Research Project Final Report: Effects of Visual Prompts on Coffee Cup and Plastic Bag Disposal

Aimee Xing, Edward Lai, Jason Jin, Marco Choi, Wendy Xing

University of British Columbia

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Effects of Visual Prompts on Coffee Cup and Plastic Bag Disposal

Aimee Xing, Edward Lai, Jason Jin, Marco Choi, Wanhui Qing
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Executive Summary

In this class research project, we explored the usage of visual prompts in correct disposal of garbage, paper, recyclables, and food scraps. We focused our project on the distribution of coffee cups and plastic bags in the sorting bins at the Sauder Exchange Café and Forestry bins near Tim Hortons. Accordingly, our research question was "Do prompts such as "no coffee cup" and "no plastic bag" stickers impact coffee cup and plastic bag contamination in the wrong bins?" and we predicted that the percentage of correct throws of coffee cups and plastic bags would improve after applying the stickers on top of the sorting bins. We conducted an experimental groups design, using naturalistic observation to monitor participants. We measured the percentage of correct disposal of coffee cups and plastic bags before and after adding the prompts. In addition, we observed the percentage of correct disposals of all the other bins to see if prompts had an indirect effect on where a participant would throw their disposals. In the end, we found no significant results in our primary research question but we found some significant results in the general disposal.

Research Question and Hypothesis

The research question provided for our study was "Do prompts such as "no coffee cup" and "no plastic bag" stickers impact coffee cup and plastic bag contamination in the wrong bins?" Considering that the general theme of Zero Waste research projects is minimizing waste, we hypothesized that if visual reminders such as stickers are posted on recycling stations, then people would be more likely to correctly dispose of coffee cups and plastic bags.

Methods

Participants

The participants for our study were UBC students, faculty, staff, and visitors who used the disposal bins in the Sauder Exchange Cafe and in the Forestry Building near Tim Hortons under our observations. The total number of participants in our study was 518. There were 66 participants observed for forestry and 104 participants for Sauder for the disposal of coffee cup and plastic bag for both experimental and control groups. We did not obtain consent because the nature of our study required that we observe participants without interference. In addition, there were low moral implications for not telling the participants about our study because we kept their anonymity.

Conditions

The days we collected data from Sauder were Tuesdays and Thursdays. For Forestry, we collected the data on Mondays and Wednesdays. We had an experimental and control group for each location. The control group consisted of participants who used the sorting bins without the prompts (See Appendix A, Experiment Setting). In contrast, the experimental group consisted of participants using the sorting bins with the stickers on them (See Appendix A, Experiment Setting). We collected data between 11 am-2 pm from both the Forestry building near Tim Hortons and Sauder Exchange Café. (2 sets of

4-stream disposal stations in Sauder Exchange Cafe and 1-set of 4-stream disposal stations in Forestry outside of Tim Hortons).

After observing the control group, we decided to place stickers on the sorting bins that had the most offenders. Food scraps and garbage bins tended to have the most offenders for coffee cup disposal, so we placed encouraging stickers on the recyclables bin and discouraging stickers on the garbage and food scraps. For plastic bags, we applied encouraging stickers on the garbage and discouraging stickers on the food scraps bin only. We found that people would throw plastic bags into the food scraps along with their food, therefore we applied the warning signs against it. Generally, people did not throw either coffee cups or plastic bags into the paper bins in our control group so we did not place any stickers on them.

Measures

We measured the accuracy rate of disposal for coffee cups and plastic bags, by collecting the numbers of disposals for coffee cups and plastic bags during our observation, before and after the visual prompts were introduced. We then calculated the percentage of correct disposals for coffee cups and plastic bags separately.

In addition, we also measured the correct throws percentage for all the sorting bins, including food scraps, recyclable containers, paper and garbage. Similar to the method that we collected the numbers of disposal for coffee cup and plastic bags, we collected the numbers of disposal for each bin before and after the stickers were applied, and calculated the accuracy rate independently.

All measures were administered using Excel. We used a spreadsheet (Appendix A, Table A1) to collect data for coffee cups and plastic bags for both the control and experimental group. For instance, if one participant disposed the coffee cup in the right bin, then R was marked red under right column. If one coffee cup ended up in the wrong bin, the bin was used would be marked red under the wrong disposal column (one of G, F, P). The summed numbers were added up at the end of the day. Another excel spreadsheet (see Table) was used to collect data for all the four bins. We had four columns for each bin, garbage was labelled as 1, paper was labelled as 2, recyclable containers was labelled as 3 and food scraps was labelled as 4. When food scraps was accurately disposed to the corresponding bin, 4 was put under column food scraps. If food scraps was incorrectly disposed in garbage bin, then 4 was added under garbage column. Excel automatically calculated the accuracy percentage for each bin.

Procedure

Participants were observed in a natural environment without the knowledge of being watched. We made sure that every observer had the same understanding on disposal categorization. We observed them discretely so that there was no confound affecting the performance of the participants under study by making them aware of our presence. We also made sure that we were close enough to observe the participants to get a reliable accuracy in collecting the data. Two observers were present during the study to minimize inaccuracy. One observer was in charge of observing disposal behaviors while

the other input the data into Excel. All the observations were done during the peak hours from 11am to 2pm. The entire experiment lasted four weeks. Data for Sauder was collected on Mondays and Wednesdays and data from Forestry was gathered on Tuesdays and Thursdays. We collected data for the control group during the first two weeks, under the condition that no remaining stickers were put up on the sorting bins. We then collected data during the last two weeks for the experimental group, after we put four kinds of stickers on top of the sorting bins.

Results

Participant's disposal behaviours were recorded with the Excel spreadsheet. The first table, Table A1 (see Appendix A), we specifically kept track of the disposal behavior of plastic bag and coffee cups. The second table was the record of the general disposal behavior (Table A2). There were four columns corresponding to the sorting station (garbage, paper, recycle, and food scraps). In Appendix A, the result of Table A2 is further summarized into percentage of general disposal (Table D1, D2, D3, D4). We used SPSS to analyze the statistical results. Our data is coded as binary into SPSS as either "0" or "1" depending whether the throw was correct or incorrect. Each correct disposal is coded as "1" and each incorrect throwing is coded as "0". Our study used independent group design, meaning that we have independent groups of subjects for our control and experimental condition. Therefore, an independent t-test analysis was the best measure to compare the difference between the two groups. Before calculating the results, we chose to conduct the two-tailed t-test because we did not want to miss out on any results due to directionality. The result of the two-tailed t-test is shown with the SPSS output table (Table B4, C4, C5, D5, D6, and D7). The number under the "sig (2-tailed)" column shows the p-value for the two-tailed t-test.

For Table A1, which focused on plastic bag and coffee cups, we conducted 4 independent t-tests. Two t-tests were for Sauder and two t-tests were for Forestry. The results were shown in the SPSS output table. Setting alpha at 0.05, we did not find any significance in our results. For the Sauder coffee cup condition, we found a p-value of 0.131 as shown in Table C4 (Appendix C). Similarly for forestry coffee cup condition, we found a p-value of 0.394 as shown in Table B4 (Appendix B). For the plastic bag condition, we were not able to track many participants. There were estimated one and a half plastic bag disposals per hour. We managed to get 16 raw data points in total for plastic bags but most of them were from Sauder. No data were observed for plastic bags in the Forestry experimental condition therefore, it was impossible to do the t-test without data from the experimental group. For the Sauder plastic bag condition, we found a p-value of 0.277, which was not significant as shown in Table C5 (Appendix C). Although our results did not show any significance, one interesting finding was that Sauder showed a greater increase in correct disposal of coffee cup ($p= 0.131$) comparing to Forestry ($p= 0.394$) after putting on the stickers. This suggested that Sauder groups might have been more reactive to the effects of visual prompts.

We tried further to see if putting on the coffee cup and plastic bag stickers would have an influence on general disposal behavior of other bins using data from Table B1. Again we conducted two tailed independent t-tests as we did on Table A1. A t-test was conducted for each of the four columns in Table B1 for both Sauder and Forestry. In the end, we found some significance in the general disposal. For the garbage condition in Forestry we had a p-value of 0.05 as shown in Table D6 (Appendix D). For the recyclables column in Forestry, we had a p-value of 0.031 as shown in Table D7 (Appendix D). For the paper condition in Sauder, we had a p-value of 0.014 (Appendix D, Table D5). This suggested that there might be an effect of visual prompt (i.e stickers) on the disposal behavior even though the prompts were specifically for coffee cup and plastic bag.

In addition to the t-test, we made bar graphs to indicate the general patterns of our study. There was a slight increase in the number of correct disposal of coffee cups after putting up the stickers for both Sauder and Forestry, as shown in Graph C1 (Appendix C). Sauder also showed an improvement in general disposal behavior as shown in Graph D2 (Appendix D). There was a significant increase in the number of correct disposal into the paper bin. For Forestry, however, the pattern was not as clear as the Sauder one as shown in Graph D1 (Appendix D). There was a significant increase in number of incorrect disposal in garbage and a slight increase in paper after putting on the stickers; however, the increase was not significant.

Discussions

Although the results are not significant, participants tend to behave better when visual prompts are present with up to a 13% increase of correct disposal of coffee cups in Sauder and a 9% increase rate of correct disposal of coffee cups in Forestry. Unfortunately there is not enough sample size for the plastic bag condition to conclude any symbolic meaning with n = <10 for both Sauder and Forestry control and experimental condition. Difference in results between Forestry and Sauder with Forestry participants disposing a higher number of correct coffee cups in both control and experimental group can be related to the difference in environmental conditions. While Sauder is located in the central part of campus with a high traffic flow of people rushing for business meetings, interviews etc., the Forestry building is located in the very east side of campus with a much less traffic. Inside the Forestry building there are more environmentally friendly cues such as trees implanted beside the study tables with a calmer and steady atmosphere, possibly priming people to stop and think about the environment before disposal. According to another similar study, one limitation could be the difficulty to assess the similarity of the two populations at different locations, they suggested that different groups might have fundamentally different reinforcement histories regarding prompts, information and recycling, therefore responded differently (Austin, Hatfield, Grindle & Bailey, 1993).

One potential confound variable is the various days that data was collected between Sauder and Forestry building, as different days might include various types of

people and their disposal behaviors. Also, the reason we excluded Friday as a day to collect data in Sauder was due to the fact that there were no lectures for Sauder students on that day. Another time confound was the narrow period of peak hours that we did during the study. People tend to be busiest during 11am-2pm which might have an effect on their throwing behaviour. To improve our future studies, we should include all the days of weekend and expand the time span of the day for observation.

In addition to our project, we also did some research on visual prompts in other applications. A study done on the effects of visual prompts on energy savings in washrooms indicated that several factors influence the effectiveness of prompts (Sussman & Gifford, 2012). These factors include sign location, sign design, and message portrayed by the prompt. The authors of this study showed that signs could be effective in energy saving and concluded that signs generally increase the number of people saving energy with 1071 observations. One of the reasons that their study might have had significant results is because of a larger sample size (Sussman & Gifford, 2012). Moreover, location could be a factor for our result not being significant. Previous researchers have studied visual prompts in office space and found substantial increase in recycling after visual prompts were introduced (Austin, Hatfield, Grindle & Bailey, 1993). Another study by Sussman looked at whether visual prompts affected individual disposal behaviors in cafeterias. The study concludes that ideal composting increases exponentially with the presence of visual prompts (Sussman, 2013). Another study points out that when visual prompts are added together with feedback and rewards it would effectively change the behaviour of people (Bekker et.al, 2010). The experiment used a "electricity saving thermometer" as feedback and the reward was a one week of free coffee, pizza party, movie night and ice cream. This suggests that people are more likely to respond to visual prompts that have incentives.

If we were to repeat this study, we would try other prompts instead of plastic bags, which did not generate much data. One suggestion would be visual prompts for napkins, we found a large number of offenders threw napkins into the garbage although they belong in the food scraps. In addition, we could have also experimented with different designs on the prompts to make it more apparent. Lastly, we could have collected data from several bins at once from both Forestry and Sauder buildings in order to collect more participants. We could also use incentives to make students be more motivated to throw the coffee cup and plastic bag to the correct disposal category. Examples of rewards can be pizza party, lower food price, free movie night etc. Further studies should be conducted with larger sample sizes and different variety of prompts to consolidate our data. The days of conducting the experiment can be done on the exact same days for both the experimental group and control group to reduce further confound variables.

It can be seen that having something as simple as a visual prompt such as a sticker can possibly promote environmental sustainability and wellbeing across the campus. In our experiment, participants hesitated less on where they should throw the coffee cups and plastic bags after the stickers were placed. In the context of a larger population,

visual prompts can serve to reduce confusion in where to put certain items those have large numbers of offenders.

Recommendation/Implications for UBC

After conducting the study, it is concluded that adding coffee cup and plastic bag stickers does not affect the percentage of correct disposal for the coffee cups and plastic bags. However, as we see in the general garbage disposal, having visual prompts increases the general awareness of correct disposal and therefore, increases correct number of sorting behaviors.

The relevancy of our research directly addresses how the general population in UBC should have better discipline in sorting wastes into the bins for the sake of the community's sustainability and wellbeing. The Zero Waste program at UBC aspires to reduce the wasted products in garbage that can be recycled and reused. From the SEEDS website, most of UBC's garbage can be recycled yet we recycle less than 50% of what we can.

References

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Appendix A

Sample Excel Spreadsheets

Table A1

Participant	R = Recyclables *Coffee Cup (Right)*	F = Food Scraps *Coffee Cup (Wrong)*	P = Paper *Plastic Bag (Right)*	G = Garbage *Plastic Bag (Wrong)*
1	R	F P G	G	F P R
2	R	F P G	G	F P R
3	R	F P G	G	F P R
4	R	F P G	G	F P R
5	R	F P G	G	F P R
6	R	F P G	G	F P R
7	R	F P G	G	F P R
8	R	F P G	G	F P R
9	R	F P G	G	F P R
10	R	F P G	G	F P R
11	R	F P G	G	F P R
12	R	F P G	G	F P R
13	R	F P G	G	F P R
14	R	F P G	G	F P R
15	R	F P G	G	F P R

Table A2

No Prompt (control group)				
Participant	*Garbage*	*Paper*	*Recyclables*	*Food Scraps*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Experiment Setting

Before adding Prompts

After adding Prompts

Appendix B

Table B1. Forestry Control Data for Coffee Cups and Plastic Bags

Participant	R=Recyclable *Coffee Cup (Right)*	F = Food Scraps *Coffee Cup (Wrong)*	P = Paper *Plastic Bag (Right)*	G = Garbage *Plastic Bag (Wrong)*
1	R	F P G	G	F P R
2	R	F P G	G	F P R
3	R	F P G	G	F P R
4	R	G	G	F P R
5	R	F P G	G	F P R
6	R	F P G	G	F
7	R	G	G	F P R
8	R	F P G	G	F P R
9	R	F P G	G	F P R
10	R	F P G	G	F P R
11	R	G	G	F P R
12	R	F P G	G	F P R
13	R	F P G	G	F
14	R	G	G	F P R
15	R	F P G	G	F P R
16	R	F P G	G	F P R
17	R	F P	G	F P

		G		R
18	R	F P G	G	F P R
19	R	F P G	G	F P R
20	R	G	G	F P R
21	R	G	G	F P R
22	R	F P G	G	F P R
23	R	F P G	G	F P R
24	R	F P G	G	F P R
25	R	F P G	G	F P R
26	R	F P G	G	F P R
27	R	F P G	G	F P R
28	R	F P G	G	F P R
29	R	G	G	F P R
30	R	F P G	G	F P R
31	R	F P G	G	F P R
32	R	G	G	F P R
33	R	G	G	F P R
34	R	G	G	F P R
35	R	F P G	G	F P R
36	R	F P G	G	F P R

Table B2. Forestry Experimental Data for Coffee Cup and Plastic Bags

Participant	R = Recyclables *Coffee Cup (Right)*	F = Food Scraps *Coffee Cup (Wrong)*	P = Paper *Plastic Bag (Right)*	G = Garbage *Plastic Bag (Wrong)*
1	R	F P G	G	F P R
2	R	F P G	G	F P R
3	R	F P G	G	F P R
4	R	P	G	F P R
5	R	F P G	G	F P R
6	R	F P G	G	F P R
7	R	G	G	F P R
8	R	F P G	G	F P R
9	R	F P G	G	F P R
10	R	F P G	G	F P R
11	R	F P G	G	F P R
12	R	l	G	F P R
13	R	F P G	G	F P R
14	R	F P G	G	F P R
15	R	F P G	G	F P R
16	R	G	G	F P R
17	R	F P G	G	F P R
18	R	F P G	G	F P R

19	R	G	G	F P R
20	R	F P G	G	F P R
21	R	G	G	F P R
22	R	F P G	G	F P R
23	R	G	G	F P R
24	R	F P G	G	F P R
25	R	F P G	G	F P R
26	R	F P G	G	F P R
27	R	F P G	G	F P R
28	R	F P G	G	F P R
29	R	F P G	G	F P R
30	R	F P G	G	F P R

Table B3. Forestry Group Statistics for Control and Experimental Group (Coffee Cups)

Group Statistics					
	Treatment	N	Mean	Std. Deviation	Std. Error Mean
Correct	control	34	.7059	.46250	.07932
	Experimental	30	.8000	.40684	.07428

Table B4. Forestry T-Test for Control and Experimental Group (Coffee Cups)

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Correct	Equal variances assumed	3.063	.085	-.859	62	.394	-.09412	.10955	-.31311	.12487
	Equal variances not assumed			-.866	62.000	.390	-.09412	.10867	-.31134	.12310

Appendix C

Table C1. Sauder Control Data for Coffee Cup and Plastic Bags

Participant	R = Recyclables *Coffee Cup (Right)*	F = Food Scraps *Coffee Cup (Wrong)*	P = Paper *Plastic Bag (Right)*	G = Garbage *Plastic Bag (Wrong)*
1	R	F P G	G	R
2	R	G	G	F P R
3	R	G	G	F P R
4	R	F P G	G	
5	R	F P G	G	F P R
6	R	F P G	G	F P R
7	R	F P G	G	F P R
8	R	G	G	F P R
9	R	F P G	G	F P R
10	R	F P G	G	F P R
11	R	F P G	G	F P R
12	R	F P G	G	F P R
13	R	F P G	G	F P R
14	R	F P	G	F P

		G		R
15	R	F	G	F P R
16	R	F P G	G	P
17	R	F	G	F P R
18	R	F P G	G	F P R
19	R	F P G	G	F P R
20	R	P	G	F P R
21	R	F P G	G	F P R
22	R	F P G	G	F P R
23	R	F P G	G	F P R
24	R	F P G	G	F P R
25	R	G	G	F P R
26	R	F P G	G	F P R
27	R	G	G	F P R
28	R	G	G	F P R
29	R	F P G	G	F P R
30	R	F P G	G	F P R
31	R	F P G	G	F P R
32	R	P	G	F P R
33	R	F P G	G	F P R
34	R	F P	G	F P

		G		R
35	R	F	G	F P R
36	R	F P G	G	F P R
37	R	F P G	G	F P R
38	R	G	G	F P R
39	R	F P G	G	F P R
40	R	G	G	F P R
41	R	F P G	G	F P R
42	R	F P G	G	F P R
43	R	F P G	G	F P R
44	R	F P G	G	F P R
45	R	G	G	F P R
46	R	F P G	G	F P R
47	R	F P G	G	F P R
48	R	F P G	G	F P R
49	R	F P G	G	F P R
50	R	F P G	G	F P R
51	R	F P G	G	F P R
52	R	G	G	F P R
53	R	F P G	G	F P R
54	R	G	G	F P

				R
55	R	P	G	F P R
56	R	G	G	F P R

Table C2. Sauder Experimental Data for Coffee Cup and Plastic Bags

Participant	R = Recyclables *Coffee Cup (Right)*	F = Food Scraps *Coffee Cup (Wrong)*	P = Paper *Plastic Bag (Right)*	G = Garbage *Plastic Bag (Wrong)*
1	R	F P G	G	F P R
2	R	F P G	G	F P R
3	R	F P G	G	F P R
4	R	F P G	G	F P R
5	R	F P G	G	F P R
6	R	F P G	G	F P R
7	R	F P G	G	F P R
8	R	F P G	G	F P R
9	R	F P G	G	F P R
10	R	F P G	G	F P R
11	R	F P G	G	F P R
12	R	F P G	G	F P R
13	R	F P G	G	F P R
14	R	G	G	F P R
15	R	F P	G	F P

		G		R
16	R	F P G	G	F P R
17	R	F P G	G	R
18	R	F P G	G	F P R
19	R	F P G	G	F P R
20	R	F P G	G	F P R
21	R	F P G	G	F P R
22	R	G	G	F P R
23	R	F P G	G	F P R
24	R	F P G	G	F P R
25	R	G	G	F P R
26	R	F P G	G	F P R
27	R	F P G	G	F P R
28	R	F P G	G	F P R
29	R	G	G	F P R
30	R	F P G	G	F P R
31	R	F P G	G	F P R
32	R	F P G	G	F P R
33	R	F P G	G	F P R
34	R	F P G	G	F P R
35	R	F P	G	F P

		G		R
36	R	P	G	F P R
37	R	F P G	G	F P R
38	R	F P G	G	F P R
39	R	F P G	G	F P R
40	R	F P G	G	F P R
41	R	G	G	F P R
42	R	F P G	G	F P R
43	R	G	G	F P R
44	R	F P G	G	F P R
45	R	F P G	G	F P R
46	R	F P G	G	F P R
47	R	F P G	G	F P R
48	R	P	G	F P R

Table C3. Sauder Group Statistics for Control and Experimental Group on Coffee Cups

Group Statistics

	TreatmentS	N	Mean	Std. Deviation	Std. Error Mean
CorrectSC	control	50	.6400	.48487	.06857
	experimental	38	.7895	.41315	.06702

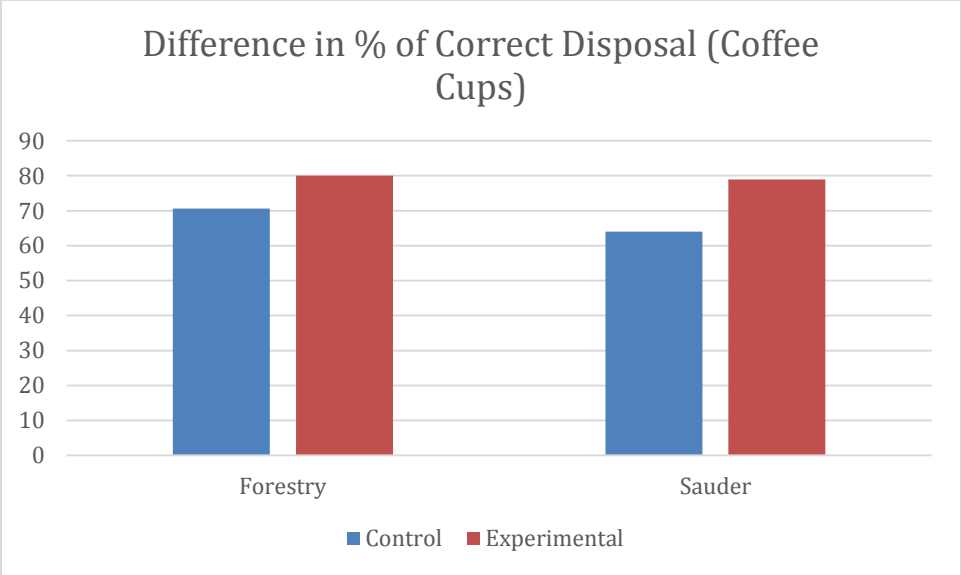
Table C4. Sauder T-Test for Control and Experimental Group on Coffee Cups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
CorrectSC	Equal variances assumed	10.135	.002	-1.525	86	.131	-.14947	.09801	-.34431	.04536
	Equal variances not assumed			-1.559	84.822	.123	-.14947	.09589	-.34013	.04118

Table C5. Sauder T-Test for Control and Experimental Group on Plastic Bags

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
CorrectSP	Equal variances assumed	5.070	.041	-1.131	14	.277	-.23333	.20625	-.67570	.20903
	Equal variances not assumed			-1.000	7.298	.349	-.23333	.23333	-.78055	.31388

Graph C1



Appendix D

General percentage of Disposal Tables

Table D1. Statistics for Forestry Control

	N	# of correct disposal	# of incorrect disposal	% of correct disposal
Garbage	50	28	22	56.00%
Paper	24	17	7	70.83%

Recyclables	38	25	13	65.79%
Food Scraps	27	24	3	88.89%

Table D2. Statistics for Forestry Experimental

	N	# of correct disposal	# of incorrect disposal	% of correct disposal
Garbage	30	10	20	33.33%
Paper	17	11	6	64.71%
Recyclables	22	20	2	90.91%
Food Scraps	15	15	0	100.00%

Graph D1

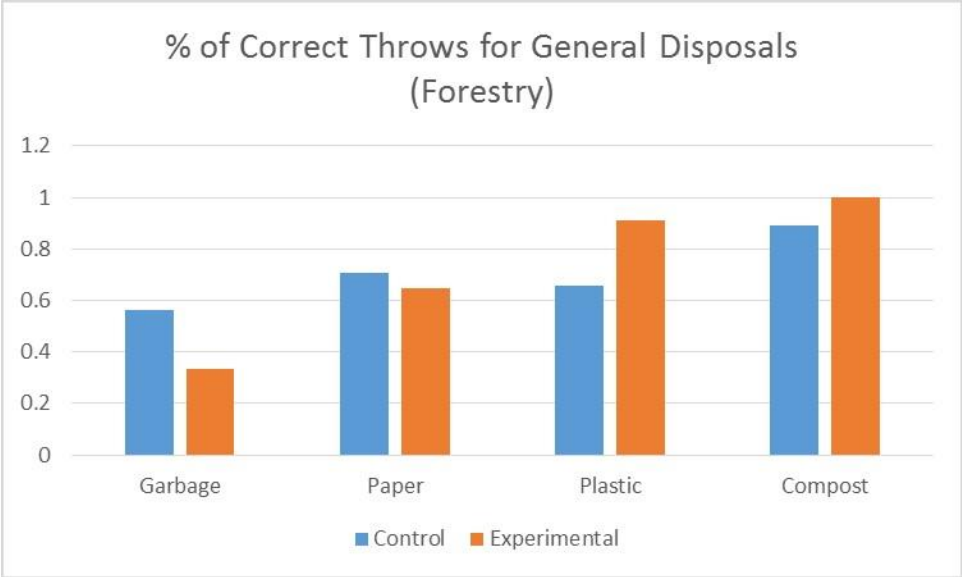


Table D3. Statistics for Sauder Control

	N	# of correct disposal	# of incorrect disposal	% of correct disposal
Garbage	62	28	34	45.16%
Paper	31	16	15	51.61%
Recyclables	63	54	9	85.71%
Food Scraps	41	34	7	82.93%

Table D4. Statistics for Sauder Experimental

	N	# of correct disposal	# of incorrect disposal	% of correct disposal
Garbage	35	19	16	54.29%
Paper	16	13	3	81.25%
Recyclables	37	35	2	94.59%
Food Scraps	12	10	2	83.33%

Graph D2

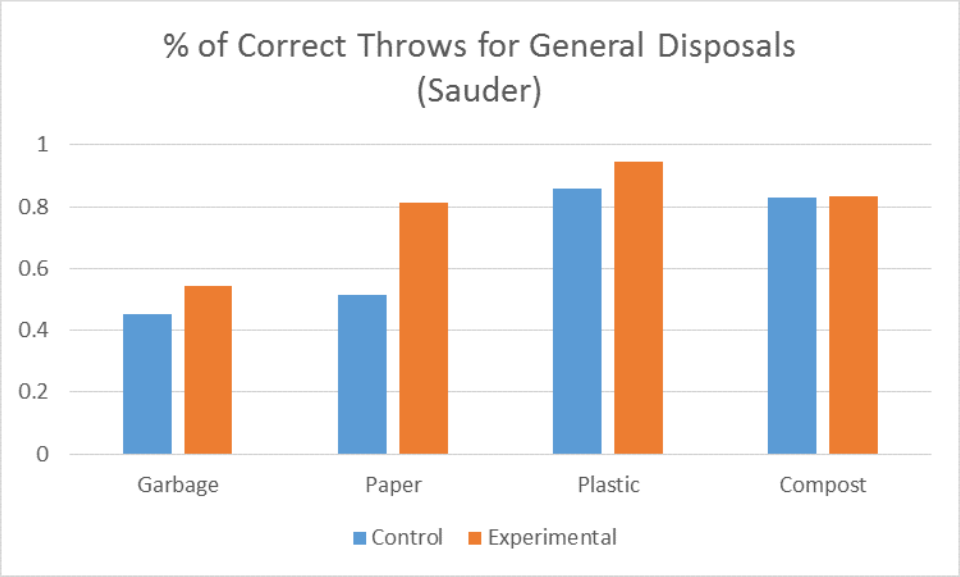


Table D5. Sauder T-Test for Control and Experimental Group general disposal (paper)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
SP	Equal variances assumed	28.312	.000	-2.540	49	.014	-.33387	.13144	-.59802	-.06972
	Equal variances not assumed			-2.723	48.302	.009	-.33387	.12262	-.58037	-.08737

Table D6. Forestry T-Test for Control and Experimental Group general disposal (garbage)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CF	Equal variances assumed	3.725	.057	1.989	78	.050	.22667	.11394	-.00017	.45350
	Equal variances not assumed			2.012	63.393	.048	.22667	.11266	.00157	.45176

Table D7. Forestry T-Test for Control and Experimental Group general disposal (recyclable)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
RF	Equal variances assumed	31.677	.000	-2.217	58	.031	-.25120	.11328	-.47796	-.02444
	Equal variances not assumed			-2.510	57.763	.015	-.25120	.10009	-.45157	-.05082