Which Sustainability Campaign - "Ripples", "Emily", and "Sort it Out" - is Most Well-known Amongst UBC Students?

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Group: Sustenuto

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Abstract

The study investigated which sustainability campaign - Ripple Effect, Emily, and Sort it Out - is most well-known amongst the UBC undergraduate students. The hypothesis was that the students will be more successful in associating Sort it Out campaign with sustainability campaign, as will be shown through the frequency of being successfully associating this campaign with the words sustainability, environment, and recycling. Using the surveys in a within-subject design, the participants were put into four conditions - General campaigns (control), and three experimental conditions - Ripple Effect, Emily, and Sort it Out campaigns. In the control condition, the participants wrote campaigns they were aware of at UBC. In the experimental conditions, they wrote what comes to their mind when they see the three sustainability-related campaigns' images. The students were most successful in associating Sort it Out campaign with sustainability, which supported the hypothesis. The frequency and use of direct words of the Sort it Out image may have been one reason that have affected the differences between the latter two images. Consequently, this can be concluded that using the images more frequently around the campus, and using slogans or words rather than only images may be more effective in promoting sustainability campaigns at UBC.

Which sustainability campaign - "Ripples", "Emily", and "Sort it Out" - is most well-known amongst UBC students?

Many students are aware of various campaigns around the UBC campus. Sustainability campaigns have been making UBC a cleaner place, however, many students are aware of only a few. How many students are actually aware of the three main sustainability campaigns going on in UBC? The hypothesis was that Sort it Out would be the most well known campaign out of the three campaigns.

Participants
131 subjects participated in the survey. The participants were randomly selected from the UBC community. This sample had 126 undergraduates and 5 graduates. Around 65% of which were domestic and 35% were international, 72 of these students were female and the rest of the 59 students were male. These students were of different faculties such as Arts, Sciences, Music, Engineering, Land and Food System, Sauder School, and Forestry.

Conditions
The study was conducted using within-subjects design. In order to test what kind of campaigns the students are aware of at UBC, all the participants were asked to fill out a survey. There were four conditions: General campaigns (control), Ripple Effect campaign, Emily campaign, and Sort it Out campaign. In the General campaigns condition, all participants listed the campaigns they were aware of at UBC. Then the three images were shown to the participants in the order of Ripples Effect, Emily, and then Sort it Out (all under Appendix A), that represented each sustainability campaign that served as experimental conditions. Although Emily is a general mascot of the sustainability campaigns, one could imply that she serves as a campaign because she is the sustainability ambassador on campus promoting various sustainability events. This particular order was used to prevent priming effect, for example, presenting Sort it Out first may hint what the study is about as it contains sustainability-related slogan. Upon seeing the images, participants were asked if they have encountered the images and what comes to mind when they see them.

Measures
Two distinct coding methods were utilized to interpret qualitative data and also to measure the awareness of the students. For the first coding method, three general words that can be conformed to all conditions were selected - sustainability, environment, and recycling. All the responses in each condition containing three general words were quantified. Further statistical analysis using Chi-square test was used to calculate the probability value, p-value to testify the comparison of the words' frequency among conditions were statistically significant. Such analysis allows to determine which condition or campaign the students could most successfully associate the three words with. The second coding method explores more specific awareness of each campaign. The frequent keywords from the response set were counted to observe participants' actual awareness of the image - how they actually perceived the given image. The result collected from the second coding method will accommodate detecting the discrepancy between actual awareness of participants to the image and the intentions of the image. This will provide suggestions of how each image can be revised for more effective promotion of the campaign.

Procedure

        All 131 participants completed an online survey (Appendix B), posted on UBC Reddit and Facebook pages. The data was collected before the Ripple Effect campaign took effect on March 7, 2016, to avoid the data from getting skewed due to the images being promoted. Consent was assumed when participants submitted the survey. The experimenters' contact information was also provided if any participants decided not to take part in the study anymore or have any concerns. The first part of the survey consisted questions regarding demographics of the participants such as age, year, gender, and faculty. Second part of the survey investigated the awareness of the sustainability campaigns. An open ended question was asked first: what UBC campaigns the students are aware of in general ("General campaigns" condition - the control). The three images were then presented in a specific order - Ripples Effect, Emily, and Sort it Out - without any labels or descriptions, and asked if they have come across the image before, and what comes to mind when they see the image. The participants were debriefed afterwards.

Results

        The result from the first coding method was calculated and cross-compared among conditions using chi-square. We found out that p-value < 0.00001 when we compare all the campaigns simultaneously. This shows that the result is statistically significant as the p-value is smaller than 0.05 (Appendix C: Calculator Table 1). Using three by two contingency table for chi-square test, we further cross compared each individual campaign in order to see if there was a statistically significance in comparisons between each campaign; for example, we cross compared General campaign against Sort It Out, Emily, and Ripple. From this calculation, we found out that every individual campaign yields a p-value greater than 0.05 (Appendix C: Calculator Table 2, 3, & 6), suggesting that the results are all statistically insignificant, except for the Sort It Out campaign. When we cross compared Sort It Out campaign against other individual campaigns, we found out that the results are all statistically significant with a p-value smaller than 0.05 (Appendix C: Calculator Table 4,5,& 7), and it had the highest rate of being associated with the sustainability-related words - sustainability, environment, and recycling - when compared to other campaigns. This result supports our hypothesis that the majority of students are more aware of the image of Sort it Out than Emily and Ripple Effect.

        Moreover, we took a closer look at the frequencies of the specific words that our participants associated each campaign with. For Sort it Out, as shown in the frequency table (Appendix D: Frequency Table 1), it was most frequently associated with the words such as UBC, recycling, bin/can, and sorting. There were only 6 out of 131 participants who reported that they did not know or have never heard of it. Contrarily, the frequency table of General campaigns (Appendix D: Frequency Table 2) showed that 47 participants reported that they did not know anything about campaigns on campus. This was followed by Mental Health campaigns, Tuition campaigns, and AMS campaigns. As for the Ripple Effect, the frequency table (Appendix D: Frequency Table 3) demonstrated that the participants associated the Ripple Effect image with rings, water, ripples, and, interestingly, Mickey Mouse. Similar to the Ripple Effect image, the participants associated Emily with many non-sustainability/environment-related words; as shown in the frequency table for Emily (Appendix D: Frequency Table 4), most participants reported that Emily was a girl/woman, related to UBC/AMS campaigns, or that they did not know the image, and unexpectedly, 17 participants reported that the image of Emily was either creepy or scary.

Discussion

According to the analysis of the 131 responses we collected, there were two factors that possibly made "Sort it Out" the most well-known campaign. Statistically, there were 22 participants relating "sorting", 62 participants relating "recycling" and 20 participants relating "waste" and "disposal" to "Sort it Out". The frequency of these words that were used to describe the "Sort it Out" campaign were significantly higher than the other two campaign images because the straight-forward text and the green background made it easier for UBC students to associate "Sort it Out" to environmental concerns. Secondly, there were 76 participants relating "UBC" to "Sort it Out", but there were only 22 participants and less than 10 participants relating "UBC" to the other two images. According to the data, it can be concluded that students were able to associate Sort It Out more with the sustainability campaign because of the high frequency of image "Sort It Out" appearing around the campus. Lastly, 44 participants indicated that the location (according to their responses, "garbage bin and trash can") suggested that the "Sort it Out" image helped them understand the meaning of the campaign more easily.

Limitations

One of the limitations of the study was the methodology. The online survey was essential to collect large number of sample size in a short time. The time constraint for the data collection limited the method of distributing surveys to online distribution rather than offline. As a result, many responses were reported in colloquial form or in internet slags; thus, it was difficult to find an effective way to code the data. In addition, we did not want to risk any priming issues, thus we let the participants answer for themselves rather than providing a choice of answers to them. This led to participants being able to misunderstand the question or just simply being too lazy to answer everything we asked for. Therefore, the issue of open-ended questions and unrelated answers might have resulted in insignificant results. We cannot conclude that the ability to associate keywords such as sustainability and environment to the three images equals the proof of awareness to the sustainability campaigns. We also could not identify the reason behind the success of "Sort It Out" as there are multiple factors that influence the awareness of the logo. For example, we may predict that the text in the logo or the location (where it usually is posted with recycling bins) have enhanced the awareness of the Sort It Out campaign. This reasoning came from comparison to other two logos as they do not contain texts nor they are exposed as frequent as the sort it out campaign is. However, we cannot draw any additional conclusions about other external factors that might have directly caused in better awareness of sort it out campaign. This is another interesting study to conduct. The experimental study design where it manipulates different kinds of exposure of the logos (independent variables) such as having the text in the logo or not, increasing iconographies in the logo, having simple or complicated logos and etc) will allow to detect the direct causation of increased awareness of the logo.

Recommendations for Our Client

The Sort it Out image was the most well-known campaign due to the location of the images were presented; almost all of the garbage cans around the campus had the image. Increasing the exposure of images around the campus will enhance awareness amongst the students. Also, by using a slogan or catchphrase along with the images, campaigns would most likely give a better and more long lasting impression on the students.

The awareness of image does not directly influence the behavior. Moreover, showing how much the students are aware of the images does not mean that they actually recycle or

consider about sustainability. Therefore, another suggestion would be to investigate if the students' awareness of the sustainability campaigns actually affect their behaviors.

In further research, we would like to investigate the effect on future sustainability campaigns, which increase the exposure of these three sustainability logos. We hypothesize that sustainability campaigns will directly help students to associate logos with sustainability because campaigns increase the frequency students see these logos. In detail, we will collect data using the same survey as we did this time to observe the frequency that participants relate keywords to logos after each campaigns. By comparing the data before the campaign and after the campaign, we can discover the effect of each campaign. Additionally, we can assume that increasing the exposure of logos to students can help students to associate logos to representations, and on the contrary, we predict that showing texts, such as "Sort It Out", along with the logos can help people to relate better to their representations. Modifying logos in a way that they can do a better job representing sustainability is much more effective.

References

Chi-Square Test Calculator. (n.d.). Retrieved April 07, 2016, from
        http://www.socscistatistics.com/tests/chisquare2/Default2.aspx

Appendix A

Sustainability Campaign Images

Ripples Image from Ripple Effect Campaign
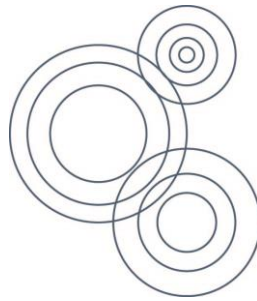
Emily Image from Emily Campaign

Sort it Out Image from Sort it Out Campaign

Appendix B

Survey Questions

1. How many years have you been studying at UBC?
2. What is your age?
3. Are you currently studying as an undergraduate or a graduate student?
4. I identify my gender as…
5. Which faculty are you in?
6. Are you an international or a domestic student?
7. Where do you currently live? Student residence/non-student residence but on campus/Richmond/Vancouver/Burnaby/Delta/Surrey/Langley/West Vancouver/North Vancouver/Coquitlam/New Westminster/Pitt Meadows/Maple Ridge/Others:
8. What campaigns are you aware of/think is important at UBC?
10. "Ripples" - what comes to mind when you see this image?
11. "Emily" - what comes to mind when you see this image?
12. "Sort it Out" - what comes to mind when you see this image?

Appendix C

Chi-Square Calculation

Calculator Table 1:All Campaigns compared:

Chi-Square Calculator

Success! The contingency table below provides the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

The chi-square statistic, *p*-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Sustainability	Recycling	Environment			Row Totals
General	8 (3.15) [7.49]	2 (9.44) [5.86]	4 (1.42) [4.72]			14
Ripple	3 (0.90) [4.91]	1 (2.70) [1.07]	0 (0.40) [0.40]			4
Emily	6 (2.47) [5.04]	3 (7.42) [2.63]	2 (1.11) [0.71]			11
Sort	3 (13.48) [8.15]	54 (40.45) [4.54]	3 (6.07) [1.55]			60
Column Totals	20	60	9			89 (Grand Total)

The chi-square statistic is 47.0657. The *p*-value is < 0.00001. The result is significant at *p* < .05.

Calculator Table 2: General Campaigns v.s. Ripple Effect:

Chi-Square Calculator

Success! The contingency table below provides the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

The chi-square statistic, *p*-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Sustainability	Recycling	Environment			Row Totals
General	8 (8.56) [0.04]	2 (2.33) [0.05]	4 (3.11) [0.25]			14
Ripple	3 (2.44) [0.13]	1 (0.67) [0.17]	0 (0.89) [0.89]			4
Column Totals	11	3	4			18 (Grand Total)

The chi-square statistic is 1.5195. The *p*-value is .467788. The result is *not* significant at *p* < .05.

Calculator Table 3: General Campaigns vs Emily:

Chi-Square Calculator

Success! The contingency table below provides the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

The chi-square statistic, p-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Sustainability	Recycling	Environment			Row Totals
General	8 (7.84) [0.00]	2 (2.80) [0.23]	4 (3.36) [0.12]			14
emily	6 (6.16) [0.00]	3 (2.20) [0.29]	2 (2.64) [0.16]			11
Column Totals	14	5	6			25 (Grand Total)

The chi-square statistic is 0.804. The p-value is .668995. The result is *not* significant at $p < .05$.

Calculator Table 4: General Campaigns v.s Sort It Out:

Chi-Square Calculator

Success! The contingency table below provides the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

The chi-square statistic, p-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Sustainability	Recycling	Environment			Row Totals
General	8 (2.08) [16.83]	2 (10.59) [6.97]	4 (1.32) [5.41]			14
Sort	3 (8.92) [3.93]	54 (45.41) [1.63]	3 (5.68) [1.26]			60
Column Totals	11	56	7			74 (Grand Total)

The chi-square statistic is 36.0287. The p-value is < 0.00001. The result is significant at $p < .05$.

Calculator Table 5: Ripple Effect v.s. Sort It Out:

Chi-Square Calculator

Success! The contingency table below provides the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

The chi-square statistic, *p*-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Sustainability	Recycling	Environment			Row Totals
Ripple	3 (0.38) [18.38]	1 (3.44) [1.73]	0 (0.19) [0.19]			4
Sort	3 (5.62) [1.23]	54 (51.56) [0.12]	3 (2.81) [0.01]			60
Column Totals	6	55	3			64 (Grand Total)

The chi-square statistic is 21.6436. The *p*-value is .00002. The result is significant at *p* < .05.

Calculator Table 6: Ripple Effects v.s. Emily:

Chi-Square Calculator

Success! The contingency table below provides the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

The chi-square statistic, *p*-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Sustainability	Recycling	Environment			Row Totals
Ripple	3 (2.40) [0.15]	1 (1.07) [0.00]	0 (0.53) [0.53]			4
Emily	6 (6.60) [0.05]	3 (2.93) [0.00]	2 (1.47) [0.19]			11
Column Totals	9	4	2			15 (Grand Total)

The chi-square statistic is 0.9375. The *p*-value is .625784. The result is *not* significant at *p* < .05.

Start Again

Calculator Table 7: Emily v.s. Sort It Out

Chi-Square Calculator

Success! The contingency table below provides the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

The chi-square statistic, *p*-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Sustainability	Recycling	Environment			Row Totals
Emily	6 (1.39) [15.21]	3 (8.83) [3.85]	2 (0.77) [1.94]			11
Sort it Out	3 (7.61) [2.79]	54 (48.17) [0.71]	3 (4.23) [0.36]			60
Column Totals	9	57	5			71 (Grand Total)

The chi-square statistic is 24.8511. The *p*-value is < 0.00001. The result is significant at *p* < .05.

Appendix D
Frequency Tables

Frequency Table 1: Sort It Out Frequency Table (ranked)

Specific Words	UBC	Recycling	Bin/Can	Sorting	Waste	Sustainability	Environment	Disposal
Frequency	76	62	44	22	12	10	8	8

Specific Words	No/never	Nest	IKB	Bus Stop	Commercial/Slogan
Frequency	6	4	4	4	4

Frequency Table 2: General campaigns Frequency Table(ranked)

Specific Words	Do Not Know	Mental Health	Tuition	AMS	Sustainability	LGBT	Thunderbirds	Recycling
Frequency	47	13	11	10	7	7	3	2

Frequency Table 3:Ripple Effect Frequency Table (ranked)

Specific Words	Rings	Water	Ripple	Mickey Mouse	Math	Network	Gear	Planets
Frequency	27	21	19	13	11	6	6	5

Specific Words	Target	Sustainability	Ripple Effect	Glasses	Recycle
Frequency	5	3	2	1	1

Frequency Table 4: Emily Frequency Table (ranked)

Specific Words	Girl/Woman	No/Don't Know	UBC/AMS	Cartoon/character/Mascot	Scary/Ugly/Creepy	Person	Sustainability	Translink/Bus/Canada line
Frequency	31	22	22	20	17	8	8	7

Specific Words	Makeup/Eyeliner	Emily	Environment	Recycle	Ripple Effect
Frequency	5	3	2	2	1