

The Psycho-Geographical Association:

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The Centre for Interactive Research on Sustainability
(CIRS) Common Kitchen Study

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The CIRS kitchen space is routinely left uncleaned, despite having signs within the kitchen space telling inhabitants to do so. To address this problem, we tested the relationship between wording of signs in 3 common kitchens of the CIRS building at UBC, and CIRS inhabitants' behaviors and attitudes towards leaving their dishes in the sink. We used pre and post surveys to measure out participant's attitudes towards the space, and then observed CIRS inhabitants' behaviors with the original signs, and then after a week, changed the wording of the signs to make them selfish-appeal/funny/moral-positive for the experimental conditions. Our study suggests (based on survey results) that in general, people do not feel responsible for the cleanliness of the CIRS common kitchens, it should be noted however that these responses could have been influenced by response biases within the survey. Changing the original signage, was also ineffective at the CIRS inhabitant's behaviors. This effect could be due to observation bias and random variance, and could also be a product of limited observation time. For future research regarding the CIRS kitchen, we suggest testing other versions or aspects of the signs, such as sizing, color, font, and placement which may be more effective for changing people's attitudes.

This study is based off of issues within the CIRS building with regards to inhabitants of CIRS not obeying the signage within the common kitchen area, some people seemingly do not feel responsible for their shared space and therefore do not feel the need to contribute to the space. This disconnect could be due to their individual feelings toward the shared kitchen space, as in they do not care about the space, it could be due to a lacking sense of community within CIRS, or simply people do not feel it is their responsibility to keep the space clean. The purpose of the study then, is to attempt to determine how we might influence these negative behaviors and attitudes. Our research question was what kind of signage can be used to change the attitudes and behaviors of the CIRS inhabitants within the CIRS common kitchen? Our hypothesis was that signs that make salient CIRS inhabits responsibility towards the space while simultaneously making them laugh will be the most effective in changing their attitudes and behavior.

Methods:

Participants included CIRS inhabitants of the 2nd, 3rd, and 4th floors. On the pre-survey there were 58 respondents. On the post survey there were 22 post survey respondents. Additionally, there were 64 people in total we observed over the course of the two weeks. The floor breakdown of the participants is as follows. Of the 58 pre-survey participants, there were 23 from the 3rd floor, 10 from the 4th floor, and 24 from the 2nd floor, with 1 respondent not indicating their floor. Out of 22 post-survey respondents, 2 were from the 4th floor, 8 were from the 3rd floor, and 9 were from the 2nd floor, with 2 choosing not to respond.

We had four conditions in total, all of the conditions were based around a sign in the common kitchen regarding keeping the sink and counter clean. We kept the general design of the signs consistent to ensure that we were testing for word content of the sign being responsible for any potential changes in behavior or attitudes (Refer to the appendix for images of the signs, section 1.1). The first condition was our control condition which consisted of observations of the CIRS common kitchen with the original and already present signs placed in the CIRS kitchen (See Appendix). Our second condition was a selfish appeal sign on the second floor, which was intended to make people feel personally invested in the space. Our third condition was a funny condition sign on the third floor, its purpose was to amuse people in hopes of getting them to clean their dishes. Finally, our fourth condition was a moral positive sign on the fourth floor designed to make people feel like it was their moral obligation to take care of the shared kitchen space.

We measured behaviours relevant to the sign content directly by noting the number of dishes on the sink/counter every 15 minutes from 1-2PM on each observation day. This was to give us an example of how effective the signs were at changing the targeted behavior (leaving dishes in the sink). However, without a long enough observation period it is impossible to determine whether the changes were due to the signs themselves or to confounding variables. For our procedure we chose to observe and to do a pre and post survey using the UBC fluid survey because behaviors aren't always congruent with attitudes. For the pre-survey, we created our own set of survey questions in order to be specific to the CIRS common kitchen space, with the inclusion of several free response questions to give more in-depth information on participant's attitudes. To examine perceptions towards the kitchen space we included sliding scale questions to determine how important a clean kitchen space was to the participants, their current satisfaction with the space, and the cleanliness of their own kitchen as a reference point. In order to measure attachment, we included drop down options for how long

participants were in the building each day, as well as sliding scale questions measuring how much participants cared about CIRS, their sense of responsibility for the space, how often they talked with others in the building as well as how connected they felt with others. We then asked how often they used the kitchen as well as how often they contributed to maintaining it. One of the pre-survey questions asked the inhabitants what sign they would prefer which later helped us in deciding which signs to put up. The pre-survey was available from February 17th to February 24th. Our observations took place on two separate weeks, one for the control and one the intervention conditions, leaving a week in between the end of the control period and the intervention to give the subjects time to notice the new signs. We observed 3 days out of each week from 1-2pm. Our control observations were conducted from February 29th until March 3rd, the signage intervention was during the week of March 14 to 17th. After this we did a post survey to see if there was an attitude change in regards to the new signs. This was also left up for roughly a week. For the post-survey asked the questions measuring attachment from the pre-survey to maintain consistency and see if this factor had an effect in changing behavior, as well as the questions regarding kitchen perceptions. We also asked whether the participants noticed the new signs, what effect they thought the signs had in changing their behavior and making them feel attached to CIRS, as well as a space for additional comments. Both surveys contained questions for demographic information such as gender, department, the role of each respondent in the building, etc. The post-survey was open from March 24th to March 30th.

Results: (please refer to the appendix to view our data, section 1.2)

The sign interventions we created had no effect. We calculated our observational data using Welch's two-sample t-test. Across all conditions there was no significant effect, even to the point where there were significantly more dishes present after we implemented the new signs. None of the signs fared better when compared to the original, this is due to the fact that we had a limited amount of observational data and as a result a limited amount of statistical power. To clarify, our data was far too variable, we would observe to find only a few people to use the sink on one day of observation and many more people on another day, if we had more observational days we would have had a better perspective on the general amount of people to use the kitchen area daily between the hours of 1 to 2 pm. Because of the fact that the data set varied so vastly it was skewed. Furthermore, even if we did have a significant effect, due to the low number of observational days we would have had to state the effect as being due to random variance. Although the observational data is not useful, the survey data indicated some interesting findings that will be discussed further in the next section. The pre-survey results were in line with the anecdotal evidence we received from members of the CIRS staff, who felt CIRS inhabitants did not feel responsible for the space. The pre-survey results indicated that people generally did not feel responsible for the shared kitchen space indicating that they lacked a sense of community. We also found that the post-survey results indicated little change in CIRS inhabitants' attitude towards the shared kitchen space. To conclude, possible reasons our signs had no significant effect include: reactivity from the pre-survey or the presence of new signs themselves, and random variance.

Discussion:

There are several limitations to our study. As mentioned previously, we did not gather enough observational data. As a result, we did not have sufficient data or statistical power; even if we did have a significant effect, we would have had to report the effect as being due to random variance. We also did

not explore possible effects of changing signage colors, placement, or sizing. Respondents from the survey indicated that they would prefer a change in the placement of the signs, suggesting that most people cannot see the sign from where they stand at the sink. It would be beneficial to manipulate a change in signage color or placement in order to get people to notice them more, as there is a possibility that the signs simply blend into the background. The reason we did not change the signs was to test for word content only. If we had more time, we would have liked to have design a primary test for what sizes and colors would have been the most noticed. Another limitation of our study method comes from the flawed nature of the self report method, this method can produce a number of response biases such as the moderacy, extremity, and acquiescence biases. We also neglected to account for the reference group effect, if an individual associate themselves with someone that cleans the kitchen once every week then they might evaluate themselves cleaning the kitchen once a week as being pretty good, if we can compare this person to someone who associates themselves with someone who helps cleans daily, this would set a higher standard of cleanliness for that individual. These possible reference group effects may account for CIRS inhabitants' behavior regarding the common kitchen, if groups of people do not care then this will have an effect on other people's attitudes as well. Lastly we did not standardize the data, this would have been a possible solution to the potential response biases but due to our study being imperative towards individual response data we could not lose those individual responses (as that is the result of standardizing). However, it would have been beneficial to reverse score our survey to attempt control of the potential biases. It should be noted that the self report method is an unfortunate companion of environmental and survey dependant psychological study.

In regards to the pre-survey questions, there were a number of interesting gender differences in the results. For starters, both males and females reported caring about CIRS about equally, with men at 80.93 and 81.28. However, for the question regarding how happy one was with the cleanliness of the shared kitchen, the average for the male responses was 78.85 while females scored 56.34 average, indicating a gender differences in perceptions of cleanliness for the space, or at least caring about it. Furthermore, when asked the question about how responsible one felt for maintaining the shared kitchen space, for males it was 24.3 average and for females it was 49.77. Interestingly, however, men and women both felt around the same responsibility for their actions in general in CIRS, with men at 91.71 and women at 90.13 average, which indicates that the men felt less responsible for the kitchen itself, which is consistent with the idea of gender socialization of kitchen maintenance being "women's work". We are not going to elaborate on the post survey results because there were only 20 respondents, as opposed to the 58 respondents for the pre survey. This due to the fact that it was available for less time, the post survey fell on holiday time (Good Friday and Easter Monday) meaning that there were technically only three days for people to actually respond. The gap of respondents in between the two surveys resulted in less availability for us to compare pre and post survey data.

When comparing how other floors responded to the same questions, we took an extensive look at the following questions: *how responsible do you feel for maintaining the kitchen space?* and *how connected do you feel with the other inhabitants on your floor?* Floor four scored 51.44 average on how responsible, and 52 for connectedness. Floor two had a 42.74 average for how responsible and 64.25 for connectedness, and on floor three it was 37.96 for how responsible and 59.67 for how connected. Even though floor four had the lowest level of connectedness, they had the highest level of responsibility. The third floor felt the least responsible.

Future Recommendations:

We would recommend manipulating placement of the signs, as well as experimenting with different colors and sizes in order to get people to notice them more. Placement of the signs in particular was an issue that was pointed out several times throughout the surveys. As well as for future observational study to observe more consistently, to account for reference group effects and keep that in mind as being part of an effect to people's potential behaviors and attitudes. A possible field of future research could be conducted where one would explore the effects of CIRS inhabitants being 'watched' by a pair of eyes. A study conducted by Bateson et al. (2006), explored people's behavior being affected by a pair of eyes. In their study, if there is a picture of a pair of eyes in a place, people will be more likely to follow the rules compared with if there is no such picture. Even though there is not a real pair of eyes watching them, people still seem to feel the effects of being watched. This effect could be experimented with at CIRS in order to get inhabitants to clean their dishes more consistently. Another suggested direction of research comes from a study by Nabi et al., (2007), they tested the effect of humorous wording on getting participants to cooperate. They found that more humorously worded messages were more effective in getting people to cooperate with each other, this research could be implemented into the CIRS common kitchen for similar effects.

Because CIRS has so many different faculty members in different fields it can produce an effect of segregation, therefore, it would be beneficial to encourage more community within the CIRS inhabitants. Ways we could do that include: group activities, multi-level and inter-level interventions, and making the CIRS space more personal. Group activities encourage the sense of community (Easter egg hunts, fundraisers etc). Multi-level and inter-level interventions help in gaining further insight into the problem. More specifically, we could also conduct Multi level interventions (in terms of the different floors), our anecdotal evidence indicated that there was suspicion of people not feeling responsible for the space. The CIRS staff could talk to people on the specific floors, using the pre-survey results as a platform to speak from that's based in proof rather than suspicion about people's attitudes towards the responsibility of the shared space. Implementing this could lead to potential solutions. Finally, to make CIRS more personal, we could allow people to bring personal items to put around the shared space so that they might feel more at home. This might also discourage use of the reserved tables and kitchen from individuals who are not involved in the CIRS community.

Appendix:

A number of factors need to be addressed regarding the outcomes of our study. First, the clients were heavily involved in our project and as a result, this led to delays in terms of waiting for feedback and approval at various stages of our study (we fully acknowledge and appreciate that it takes time to respond and that everyone is busy, we simply mean to state that it did take time). More specifically the post survey was up for less than a week as a result of waiting for feedback. The time it took for the clients to approve the signs also affected the amount of time our signs were left up, hence why we were only able to collect experimental data over the course of one week. Over the duration of our project we were met with inconsistencies between the expectations of the clients and the professor about how we should conduct and design our study, this caused some confusion and resulted in us taking time to do and consider things that were not necessary in the end.

References:

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**IF YOU WANT A HAPPIER PLANET,
START SMALL BY TAKING CARE OF
YOUR SHARED KITCHEN AREA.**



Please keep the sink & counter clean.

Thank you !



Appendix 1.1. Floor 2

**WARNING DISHES LEFT IN THE SINK
ARE SUBJECT TO DISH GOBLINS**



Please keep the sink & counter clean.

Thank you !



Floor 3

CIRS IS OUR HOME, TREAT IT LIKE ONE.



Please keep the sink & counter clean.

Thank you !



Floor 4

1.2

CIRS study observational data Welch Two-Sample t tests:

FLOOR 3

data: d\$Baseline.cleanliness3.1 and d\$Manipulation.cleanliness3.2

t = -5.1711, df = 4, p-value = 0.006647

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-5.840262 -1.759738

sample estimates:

mean of x mean of y

1.0 4.8

t(df) = 5.17, p < 0.01

data: d\$Dishes.per.users3.1 and d\$Dishes.per.user3.2

t = -1.8501, df = 4.3129, p-value = 0.1328

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-4.5585184 0.8505184

sample estimates:

mean of x mean of y

0.566 2.420

t(df) = 1.90, p > 0.01

data: d\$Kitchen.users3.1 and d\$Kitchen.users3.2

t = -1.8353, df = 7.2746, p-value = 0.1075

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-3.6457639 0.4457639

sample estimates:

mean of x mean of y

1.4 3.0

t(df) = 1.84, p > 0.01

FLOOR 4

data: d\$Baseline.cleanliness4.1 and d\$Manipulation.cleanliness4.2

t = -2.3333, df = 4, p-value = 0.07996

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-3.0658671 0.2658671

sample estimates:

mean of x mean of y

5.6 7.0

t(df) = 2.33, p < 0.01

data: d\$Dishes.per.user4.1 and d\$Dishes.per.user4.2

t = -1.2242, df = 6.7628, p-value = 0.2618

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-4.954026 1.590026

sample estimates:

mean of x mean of y

1.468 3.150

t(df) = 1.22, p > 0.01

data: d\$Kitchen.users4.1 and d\$Kitchen.users4.2

t = -0.42164, df = 7.9961, p-value = 0.6844

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-2.587856 1.787856

sample estimates:

mean of x mean of y

1.4 1.8

t(df) = 0.42, p > 0.01

FLOOR 2

data: d\$Baseline.cleanliness2.1 and d\$Manipulation.cleanliness2.2

t = 1.633, df = 4, p-value = 0.1778

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.2800874 1.0800874

sample estimates:

mean of x mean of y

0.4 0.0

t(df) = 1.63, p > 0.01

data: d\$Dishes.per.user2.1 and d\$Dishes.per.user2.2

t = 1.5, df = 4, p-value = 0.208

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.255289 0.855289

sample estimates:

mean of x mean of y

0.3 0.0

t(df) = 1.50, p > 0.01

data: d\$Kitchen.users2.1 and d\$Kitchen.users2.2

t = -0.63246, df = 7.3394, p-value = 0.5463

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

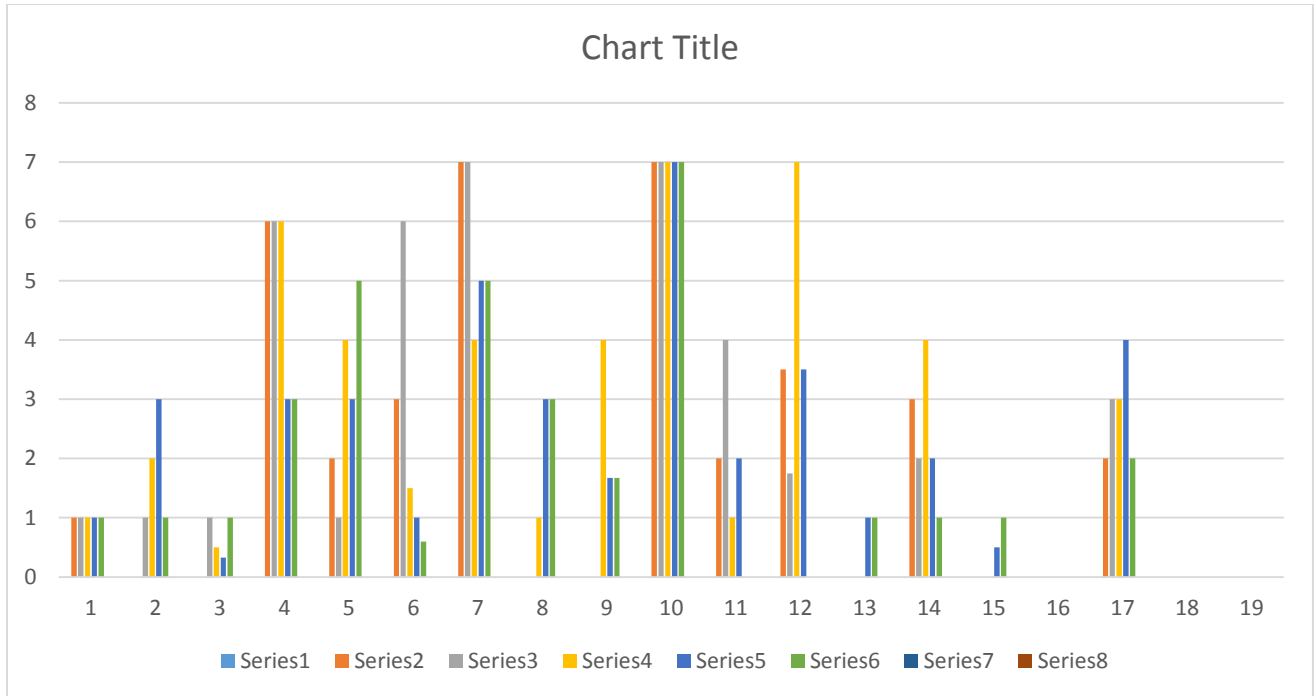
-1.881612 1.081612

sample estimates:

mean of x mean of y

2.4 2.8

t(df) = 0.63, p > 0.01



1.3 survey questions

What floor is your workplace in CIRS?

What is your gender?

What faculty/department are you a part of?

Which of the following describes your role?

How important is having a clean, organized, shared space to you?

How clean is your home kitchen?

How happy are you with the current cleanliness of the shared kitchen on your floor?

How responsible do you feel for maintaining the cleanliness of the kitchen space?

How connected do you feel with the other inhabitants on your floor?

What function(s) does the CIRS building serve you?

What floor number is your workplace on in CIRS?

What is your gender? (Optional)

What faculty/department are you a part of?

Which of the following describes your role?

How happy are you with the current cleanliness of the shared kitchen on your floor?

How responsible do you feel for maintaining the cleanliness of the kitchen space?

How connected do you feel with the other inhabitants on your floor?

Who currently takes care of the kitchen on your floor?

How much do you care about CIRS?

How responsible do you feel for your own actions in CIRS

How do you currently contribute to keeping the shared kitchen space clean?

Did you see the new signs?

If so, what did you think of them?

How effective do you think the signs were in changing your own behaviour in the shared kitchen space?

How effective were the signs at making you feel like part of a community in the CIRS building?

How much do you care about the CIRS common kitchen space?