How built environment affects wellbeing based on students' preference for different cafes in the UBC Vancouver campus

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Executive Summary

The University of British Columbia in Vancouver has 29 projects under construction as of April 2015, ranging from academic lands to public spaces (UBC Campus and Community Planning, 2015). Research has shown that built environments have both direct and indirect effects on psychological well-being and mental health, one of which is how crowding and elevated noise levels hoist psychological distress (Ewans, 2003). This study examines how built environments (e.g. social spaces, access to nature) influence the well-being of students at UBC. This research focuses on students' preferences of UBC Food Services Cafes and assumes that students prefer spaces in which they feel good/comfortable (Van Kamp et al., 2003). Using a correlational study, we first surveyed 82 UBC students and asked them to identify a favourite, mediocre and an avoided cafe. The results showed preference levels to Stir it Up, Neville's, and Sauder Exchange Cafe, respectively. Then, we measured a pre-selected combination of eight factors of the built environments in these spaces by interviewing 20 participants per selected site. We finally analyzed data to find a correlation between specific factors of the built environment and students' preferences. We did not obtain statistically significant results regarding any of the eight factors, however we found a trend of preference for lighting, location, less crowding and reduced noise levels. Thus we suggest that UBC needs to make sure, for future construction of UBC Food Services Cafes, to build them in highly populated class locations that have great lighting and are spacious.

How built environment affects well-being based on students' preference for different cafes in the UBC Vancouver campus

Since we wanted to examine how built environments influence the well-being of students at UBC, our specific research question was, to what extent does the aspects of the built environment forecast the choices that UBC students make to spend time in UBC Food Services Cafes. We chose to focus on UBC Food Services Cafes to control the food available and its price from being determinants of students' choice. We predicted that aspects of the built environment, specifically lighting, crowding, noise level, air quality, temperature, cleanliness, decor, access to and view of nature, heavily influence the UBC Food Services Cafes students prefer, based on the feelings generated by the surrounding space and the atmosphere it produces.

Method

Preliminary Survey

Participants: 82 participants from the University of British Columbia, Vancouver, chosen based on physical opportunity sampling.

Conditions: No independent variables were tested for as participants were asked to directly rate their preferences from a list of the selected cafes on campus.

Measures: Participants were asked to choose their preferred cafe, one which they felt neutral about, and their least favourite one. In order to eliminate location and peer bias, participants were indicated to ignore these factors at the time of their choosing. A sample of the preliminary survey can be seen in Table A1, Appendix A.

Procedure: In order to determine which UBC Food Services Cafes we would conduct our survey, each team member conducted, on average, 20 surveys in different locations with high student flow across campus. This created a pool of participants from different faculties and areas of study. Based on the mode of the participants' responses, we classified Stir it up as the preferred cafe, Neville's as the neutral, and Sauder Exchange Cafe as the least preferred.

Focal Survey

Participants: 60 participants were surveyed, 20 participants at each of the chosen locations (Stir it up, Neville's, and Sauder Exchange Cafe), who were randomly selected based again on physical opportunity sampling.

Conditions: Each of the three cafes were chosen based on the results from the preliminary survey. Based on our hypothesis, the cafe at which participants were surveyed would determine how they rated different aspects of the built environment.

Measures: In each of the three selected cafes, participants were asked to rate how satisfied they felt with different factors of the built environment such as lighting, crowding, noise level, air, temperature, cleanliness, decor, and location. They were asked to rate each aspect on a scale of zero to ten, ten being extremely satisfied and zero being not at all satisfied. Finally, the survey asked participants to briefly describe why they are or are not satisfied with the space in which they were in. A sample of the focal survey can be seen in Table A2, Appendix A.

Procedure: Each team member delivered the survey in one of the cafes on the same day between 10 am and 12 pm. In addition to delivering the surveys, we performed a head count every half hour to establish an approximate mean of the number of people in the cafe within the hours of observation. We

recorded notes and observations of the physical structures found in each cafe such as number of chairs and tables, number of windows, number of entrances, and whether or not it overlooks nature.

We used version 3.0 Beta of Statistics Calculators to conduct a one-way ANOVA in order to determine whether or not a significant difference exists between the mean levels of satisfaction with each different aspect of the built environment across the different cafes. Means, standard error and standard deviation were all calculated using the 2013 version of Excel.

Results

Preliminary Survey: The mode of the answers of our 82 participants was determined for each category (favourite, least favourite, neutral). The most popular cafe was the 'Stir it up' cafe in the Buchanan building (Mode=27, 33% preference). The least favourite cafe was the
'Sauder Exchange Cafe' in the Henry Angus building (Mode= 20, 24% preference). The cafe which was most often voted as the one students feel neutral in is the Neville's Cafe in the Neville Scarf building (Mode= 17, 21% preference)

Focal survey: 20 students in each location rated the eight factors on a scale of 0-10. In the Stir it up cafe (voted favourite) the three best rated factors of built environment were the location (M = 9.05, SD = 1.05), the lighting (M = 8.85, SD = 1.50) and the airflow (M = 8.05, SD = 1.54). At Neville's Cafe (voted neutral), the same three factors were best rated, but in a different order; Location (M = 8.9, SD = 1.29), airflow (M = 8.1, SD = 1.29) and lighting (M = 7.9, SD = 1.59). For the Sauder Cafe (voted least favourite), we considered that calculating the three worst rated factors was more relevant, so as to understand what students dislike most about the space they liked least to be in. Those were crowding (M = 5.30, SD = 2.64), cleanliness (M = 6.15, SD = 2.91) and noise (M = 6.65, SD = 1.81).
Although we decided to focus on the three worst rated factors for the Sauder Cafe (least favourite), we could not overlook that the three best rated factors were once again location, lighting and airflow. Indeed calculating the overall average of ratings (N= 60 ie. 20 each cafe) reported that the three best rated factors were the location (M = 8.7, SD = 1.53), the lighting (M = 8.1, SD = 1.43) and the airflow (M = 7.9, SD = 1.52).

A one way ANOVA was carried out for each of the eight factors to determine the significance of the difference between ratings in of the 3 cafes. With (p < 0.05), none reported as significant.

Discussion

An initial interpretation is that location, light and airflow were rated highest because those were the three most important to students' well-being, which might have prompted them to be more sensitive in their rating. This could indicate that increased attention should be on those three factors when planning new built spaces. The small 'other comments' section at the bottom of the focal survey contained data about some details of students' preferences. Regarding location for example, many students mentioned the distance to their classes as well as the centrality of the cafes as important factors in their decision to come to these spaces. We were wary that students coming to these cafes usually have class in the corresponding buildings, thus the confounding variable of 'relative distance' could have acted upon their decision. Although we attempted to prompt students to ignore 'distance' and 'social' reasons for choosing a cafe, it is a limitation to expect that they can really strip those variable away. Another unexpected confounding variable and limitation in the preliminary survey was that many students mentioned not knowing all of the cafes on the list, therefore basing preference only between the cafes they personally knew.

As for the lighting, students mentioned their liking of the large windows, especially in Stir it up, as it allowed for an outside view and a lot of natural light in the cafe. Given that although Neville's does not have many windows students still rated the lighting factor quite highly (7.9/10) perhaps good artificial (electric) lighting is still efficient in making students feel good in an environment. Further research could investigate how significantly the type of lighting (natural vs. artificial) affects well-being and comfort in a space.

Regarding the airflow, students mentioned liking high ceilings and places that allow for good air, even when it is crowded. However, it is possible that since the survey was conducted on an overcast day in March (when it is still quite chilly in Vancouver) an appropriate setting of the electric heating might have been the reason why student ratings were high. If that was the case, we could suggest that the importance of good quality technological implementations have to be involved in thinking about building new environments. As Hawkins (1981, p. 284) indicates, the room temperature has an effect on 'personal temperature', a cold room increases headaches, and those effects are different depending on the time of day. Not feeling too cold or too warm is a central element of physical comfort and subjective well-being. Linked to this, we measured the flow of people in each space to calculate average crowding by counting the number of heads every 25 minutes for 2 hours. Correlating with the number of seats available, Sauder Cafe was observed as the most crowded, which was well represented in a low rating of that factor.

A second interpretation for a general high rating of the three same factors perhaps represents that all of the UBC cafes are built very similarly. In terms of materials, colour schemes (mainly black and white- students indicated not liking when too much black was used as in the Sauder Cafe), decoration and arrangement of space (e.g. number of tables to m^2). Multiple studies have been carried out to research the concepts of consistency vs. innovation, usual vs. new, standard vs. unique designs. There is, however, limited literature regarding those concepts applied to built environments. A suggestion for further research could be to investigate the well-being of students in innovative spaces, designed and built differently from 'the usual' or the 'standard.'

A few other limitations of the study were the rather small sample size (especially to represent such a large and diverse UBC student population) and that we received limited feedback/criticism and direction from the stakeholders. Perhaps clearer expectations could have produced an even more relevant study and findings.

Recommendations for UBC

Although our study didn't prove to be statistically significant, we did see patterns in what students most cared about with respect to the built environment. Lighting (i.e., brightness of the space, amount of natural light etc.) and location (i.e., closeness to classes) were the most important elements that students both rated in the survey as well as making note of it at the completion of the second survey. Therefore we believe that UBC should ensure that for future construction of campus cafes, that both these elements are of top priority, making sure that cafes are well lit as well as in densely populated class locations. Students noted their greatest discouragement with the spaces studied was a lack of detail both in the décor and functionality. Students want to be somewhere warm and fun, so we suggest brighter but warmer paint colors for the spaces windowless walls. Students also noted their frustrations resided in the student functionality of the space: complaints of not enough electrical outlets, tables and chairs, and not enough views from the windows. We believe that with these alterations and recommendation for the spaces studied, UBC will explicitly be able to connect their spaces to the well-being of the students that visit them.

References

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Appendices

Appendix A	Survey Questions
Appendix B	Photos of Research Locations
Appendix C	Tables, Charts and Results

Appendix A
Survey Questions

Table A1: <u>Preliminary Survey</u>

Imagine that all of your friends and colleagues are not on campus today. Assume that all of the following UBC Cafes are in the same distance from you. From the following, choose your favourite (1), least favourite (2), and one you feel neutral about (3).

A. Cafe MOA — Museum of Anthropology
B. Daily Dose — Pharmaceutical Cafe
C. IRC Snack bar — Instructional Resources Centre
D. Law Cafe — Allard Hall
E. Magma Cafe — EOSC Building
F. Neville's — Neville Scarfe Building
G. Niche Cafe — Beaty Biodiversity Museum
H. Reboot Cafe — ICICS Computer Science
I. Sauder Exchange Cafe — Sauder School of Business
J. Stir it up — Buchanan

(1)
(2)
(3)

Table A2: <u>Focal Survey</u>

Survey

Please rank the following items from 0 (not at all satisfied) to 10 (extremely satisfied).

- Are you satisfied with the light?

0   1   2   3   4   5   6   7   8   9   10

- Are you satisfied with the crowding?

0   1   2   3   4   5   6   7   8   9   10

- Are you satisfied with the noise level?

0   1   2   3   4   5   6   7   8   9   10

- Are you satisfied with the air?

0   1   2   3   4   5   6   7   8   9   10

- Are you satisfied with the temperature?

0   1   2   3   4   5   6   7   8   9   10

- Are you satisfied with the cleanliness?

0   1   2   3   4   5   6   7   8   9   10

- Are you satisfied with the decor?

0   1   2   3   4   5   6   7   8   9   10

- How happy are you with the location with this cafe?

0   1   2   3   4   5   6   7   8   9   10

Why are/aren't you happy with this space? Please briefly describe in two sentences.

_____

_____

_____

Appendix B
Photographs of Research Locations

Image B1: <u>Stir It Up Café – Buchanan A</u>

Image B2: <u>Neville's Café – Neville Scarfe Building</u>

Image B3: <u>Sauder Exchange Café – Henry Angus Building</u>

Appendix C
Tables, Charts and Results

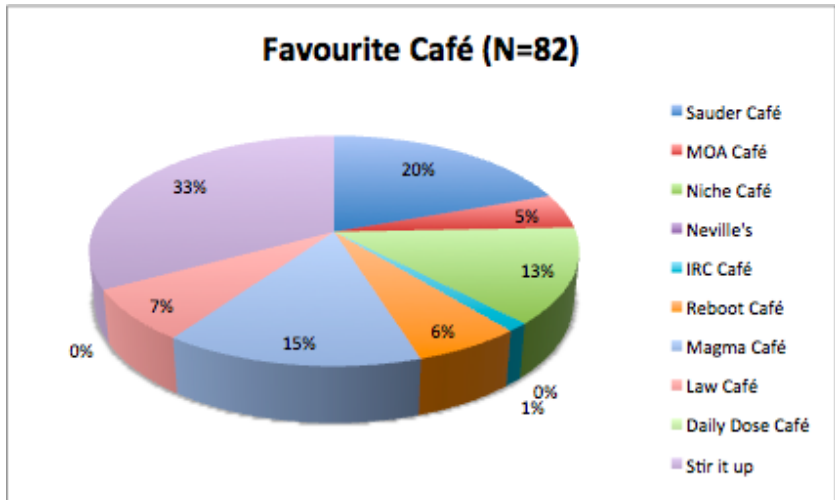Table C1: Preliminary Survey Results for Favourite Cafe

Favourite Café (N=82)

- Sauder Café
- MOA Café
- Niche Café
- Neville's
- IRC Café
- Reboot Café
- Magma Café
- Law Café
- Daily Dose Café
- Stir it up

Table C2: Preliminary Survey Results for Least Favourite Cafe

Least Favourite Café (N=82)

- Sauder Café
- MOA Café
- Niche Café
- Neville's
- IRC Café
- Reboot Café
- Magma Café
- Law Café
- Daily Dose Café
- Stir it up
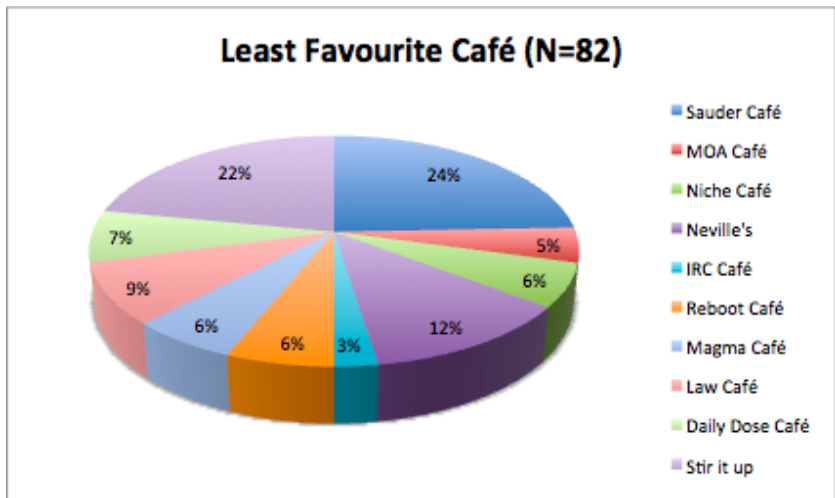
Table C3: Preliminary Survey Results for Neutral Cafe
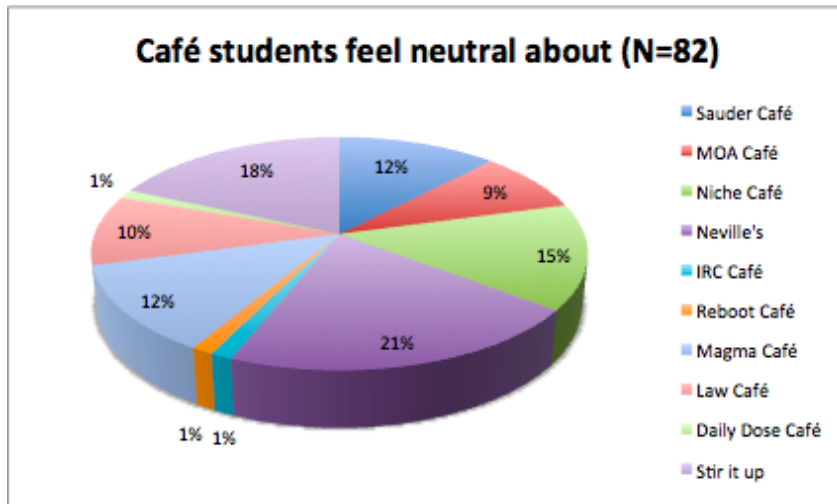
Table C4: Focal Survey Results — Overview
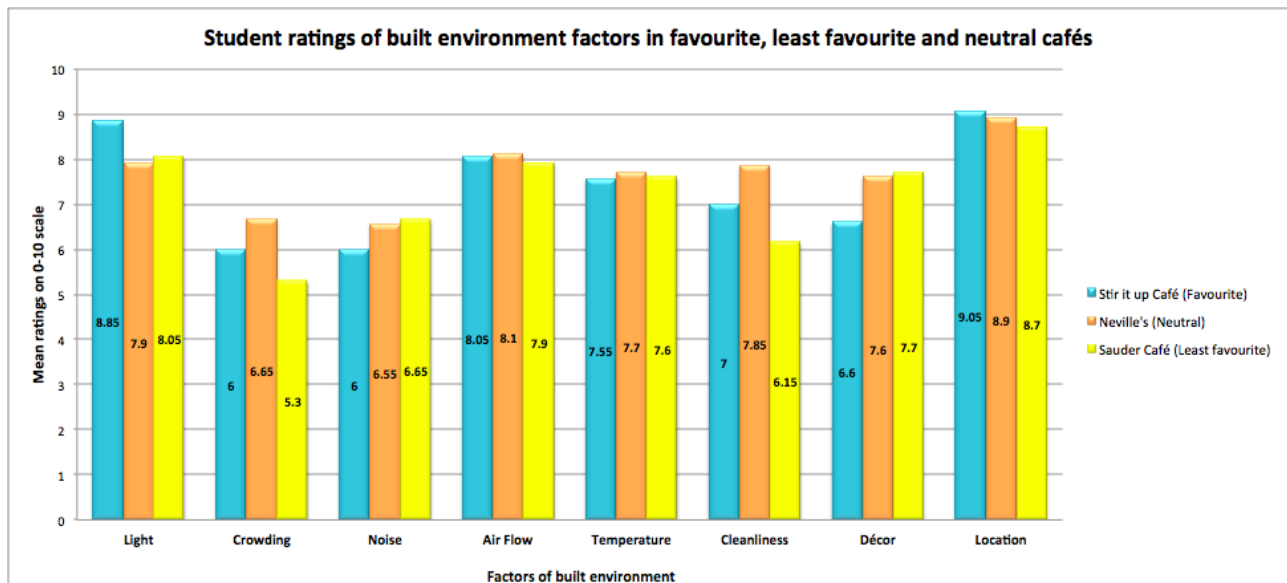
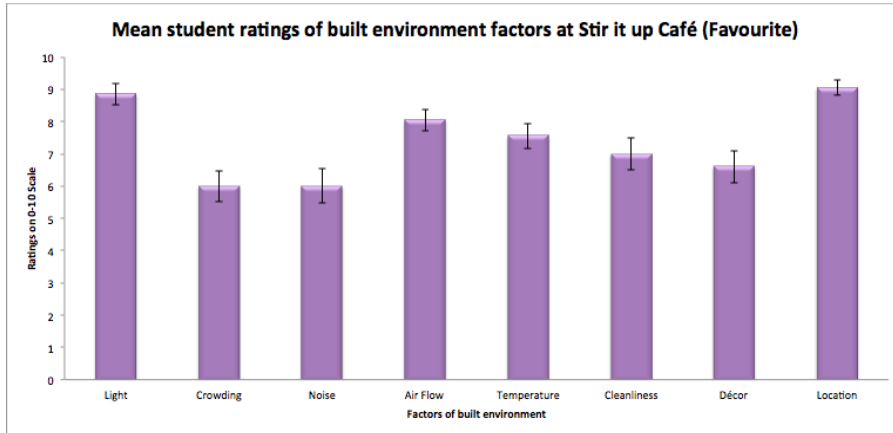Table C5: <u>Focal Survey Results — The Three Best Rated Factors at Stir it up Cafe</u>

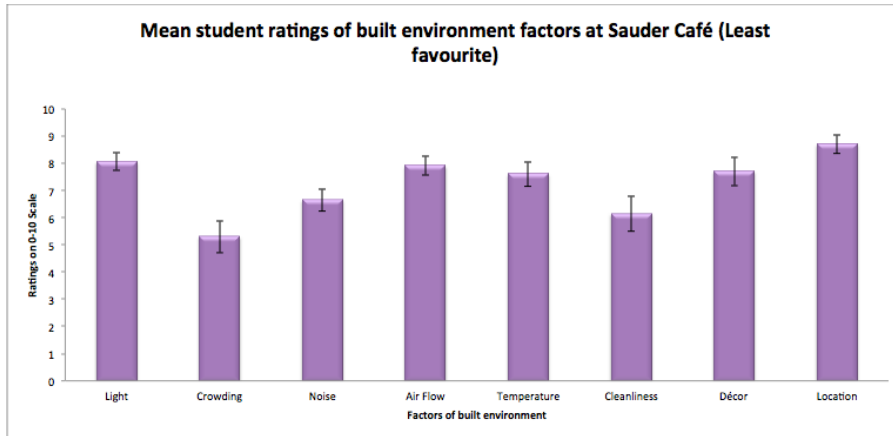Table C6: <u>Focal Survey Results — The Three Worst Rated Factors at Sauder Cafe</u>

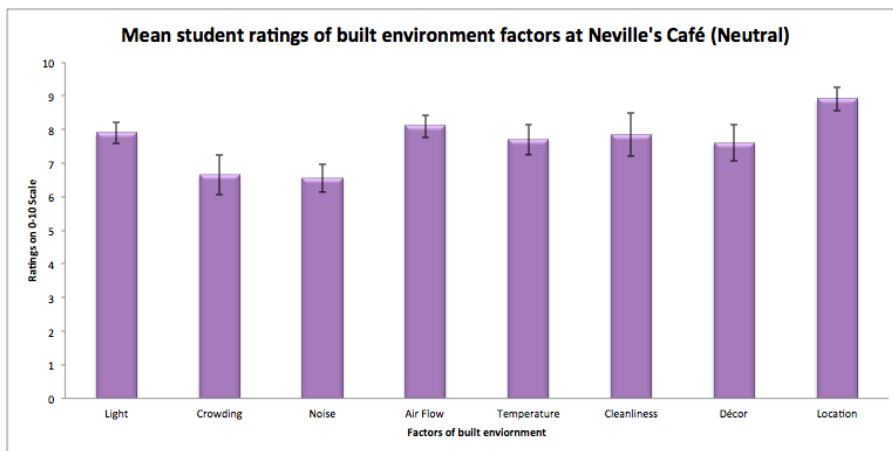Table C7: <u>Focal Survey Results — The Three Best Rated Factors at Neville's Cafe</u>

Table C8: <u>One Way ANOVA Results</u>

Built Environment Factor	P Value	Significant
Light	0.110	Not significant
Crowding	0.169	Not significant
Noise	0.606	Not significant
Air flow	0.903	Not significant
Temperature	0.964	Not significant
Cleanliness	0.070	Not significant
Decor	0.247	Not significant
Location	0.698	Not significant