (stress, excitement, relaxation, and depression) they felt when looking at the logo. This allowed us to capture two dimensions of effect: arousal and pleasure. By examining the average scores of the high-arousal emotions (stress and excitement) and comparing them across conditions, we determined how much the emotionally worded descriptor influenced participants’ emotional arousal and valence when viewing the upcycled food logo.

Procedures

The study was conducted using a 5-question, self-report Qualtrics survey. The survey was created on Qualtrics (<https://www.qualtrics.com>), and distributed from March 3rd to March 17th, 2023. After agreeing to a consent form, participants were provided with a brief introduction to upcycled food. Then, they were randomly assigned to one of the three logo conditions, where they were presented with one logo, rated their likelihood of purchasing food with that logo, and rated levels of emotions they felt after seeing that logo (in terms of stress, excitement, relaxation and depression). For the purchase intent measure, participants were presented with one question, and for the emotional measure, there was one question for each aspect of emotion (stress, excitement, relaxation and depression).

Recruitment occurred over a 2-week period during which we sent the survey to friends, UBC clubs, and UBC course chat groups, and students on the UBC campus posted the link on social media and asked professors to share the survey with their classes. A challenge we faced was that after one week of recruitment, responses plateaued to 101. To overcome this, we created a QR code and asked students around the UBC Nest and Life Building if they could please complete our survey by scanning the QR code. This resolution worked, as by March 16th, we had exceeded our target sample size. Another challenge we encountered was that 63 participants failed the survey’s attention check. The attention check consisted of picking which of the 3 logos the participant had just seen. As all of the three logos are quite similar, and this

could be hard considering the task is memory based, it was decided all participants who failed the attention check but completed the survey would have their responses kept in the total data. Although this challenge could not be rectified, it can be acknowledged as a limitation, and room for improvement in later studies.

Results

First, a one-way ANOVA was conducted to test the between-subject hypotheses that the informational condition would produce the strongest effect in promoting **purchase intent**, followed by the emotional condition and then the control condition (Appendix D.3). Although participants in the informational ($M = 5.807$, $SD = 1.928$) and emotional ($M = 5.945$, $SD = 1.980$) conditions had a higher score than those in the control condition ($M = 5.770$, $SD = 1.660$) (Appendix D.1), there was no significant difference among three conditions [$F(2, 245) = 0.206$, $p = 0.814$, $p > 0.05$]. Thus, we can conclude that no language framing effect was shown in our study, and that the informational and emotional conditions didn't promote a higher purchase intent than the control condition, meaning our hypothesis was null.

Next, a one-way ANOVA was used to test the between-subject hypothesis that emotional arousal would be higher in the emotional condition relative to the informational and control conditions. The conditions were tested separately across the four dimensions of emotional arousal (Appendix E.1). For **stress**, similar responses were found in informational ($M = 2.627$, $SD = 2.162$), emotional ($M = 2.670$, $SD = 1.850$), and control ($M = 2.662$, $SD = 2.056$) conditions (Appendix B, Figure 3), and there was no significant difference between them [$F(2, 245) = 0.011$, $p = 0.989$, $p > 0.05$] (Appendix E.2, E.3, E.4)

For **excitement**, participants in the emotional condition ($M = 4.352$, $SD = 2.223$) had higher excitement levels relative to the informational ($M = 4.096$, $SD = 2.122$) and control ($M = 3.459$, $SD = 1.761$) conditions (Appendix E.6, E.7). A significant difference was detected by the one-way Anova test [$F(2, 245) = 3.962$, $p = 0.02$, $p < 0.05$] (Appendix E.8). Then, a post-hoc Tukey test was conducted and found that the only significant difference was between the emotional and control conditions, $p = 0.017$, 95% C.I. = [-1.653, -0.132] (Appendix E.9). From this, it is concluded that the emotional logo evoked significantly more excitement from participants than the control logo, supporting the hypothesis that the emotional condition is more emotionally arousing.

For **relaxation**, there was also a similar response to all the informational ($M = 4.952$, $SD = 2.118$), emotional ($M = 5.088$, $SD = 2.234$), and control ($M = 4.973$, $SD = 2.483$) conditions (Appendix E.10, E.11) (Appendix E.10, E.11). However, the difference was non-significant, $F(2, 245) = 0.09$, $p = 0.914$, $p > 0.05$ (Appendix E.12). This was also true for **depression**. While participants in the emotional condition ($M = 1.967$, $SD = 1.656$) had higher depression levels than participants in the informational ($M = 1.687$, $SD = 1.306$) and control ($M = 1.649$, $SD = 1.243$) conditions (Appendix E.13, E.14), the difference was again non-significant, $F(2, 245) = x$, $p = x$, $p > 0.05$ (Appendix E.15).

Discussion

Based on our results, the only significant finding in our research was for excitement, between the emotional and control logo. This finding supported one of our predictions, namely that the emotional logo would elicit greater excitement among participants than the plain logo (control condition). However, our hypothesis that the informational logo would promote the highest purchase intent, followed by the emotional logo, and then the control logo, was not supported by our data. Furthermore, the results also indicated that neither of the experimental conditions significantly increased purchase intent compared to the control condition. From this,

it can be concluded that emotional logos cause excitement, but this excitement does not increase purchase intent. Further studies would have to be conducted to see if emotionally logo-derived excitement influences other aspects of upcycled food purchasing or consumption.

The non-significant outcome in terms of purchase intent combined with the high attention check fail rate may suggest that individuals tend to not pay close attention to logos in on-campus dining hall environments. Previous research has suggested that rational messaging can promote individuals' acceptance of upcycled food. However, we did not replicate this finding. This discrepancy may be due to different scenarios between studies. Previous research focused on grocery shopping where consumers tend to pay more attention to labels, prices and logos (Bhatt et al., 2021), whereas our study focused on all-you-can-eat dining halls where students are busy with feeding themselves between classes. It would be valuable for future studies to examine how consumers' behaviour differs in different contexts. At the same time, the significant difference between emotional and control conditions in terms of excitement level demonstrates that future studies should also explore how other consumers' emotions can influence their purchase intent of upcycled food.

There are several significant limitations to consider that could lead to the misinterpretation of our findings. Firstly, the high rate of attention check failures may suggest that participants lacked engagement with the task and did not pay sufficient attention to the logos or messages. This might result from our recruitment strategy: we recruited the majority of our participants during meal and break time on campus and didn't monitor how they completed the survey, which might have left them unattentive. Therefore, future research on logos should make sure they design their studies to engage participants more with their logos. Secondly, the three logos were too similar, which may have made it challenging for participants to differentiate between them. And the similarities in colour, graphics and punctuation in our logos may contribute to the lack of significant differences in purchase intent. Therefore, future studies should emphasize the importance of designing unique and distinct logos to enhance participants' engagement and effectiveness in generating purchase intent. However, we also designed our conditions intentionally to make sure we limited our variables. Lastly, our sample mainly comprised UBC students aged 18-25, with 68 percent of females. Hence our findings may not be generalizable to other populations. Future research should aim to investigate a more diverse sample consisting of different demographics, such as more males, other universities, teenagers, adults, and the elderly. UBC researchers can also conduct studies about on-campus groceries stores, restaurants and other scenarios.

UBC Client Recommendations

In our study, the only significant finding was that the emotional condition elicited much greater excitement than the control condition. There were no significant findings in regard to purchasing intent - this means that no logo caused more purchase intent of upcycled food than another. These findings indicate that excitement might increase the attention paid to logos. This is because when excited, dopamine gets released, which can increase aspects of attention (Dang et al, 2012; Franken, 2005). Hence, we recommend that excitement be incorporated into the language framing used in logos, as well as other design areas and promotional material, to increase attention to upcycled food. Specifically, for UBC dining halls, logos could be created with an element of excitement that increase students' awareness and willingness to purchase the food items. This approach can create a more engaging and appealing message that resonates with students.

Furthermore, it is recommended for future studies to broaden the scope of examination beyond language framing, and to focus on different aspects of logo designs. All logo elements could possibly have an influence on purchase intent and are valuable to investigate - for

instance, colours, shapes, graphics, size and punctuation. A new form of logo design: interactive logo designs (e.g. logos with QR codes for viewers to scan, or peelable stickers you can collect), have recently been quite successful in increasing attention and purchase intent in consumers and should also be considered (Lam et. al, 2022).

Another area of research that should be examined is logo memorability. As seen by our peers and recent scholarly articles, upcycled food is something that doesn't have the best public perception (Yilmaz & Kahveci, 2022). Some people either have misconceptions of what upcycled food is, or they're hesitant about it. One way this, and purchase intent could be changed, is through logo memorability. Logo memorability (also known as brand recognition) is when a logo becomes symbolic to a specific store (ex. The Nike checkmark), or a specific cause (ex. The Fair Trade Logo) (Keany & McDermott, 2019). If UBC and its food services were to create a simplified logo (ex. A vertical carrot in a green circle), and then run multiple marketing campaigns advertising upcycled food *with* this logo, people might start associating the logo with upcycled food. As our research concluded UBC students might not have the time to look at logos in-depth, but having this easily recognizable factor might increase purchase intent. In order for this to be successful, the marketing campaign must elicit positive emotions, so that the upcycled food, and thus the logo, is viewed positively. As seen with our research results, UBC could make marketing campaigns and logos that elicit excitement. This, tied in with other persuasive design tactics could lead to a UBC-wide recognition of upcycled food, and increased purchase intent.

More broadly speaking, it would be beneficial for UBC to enhance the accessibility of upcycled food since one barrier to the consumption of upcycled food may be its availability and accessibility. Past research has shown individuals are more likely to purchase products near them - it's even a marketing tactic called *Product Placement* (Gebauer & Laska, 2011). UBC can collaborate with retailers and distributors (e.g. Peko, a Vancouver-based upcycled grocery online store) to make upcycled food more widely available and accessible to students. It could be done by selling upcycled food products in UBC grocery stores (ex. UBC Food Hub), coffee bars, and snack stores and promoting these products in dining halls and restaurants at UBC. Further research on this would need to be explored, which could potentially be done in future PSYC 421 classes.

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Appendix A

Survey of Purchase Intent



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Consent Form

Class Research Projects in PSYC 421 - Environmental Psychology

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Introduction and Purpose

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

Study Procedures

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

Confidentiality

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

Remuneration

There is no remuneration for your participation.

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Contact for information about the study

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

Contact for concerns about the rights of research subjects

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

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

Ethics ID: H17-02929

The purpose of this survey is to understand the impact of language framing in logos on the perception of upcycled food. Upcycling is a process of converting waste materials into new products, and the food industry is no exception. Particularly, upcycled foods refers to foods that convert surplus ingredients into value-added food products, is a promising solution to the alarming food waste issue. This survey will focus on determining how different language frames in logos affect customer's willingness to purchase upcycled food products.

In following section, you will see a picture of a food product logo. Please examine the logo carefully, and rate your willingness to purchase the product based on the logo you see and other related questions. The data collected from this survey will provide valuable insights into how language framing in logos can influence customer perception and purchase behaviour.





This product uses rescued food. You can make sure good food gets eaten, not wasted.

In the following section, please slide the scale to the applicable number.

Note that 1 is extremely low, while 9 is extremely high.

Extremely low Extremely high
1 2 3 4 5 6 7 8 9

The likelihood that I will buy a food product with this logo is

Please identify any emotion(s) that you are feeling after looking at the logo:

Not at all Neutral Very strong
1 2 3 4 5 6 7 8 9

Stress

Excitement

Relaxation

Depression



Please select the picture that you saw earlier:



This product uses rescued food. You can make sure good food gets eaten, not wasted.



This product uses surplus ingredients. Food waste is prevented.



What is your age?

What gender do you identify with?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Are you a current UBC student?

- Yes
- No



Appendix B

Experimental Conditions



Figure B.1 The logo for the Control Condition.



This product uses rescued food. You can make sure good food gets eaten, not wasted.

Figure B.2 The logo for the Emotional Condition.



This product uses surplus ingredients. Food waste is prevented.

Figure B.3 The logo for the Informational Condition.

Appendix C

Power Calculation: G*power calculation to determine the predicted sample size

Central and noncentral distributions
Protocol of power analyses

critical F = 3.033

Test family: F tests

Statistical test: ANOVA: Fixed effects, omnibus, one-way

Type of power analysis: A priori: Compute required sample size - given α , power, and effect size

Input parameters		Output parameters	
Determine	Effect size f	0.2	Noncentrality parameter λ
	α err prob	0.05	Critical F
	Power (1- β err prob)	0.8	Numerator df
	Number of groups	3	Denominator df
			Total sample size
			Actual power

X-Y plot for a range of values Calculate

Appendix D

Purchase Intent Analysis

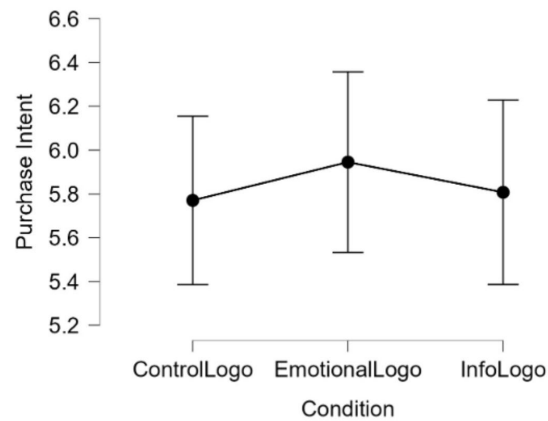


Figure D.1 A graph showing the mean purchase intent of participants per logo condition. Error bars represent standard deviation.

Descriptives - purchase intent

Condition	N	Mean	SD	SE	Coefficient of variation
ControlLogo	74	5.770	1.660	0.193	0.288
EmotionalLogo	91	5.945	1.980	0.208	0.333
InfoLogo	83	5.807	1.928	0.212	0.332

Figure D.2 A table containing the mean purchase intent on a scale of 1-9, and the standard deviation of purchase intent for each logo condition

ANOVA - purchase intent

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Condition	1.442	2	0.721	0.206	0.814	0.002
Residuals	858.736	245	3.505			

Note. Type III Sum of Squares

Figure D.3 A table showing the results of the ANOVA calculation, including the p-value, for purchase intent

Appendix E

Emotional Level Analysis

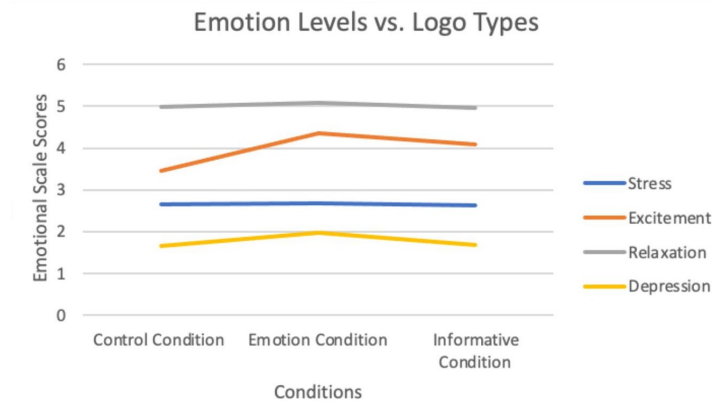


Figure E.1: A graph showing the mean emotional arousal levels of participants per logo condition.

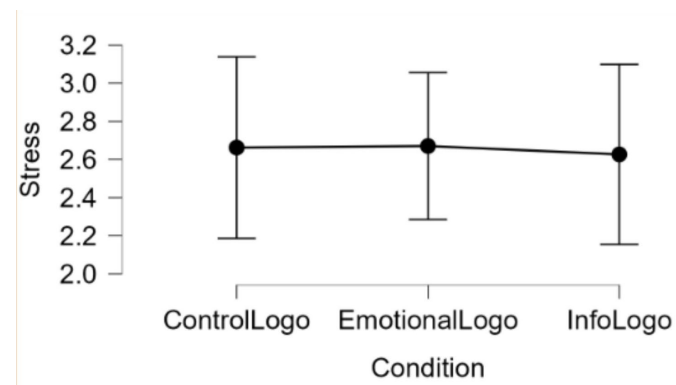


Figure E.2: A graph showing the mean stress levels of participants per logo condition. Error bars represent standard deviations.

Descriptives - Stress

Condition	N	Mean	SD	SE	Coefficient of variation
ControlLogo	74	2.662	2.056	0.239	0.772
EmotionalLogo	91	2.670	1.850	0.194	0.693
InfoLogo	83	2.627	2.162	0.237	0.823

Figure E.3 A table containing the participant's stress level on a scale of 1-9, and the standard deviation of stress level for each logo condition

Appendix E

Emotional Level Analysis

ANOVA - Stress

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Condition	0.092	2	0.046	0.011	0.989	9.177×10^{-5}
Residuals	1000.086	245	4.082			

Note. Type III Sum of Squares

Figure E.4 A table showing the results of the ANOVA calculation, including the p-value, for stress level

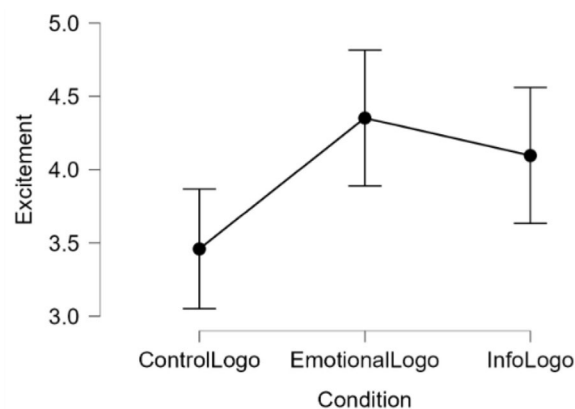


Figure E.6: A graph showing the mean excitement levels of participants per condition. Error bars represent standard deviations.

Descriptives - Excitement

Condition	N	Mean	SD	SE	Coefficient of variation
ControlLogo	74	3.459	1.761	0.205	0.509
EmotionalLogo	91	4.352	2.223	0.233	0.511
InfoLogo	83	4.096	2.122	0.233	0.518

Figure E.7 A table containing the participant's excitement level on a scale of 1-9 and the standard deviation of excitement level for each logo condition

ANOVA - Excitement

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Condition	33.645	2	16.823	3.962	0.020	0.031
Residuals	1040.355	245	4.246			

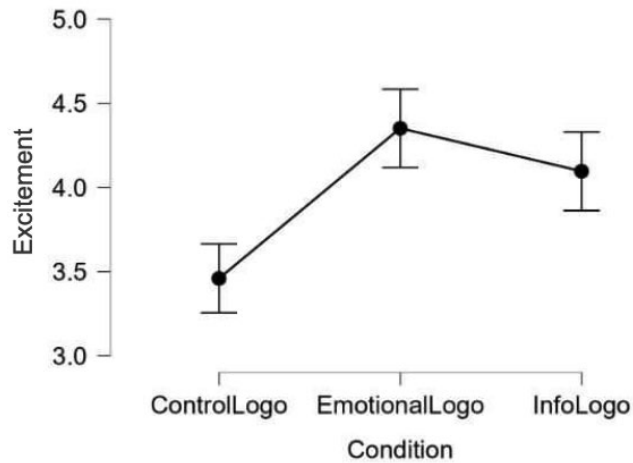
Note. Type III Sum of Squares

Figure E.8 A table showing the results of the ANOVA calculation, including the p-value, for excitement level

Appendix E

Emotional Level Analysis

Descriptives plots



Post Hoc Tests ▼

Standard ▼

Post Hoc Comparisons - Condition ▼

		Mean Difference	95% CI for Mean Difference		SE	t	Ptukey
			Lower	Upper			
ControlLogo	EmotionalLogo	-0.892	-1.653	-0.132	0.323	-2.766	0.017
	InfoLogo	-0.637	-1.414	0.140	0.329	-1.933	0.132
EmotionalLogo	InfoLogo	0.255	-0.482	0.993	0.313	0.816	0.693

Note. P-value and confidence intervals adjusted for comparing a family of 3 estimates (confidence intervals corrected using the tukey method).

Figure E.9 A graph at the top showing that the emotional condition is significantly more exciting than the control condition. A table at the bottom shows the Ptukey computations of excitement for each condition, and that the control-emotional logo interaction is significant.

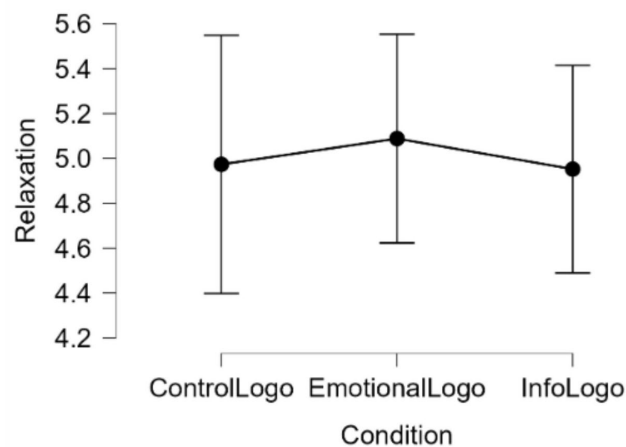


Figure E.10: Mean relaxation levels of participants per logo condition. Error bars represent standard deviations

Appendix E

Emotional Level Analysis

Descriptives - Relaxation

Condition	N	Mean	SD	SE	Coefficient of variation
ControlLogo	74	4.973	2.483	0.289	0.499
EmotionalLogo	91	5.088	2.234	0.234	0.439
InfoLogo	83	4.952	2.118	0.232	0.428

Figure E.11 A table containing the participant's relaxation level on a scale of 1-9 and the standard deviation of relaxation level for each logo condition

ANOVA - Relaxation

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Condition	0.934	2	0.467	0.090	0.914	7.366×10^{-4}
Residuals	1267.050	245	5.172			

Note. Type III Sum of Squares

Figure E.12 A table showing the results of the ANOVA calculation, including the p-value, for relaxation level

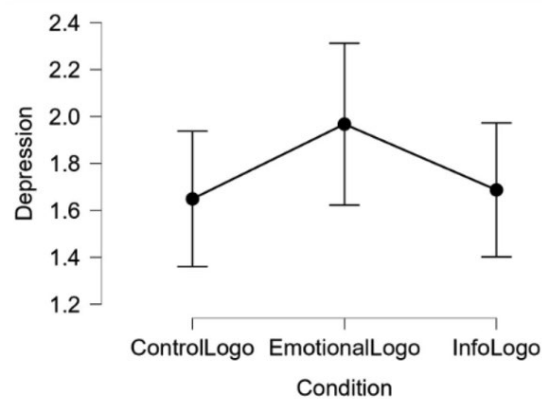


Figure E.13: Mean depression levels of participants per logo condition. Error bars represent standard deviations

Appendix E

Emotional Level Analysis

Descriptives - Depression

Condition	N	Mean	SD	SE	Coefficient of variation
ControlLogo	74	1.649	1.243	0.145	0.754
EmotionalLogo	91	1.967	1.656	0.174	0.842
InfoLogo	83	1.687	1.306	0.143	0.774

Figure E.14 A table containing the participant's depression level on a scale of 1-9 and the standard deviation of depression level for each logo condition

ANOVA - Depression

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Condition	5.181	2	2.591	1.270	0.283	0.010
Residuals	499.621	245	2.039			

Note. Type III Sum of Squares

Figure E.15 A table showing the results of the ANOVA calculation, including the p-value, for depression level

Appendix C: Contributions of Group Members

Survey and Data Collection

Ally, Nekysha → created survey and condition logos

Stephanie, Hongqin, Christine, Abhigna → recruited participants around the Nest and in other classes

All → shared survey with family and friends, and on social media

Ally, Nekysha → reached out to Dr. Zhao with questions concerning survey

Proposal

All → Group Name and Student Names

Hongqin → Background Literature

Hongqin, Stephanie, Ally → Project Title

Stephanie → Research Question and Hypothesis

Abhigna, Stephanie → Methods

Christine, Hongqin → statistical analyses (power analysis, ANOVA, post-hoc)

Ally, Nekysha → Appendix, References, Survey questions and Design, Logo designs and editing the whole paper

All → reached out to Dr. Zhao and TAs on questions concerning proposal

Presentation

Abhigna, Christine, Hongqin → created the presentation slides

Ally, Nekysha, Stephanie → created a script for, and presented presentation slide

All → edited each others' work

Final Report

All → formatting and title page

Hongqin → Executive Summary, introduction, and research question and hypothesis

Abhigna, Stephanie → Methods

Nekysha → Results

Christine → Discussion

Ally → Recommendations

Stephanie, Hongqin → reached out to Dr. Zhao on question concerning final report

Stephanie, Christine, Abhigna, Nekysha, Ally → Appendix A & B, references, and editing the whole research report

All → Appendix C