Assessing the Beliefs and Behaviours of Waste Reduction Practices of Vancouver Residents

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Executive Summary

We examined waste reduction beliefs and behaviours in Vancouver, B.C. We were interested in determining what people in Vancouver believe to be the most effective waste reduction practices in their daily lives, what are the costliest, what actions they are currently doing, and what actions they would be willing to adopt. We distributed an online self-report survey questionnaire which a total of 134 Vancouver residents completed. We found several interesting results. First, we found that participants' willingness to adopt waste reduction practices was higher on average, than their frequency to use the practices in their daily lives, although frequency and willingness were positively correlated. Second, we found that perceived cost did not play as significant a role as does perceived effectiveness in restricting participants' waste reduction behavior. We found that Willingness and Perceived effectiveness were positively correlated, meaning that Vancouver residents are more willing to adopt the waste reduction practices that they perceive to have more significant impact on the environment. An implication of these results is that there may be another variable at play, other than cost or perceived effectiveness, which makes waste reduction less desirable. If that variable is time/effort, initiatives should be focused on making waste reduction more convenient.

Research Question and Hypothesis

Though the accumulation of waste is by no means a new problem, the rapid rate at which it is occurring demands closer attention. Waste is a global issue if not properly dealt with, it poses a severe threat to public health and to the environment. According to the United Nations Environment Programme (UNEP, 2015), waste management should be seen as a basic human right. Managing waste correctly benefits several aspects of society, including public health (by reducing the spread of disease), the economy (by increasing tourism), and the environment (by decreasing pollution) (pp. 2-6). Clearly, waste management is an issue that has a broad impact on our world.

Over the past few decades, economic development, urbanization, and population growth have led to excessive waste production (Singh, Laurenti, Sinha, & Frostell, 2014, p. 800). As a thriving industrial city, Vancouver, B.C. has certainly contributed to such excess. In our study, we sought to learn what people in Vancouver believe to be the most effective waste reduction practices in their day-to-day lives. Furthermore, we wanted to learn which practices Vancouver residents were currently doing, and which ones they would be willing to adopt.

Previous research by Martin, Williams, and Clark (2006) in Burnley, England, found that most participants (>70%) had a positive attitude towards recycling, but not nearly as many actually recycled (only 27.5% recycled on a regular basis). Furthermore, the majority of respondents said that they disapproved of being charged a monetary fee in order to reduce waste (pp. 370-373). Based on these findings, as well as similar findings by Babaei et al. (2015), we came up with two hypotheses. First, participants' involvement in waste reduction behaviours will be based more on the monetary cost of each practice than on the perceived effectiveness of each practic. Second, participants' willingness to adopt a given practice will not be correlated with how frequently they perform the practice.

Participants

134 Metro Vancouver residents (75 females, 59 males) participated in the study. The majority of participants (55.2%) were between the ages of 18 and 24. See Appendix A for the remainder of the demographic information.

Conditions

Each participant answered a self-report survey questionnaire that assessed waste reduction behaviours and beliefs. We used a within-subjects design. Our independent variables were eleven waste reduction practice items presented to the participants, while our dependent variables were measures of the reported frequency, perceived effectiveness, perceived costliness and willingness of each participant to perform each waste reduction practice (11 waste reduction practices by 4 belief measures).

Measures

We measured demographic variables by asking questions pertaining to gender, age, race, education level, occupational status, household income, and residential neighborhood. The eleven waste reduction items surveyed were: (1) composting, (2) recycling beverage containers, (3) recycling paper/packaging, (4) recycling batteries/electronics, (5) recycling paints/gases/pesticides, (6) buying in bulk, (7) buying secondhand items, (8) paying surcharge on excess waste, (9) bringing reusable containers to cafes/restaurants, (10) bringing reusable bags to stores, and (11) receiving bills electronically. We came up with these practices by referencing the provincial government's waste management strategies (see Appendix B). The practices were assessed individually using a 7-point Likert scale.

For each of the eleven waste reduction practices, we asked four questions: (1) how frequently participants currently use the practice (1 = never, 7 = always), (2) how effective participants believe the practice to be (1 = extremely ineffective, 7 = extremely effective), (3) how costly participants believe the practice to be (1 = extremely inexpensive, 7 = extremely expensive), and (4) how willing participants would be to adopt the practice (1 = extremely unwilling, 7 = extremely willing). (See Appendix C for full survey)

Statistical analysis was performed using SPSS software. A one-way repeated measures ANOVA was run on each measure separately (Frequency, Effectiveness, Costliness, Willingness) to determine if there was a difference between waste reduction items 1 to 11 for each measure. Next, a post-hoc analysis was completed to determine whether or not there were statistically significant differences between specific items. Correlations were run between all 4 measures for each of the 11 items separately to determine the characteristics of each item.

Procedure

The survey was administered online via Fluidsurveys.com and distributed through link sharing (e.g. email, social media, or mobile messaging) to Metro Vancouver residents. Participants confirmed their consent before completing the survey independently (see Appendix C for consent form). The survey took less than 10 minutes to complete. Data was collected over a total of 14 days, during which time the survey was open to the public.

Results

The correlations run between all 4 measures for each of the 11 items yielded interesting results, one being that that cost was not the dominant factor in environmental behaviour (frequency of practice or willingness to adopt) that we thought it would be. For 5 of the 11 items, Cost was not correlated with any of the other 3 measures (ie. was not correlated with Frequency, Effectiveness or Willingness). Cost was only negatively correlated with Willingness for 5 items and only with Frequency once. For none of the 11 items was Cost correlated with both Frequency and Willingness. In contrast, for all of the items, Effectiveness was positively correlated with Willingness. And for all but 1, effectiveness was positively correlated with frequency of practice. Also of note was that for every item, Frequency and Willingness were positively correlated. (For detailed correlation data please refer to Appendix E.1-E.11)

The ANOVA results show that within each measure there is a statistical significance to the differences found between items. For frequency of the practice [$F(7.8,1037.4) = 103.2$, $p = 0.00$, for perceived effectiveness [$F(8.1, 1076.3) = 21.4$, $p = 0.00$, for perceived costliness [$F(6.6,886.2) = 57.4$, $p = 0.00$, and for willingness [$F(8,1066.7) = 62.6$, $p = 0.00$). The post-hoc analysis that was completed showed a large number of significant differences between items across all measures (for detailed results see Appendix D.1-D.4) In short, the most and largest differences took place in the Frequency measure, while the least and smallest differences came in the Willingness measure. Item #8 Paying a surcharge for excess waste was found to be the most significantly and frequently differing of the 11 items.

Waste reduction practice #8 stood out from the rest, as it was the only item that was not correlated with effectiveness; it was also the most significantly differing item from the post-hoc analysis. However, it should be noted that data for item #8 (paying a surcharge for any waste that exceeds a set amount) is invalid, as the practice does not yet exist and is, by nature, costly. Therefore, all responses for frequency, cost and willingness of waste reduction practice number eight we feel, may be disregarded.

Discussion

The results of the study reject our first hypothesis and support the second. 1st, cost was not related to environmental behaviour as prominently as we had predicted. Rather, results show that participants reported frequency of action and willingness to adopt was more frequently correlated with their perceived effectiveness of the given practice. This means that people's decisions about the waste reduction practices they adopt depend on how effective in reducing waste they perceive the practices to be. Therefore, Vancouver residents prefer to take action when they believe their efforts are worthwhile and make a significant impact in reducing waste. Future research from this can try to answer what makes people feel their efforts are worthwhile (more scientific data? more encouragement?). We can then try to foster this feeling to encourage increases environmental involvement

Second, although mean scores for Willingness were higher than for Frequency, both measures were positively correlated with one another for all 11 items. Despite this positive correlation between Frequency and Willingness, the discrepancy between means for both lays the potential foundation for potential future research. Despite being very willing to adopt various waste reduction practices, Vancouver residents are potentially encountering factors that are inhibiting following through with behavior. Perhaps future research can look into what factors cause the mean discrepancy between frequency and willingness.

Our ANOVA and post-hoc analysis showed the statistical differences in feelings people have towards various environmental practices. Clearly people do not treat all practices equally. Possible future research can look into what factors inform our perceptions and behaviour of various practices (eg. why is buying in bulk perceived as less effective than using reusable containers?) This can be used to inform how we educate people about environmental behaviours.

A potential factor that we would've liked to include in our study is how time/effort factor's into choosing environmental behaviours. Based on feedback from some of our participants, it seemed that the amount of work it took to follow through with a given practice informed their behaviour more than cost or effectiveness. For this reason, we feel lack of a time/effort measure is a limitation of our study.

Again, item #8 was too dissimilar from the rest of the items to be considered valid. Lastly, our demographic reach was skewed towards a younger more educated population. This may be in part because an environmental survey attracts more of this demographic but it would have been nice to have a broader sample.

Client Recommendations

Across all waste reduction practices, our results showed a higher average for willingness to adopt than frequency of action, a difference not shown to be influenced by cost in a statistically significant way. Due to this inconsistency, along with feedback from participants, we believe that there is another significant variable at play. We presume that the participant's level of perceived effort or hassle for each waste reduction practice is contributing to this discrepancy. It appears that the inconvenience posed by the various waste reduction practices is deterring Vancouver residents regardless of their perceived effectiveness of the practices or their reported willingness to adopt them. We advise that future waste reduction initiatives, campaigns, regulations or programs be focused on the convenience rather than the monetary cost of possible waste reduction practices. If it were more convenient to recycle and compost than to put everything in the garbage, we predict that unnecessary waste would decrease dramatically. We would expect that the implementation of items such as: smaller household garbage pick up bins alongside larger compost and recycling bins, less frequent garbage pick up, and an imposed fee for residents whose household garbage exceeds a set amount per person, would address this issue of convenience. We expect that initiatives such as these would help in deterring residents from simply putting everything in the garbage; encouraging them to compost and recycle more frequently. Overtime, we would also expect that the convenience of composting and recycling over producing excess waste would alter consumer behaviors, eventually increasing the frequency of each of our waste reduction practices.

Based on our finding that participants perceived effectiveness of waste reduction practices was positively correlated with frequency and willingness of action, new initiatives should also be focused on education about how various practices can reduce waste and should focus on emphasizing the effectiveness or importance of any practices they are promoting. Vancouver residents select waste reduction practices based partly on how effective they perceive various practices to be; they prefer to direct their efforts toward practices that are perceived to be significantly waste reducing.

References

Babaei, A. A., Alavi, N., Goudarzi, G., Teymouri, P., Ahmadi, K., & Rafiee, M. (2015). Household recycling knowledge, attitudes and practices towards waste management. *Resources, Conservation and Recycling, 102*, 94-100.

Martin, M., Williams, I. D., & Clark, M. (2006). Social, cultural and structural influences on household waste recycling: A case study. *Resources, Conservation and Recycling, 48*, 357-395.

Singh, J., Laurenti, R., Sinha, R., & Frostell, B. (2014). Progress and challenges to the global waste management system. *Waste Management & Research*, *32*(9), 800-812.

United Nations Environment Programme. (2015). *Global Waste Management Outlook*. Retrieved from http://unep.org/ietc/Portals/136/Publications/Waste%20Management/GWMO%20report/GWMO_report.pdf

Waste Management (n.d). Retrieved from http://www2.gov.bc.ca/gov/content/environment/waste-management

Appendix

Appendix A - Demographic Variables

Variable		Number	Percent
Gender	Male	59	44%
	Female	75	56%
Age (in years)	18-24	74	55.2%
	25-34	38	28.4%
	35-44	4	3.0%
	45-54	4	3.0%
	55-64	9	6.7%
	65 and above	5	3.7%
Ethnicity	East Asian	29	21.7%
	South Asian	5	3.7%
	SE Asian / Pacific Islander	19	14.2%
	Hispanic / Latino	3	2.2%
	White Caucasian	68	50.7%
	Mixed Race	10	7.5%
Education	Graduate or professional degree	11	8.2%
	Bachelor's degree	57	42.5%
	Associate's degree	7	5.2%
	Trade or vocational degree	8	6.0%

	Some college	31	23.2%
	High school graduate	19	14.2%
	Some high school	1	0.7%
Employment Status	Employed full-time	49	36.5%
	Employed part-time	25	18.5%
	Self-employed	10	7.4%
	Student	30	22.3%
	Homemaker	2	1.5%
	Retired	5	3.6%
	Unemployed	14	10.4%
Income	Under $20,000	36	26.9%
	$20,000 - $30,000	15	11.2%
	$30,000 - $40,000	14	10.4%
	$40,000 - $50,000	11	8.2%
	$50,000 - $75,000	14	10.4%
	$75,000 - $100,000	12	9.0%
	$100,000 - $150,000	12	9.0%
	$150,000 or more	5	3.6%
	Prefer not to answer	15	11.2%
Neighbourhood	Arbutus Ridge	4	3.0%
	Downtown	16	11.9%
	Dunbar-Southlands	4	3.0%
	Fairview	7	5.2%

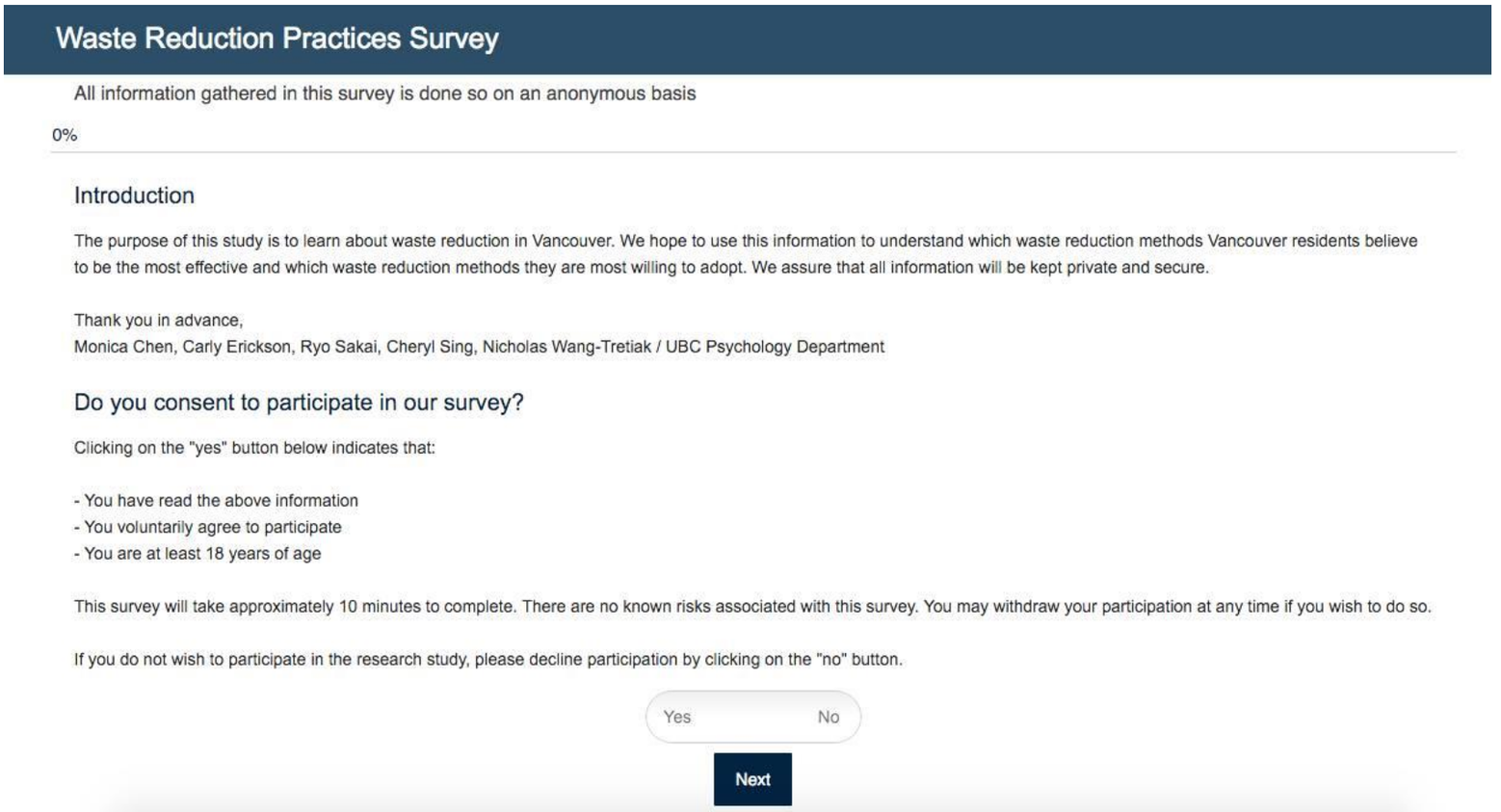
	Hastings Sunrise	3	2.2%
	Kensington-Cedar Cottage	4	3.0%
	Kerrisdale	3	2.2%
	Killarney	1	0.7%
	Kitsilano	24	17.9%
	Marpole	2	1.5%
	Mount Pleasant	10	7.4%
	Oakridge	3	2.2%
	Renfrew-Collingwood	13	9.7%
	Shaughnessy	2	1.5%
	South Cambie	3	2.2%
	Strathcona	1	0.7%
	Sunset	1	0.7%
	Victoria-Fraserview	3	2.2%
	West End	9	6.7%
	West Point Grey	9	6.7%
	Unsure	6	4.5%
	Greater Metro Vancouver	6	4.5%

Appendix B

Website from which we based our 11 waste reduction practices:
http://www2.gov.bc.ca/gov/content/environment/waste-management

Appendix C

PSYC 321 Assessing the Effectiveness of Waste Reduction Practices in Vancouver
DEMOGRAPHIC & WASTE PRACTICES SURVEY



Demographic Questions:

1.What is your Gender?

__ Male __ Female __ Other __ Would prefer not to answer

2. What is your age?

__ 18-24
__ 25-34
__ 35-44
__ 45-54
__ 55-64
__ 65 and above
__ Would prefer not to answer

2. Please specify your ethnicity:

__ African-American / Black
__ Asian / Pacific Islander
__ Southeast Asian
__ Hispanic / Latino
__ Middle Eastern
__ White Caucasian
__ Mixed
__ East Asian
__ Would prefer not to answer
__ Other (please specify): _____

3. What is the highest degree or level of school you have completed?
__ Less than High School Diploma
__ High School Diploma
__ Post Secondary Institution (not completed)
__ Associate's Degree
__ Bachelor's Degree
__ Master's Degree
__ Doctorate Degree
__ Other (please specify): _____
__ Would prefer not to answer

4. What is your Employment Status?
__ Unemployed
__ Student
__ Homemaker
__ Unable to work
__ Retired
__ Self Employed
__ Employed (Part-Time)
__ Employed (Full-Time)
__ Looking for work
__ Would prefer not to answer

5. What is your income?
__ Less than $20,000
__ $20,000 - $30,000
__ $30,000 - $40,000
__ $40,000 - $50,000
__ $50,000 - $75,000
__ $75,000 - $100,000
__ $100,000 - $150,000
__ $150,000 or more
__ Would prefer not to answer

6. What neighbourhood of Vancouver do you live in?
__ Arbutus Ridge
__ Downtown
__ Dunbar-Southlands
__ Fairview
__ Grandview-Woodland
__ Hastings Sunrise
__ Kensington-Cedar Cottage
__ Kerrisdale
__ Killarney
__ Kitsilano
__ Marpole
__ Mount Pleasant
__ Oakridge
__ Renfrew-Collingwood
__ Riley Park
__ Shaughnessy
__ South Cambie
__ Strathcona
__ Sunset
__ Victoria-Fraserview
__ West End
__ West Point Grey

Please read each waste reduction practice and answer the following questions.

1) Composting all food waste

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

2) Recycling all beverage containers (e.g. cans, bottles, jugs)

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1 2 3 4 5 6 7
Extremely inexpensive Extremely expensive

How willing are you to adopt this practice?

1 2 3 4 5 6 7
Extremely unwilling Extremely willing

3) <u>Recycling all packaging and printed paper</u>

How often do you currently use this practice?

1 2 3 4 5 6 7
Never Always

How effective in reducing waste do you feel this practice is?

1 2 3 4 5 6 7
Extremely Ineffective Extremely effective

How costly do you feel this practice is?

1 2 3 4 5 6 7
Extremely inexpensive Extremely expensive

How willing are you to adopt this practice?

1 2 3 4 5 6 7
Extremely unwilling Extremely willing

4) <u>Recycling all batteries and electronics</u>

How often do you currently use this practice?

1 2 3 4 5 6 7
Never Always

How effective in reducing waste do you feel this practice is?

1 2 3 4 5 6 7
Extremely Ineffective Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

5) <u>Recycling all paints, solvents, pesticides and gasolines</u>

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

6) <u>Buying items in bulk</u>

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

7) <u>Buying items second hand</u>

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

8) <u>Paying a surcharge for any household waste pickup that exceeds a set amount</u>

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

9) <u>Bringing reusable food and drink containers to cafes and restaurants instead of using disposable containers</u>

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

10) <u>Bringing reusable shopping bags to stores</u>

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1	2	3	4	5	6	7
Extremely unwilling						Extremely willing

11) <u>Using electronic billing as opposed to receiving paper bills in the mail</u>

How often do you currently use this practice?

1	2	3	4	5	6	7
Never						Always

How effective in reducing waste do you feel this practice is?

1	2	3	4	5	6	7
Extremely Ineffective						Extremely effective

How costly do you feel this practice is?

1	2	3	4	5	6	7
Extremely inexpensive						Extremely expensive

How willing are you to adopt this practice?

1 2 3 4 5 6 7

Extremely unwilling Extremely willing

Thank you for completing our survey!

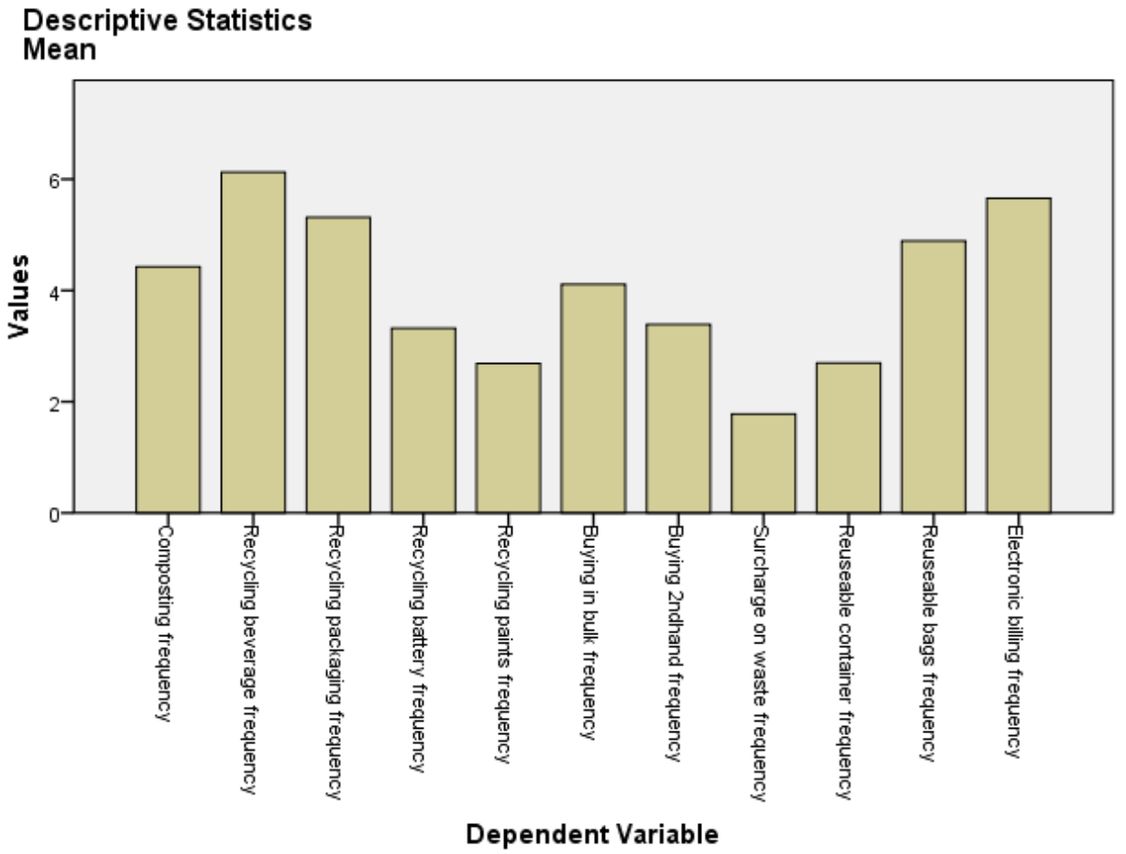
Appendix D

ANOVA Tables

Frequency (D.1)

Descriptive Statistics

	Mean	Std. Deviation	N
Composting frequency	4.4254	2.18118	134
Recycling beverage frequency	6.1269	1.21037	134
Recycling packaging frequency	5.3134	1.54831	134
Recycling battery frequency	3.3209	2.05049	134
Recycling paints frequency	2.6866	2.00907	134
Buying in bulk frequency	4.1119	1.43878	134
Buying 2ndhand frequency	3.3881	1.55070	134
Surcharge on waste frequency	1.7761	1.39625	134
Reuseable container frequency	2.6940	1.77801	134
Reuseable bags frequency	4.8881	1.93372	134
Electronic billing frequency	5.6567	1.38794	134



Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Freq	Sphericity Assumed	2569.285	10	256.928	103.283	.000	.437	1032.829	1.000
	Greenhouse-Geisser	2569.285	7.800	329.391	103.283	.000	.437	805.618	1.000
	Huynh-Feldt	2569.285	8.332	308.349	103.283	.000	.437	860.593	1.000
	Lower-bound	2569.285	1.000	2569.285	103.283	.000	.437	103.283	1.000
Error(Freq)	Sphericity Assumed	3308.533	1330	2.488					
	Greenhouse-Geisser	3308.533	1037.414	3.189					
	Huynh-Feldt	3308.533	1108.208	2.985					
	Lower-bound	3308.533	133.000	24.876					

a. Computed using alpha = .05

Pairwise Comparisons

Measure: MEASURE_1

(I) Freq	(J) Freq	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-1.701*	.179	.000	-2.310	-1.093
	3	-.888*	.186	.000	-1.519	-.257
	4	1.104*	.243	.001	.280	1.929
	5	1.739*	.225	.000	.975	2.503
	6	.313	.221	1.000	-.436	1.063
	7	1.037*	.233	.001	.247	1.828
	8	2.649*	.232	.000	1.861	3.437
	9	1.731*	.230	.000	.950	2.513
	10	-.463	.202	1.000	-1.147	.222
	11	-1.231*	.207	.000	-1.934	-.529
2	1	1.701*	.179	.000	1.093	2.310
	3	.813*	.134	.000	.357	1.270
	4	2.806*	.177	.000	2.206	3.406
	5	3.440*	.188	.000	2.803	4.078
	6	2.015*	.171	.000	1.435	2.595
	7	2.739*	.166	.000	2.174	3.304
	8	4.351*	.161	.000	3.804	4.897
	9	3.433*	.183	.000	2.813	4.053
	10	1.239*	.162	.000	.689	1.789
	11	.470	.146	.090	-.026	.967
3	1	.888*	.186	.000	.257	1.519
	2	-.813*	.134	.000	-1.270	-.357
	4	1.993*	.183	.000	1.370	2.615
	5	2.627*	.189	.000	1.986	3.268
	6	1.201*	.177	.000	.600	1.803
	7	1.925*	.173	.000	1.337	2.513
	8	3.537*	.178	.000	2.934	4.141
	9	2.619*	.200	.000	1.941	3.298
	10	.425	.180	1.000	-.186	1.037
	11	-.343	.171	1.000	-.922	.235
4	1	-1.104*	.243	.001	-1.929	-.280
	2	-2.806*	.177	.000	-3.406	-2.206

	3	-1.993*	.183	.000	-2.615	-1.370
	5	.634*	.160	.007	.090	1.179
	6	-.791*	.215	.019	-1.521	-.061
	7	-.067	.193	1.000	-.723	.589
	8	1.545*	.191	.000	.895	2.194
	9	.627	.221	.291	-.124	1.377
	10	-1.567*	.219	.000	-2.309	-.826
	11	-2.336*	.207	.000	-3.038	-1.633
5	1	-1.739*	.225	.000	-2.503	-.975
	2	-3.440*	.188	.000	-4.078	-2.803
	3	-2.627*	.189	.000	-3.268	-1.986
	4	-.634*	.160	.007	-1.179	-.090
	6	-1.425*	.213	.000	-2.147	-.703
	7	-.701	.210	.059	-1.413	.010
	8	.910*	.177	.000	.308	1.513
	9	-.007	.209	1.000	-.718	.703
	10	-2.201*	.232	.000	-2.988	-1.415
	11	-2.970*	.210	.000	-3.684	-2.257
6	1	-.313	.221	1.000	-1.063	.436
	2	-2.015*	.171	.000	-2.595	-1.435
	3	-1.201*	.177	.000	-1.803	-.600
	4	.791*	.215	.019	.061	1.521
	5	1.425*	.213	.000	.703	2.147
	7	.724*	.166	.001	.161	1.287
	8	2.336*	.159	.000	1.798	2.874
	9	1.418*	.183	.000	.798	2.038
	10	-.776*	.194	.006	-1.436	-.117
	11	-1.545*	.176	.000	-2.141	-.949
7	1	-1.037*	.233	.001	-1.828	-.247
	2	-2.739*	.166	.000	-3.304	-2.174
	3	-1.925*	.173	.000	-2.513	-1.337
	4	.067	.193	1.000	-.589	.723
	5	.701	.210	.059	-.010	1.413
	6	-.724*	.166	.001	-1.287	-.161
	8	1.612*	.179	.000	1.005	2.219
	9	.694*	.195	.028	.033	1.355
	10	-1.500*	.196	.000	-2.165	-.835
	11	-2.269*	.178	.000	-2.873	-1.665

8	1	-2.649*	.232	.000	-3.437	-1.861
	2	-4.351*	.161	.000	-4.897	-3.804
	3	-3.537*	.178	.000	-4.141	-2.934
	4	-1.545*	.191	.000	-2.194	-.895
	5	-.910*	.177	.000	-1.513	-.308
	6	-2.336*	.159	.000	-2.874	-1.798
	7	-1.612*	.179	.000	-2.219	-1.005
	9	-.918*	.186	.000	-1.550	-.286
	10	-3.112*	.199	.000	-3.787	-2.437
	11	-3.881*	.173	.000	-4.467	-3.294
9	1	-1.731*	.230	.000	-2.513	-.950
	2	-3.433*	.183	.000	-4.053	-2.813
	3	-2.619*	.200	.000	-3.298	-1.941
	4	-.627	.221	.291	-1.377	.124
	5	.007	.209	1.000	-.703	.718
	6	-1.418*	.183	.000	-2.038	-.798
	7	-.694*	.195	.028	-1.355	-.033
	8	.918*	.186	.000	.286	1.550
	10	-2.194*	.202	.000	-2.880	-1.508
	11	-2.963*	.194	.000	-3.622	-2.303
10	1	.463	.202	1.000	-.222	1.147
	2	-1.239*	.162	.000	-1.789	-.689
	3	-.425	.180	1.000	-1.037	.186
	4	1.567*	.219	.000	.826	2.309
	5	2.201*	.232	.000	1.415	2.988
	6	.776*	.194	.006	.117	1.436
	7	1.500*	.196	.000	.835	2.165
	8	3.112*	.199	.000	2.437	3.787
	9	2.194*	.202	.000	1.508	2.880
	11	-.769*	.186	.003	-1.399	-.138
11	1	1.231*	.207	.000	.529	1.934
	2	-.470	.146	.090	-.967	.026
	3	.343	.171	1.000	-.235	.922
	4	2.336*	.207	.000	1.633	3.038
	5	2.970*	.210	.000	2.257	3.684
	6	1.545*	.176	.000	.949	2.141
	7	2.269*	.178	.000	1.665	2.873

8	3.881*	.173	.000	3.294	4.467
9	2.963*	.194	.000	2.303	3.622
10	.769*	.186	.003	.138	1.399

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

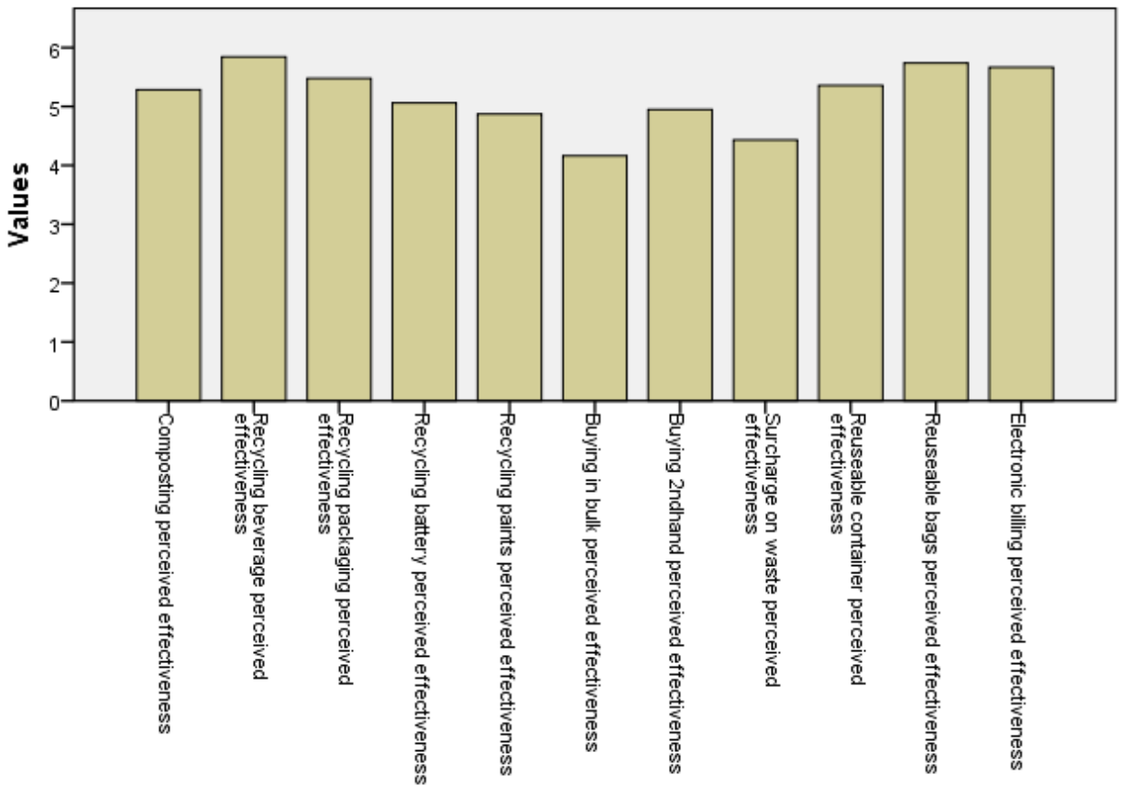
b. Adjustment for multiple comparisons: Bonferroni.

Perceived Effectiveness (D.2)

Descriptive Statistics

	Mean	Std. Deviation	N
Composting perceived effectiveness	5.2836	1.48482	134
Recycling beverage perceived effectiveness	5.8433	1.30271	134
Recycling packaging perceived effectiveness	5.4776	1.42331	134
Recycling battery perceived effectiveness	5.0597	1.60713	134
Recycling paints perceived effectiveness	4.8731	1.68327	134
Buying in bulk perceived effectiveness	4.1642	1.43109	134
Buying 2ndhand perceived effectiveness	4.9478	1.47315	134
Surcharge on waste perceived effectiveness	4.4328	1.83716	134
Reuseable container perceived effectiveness	5.3582	1.58187	134
Reuseable bags perceived effectiveness	5.7388	1.37611	134
Electronic billing perceived effectiveness	5.6642	1.47635	134

Descriptive Statistics
Mean



Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Effectiveness	Sphericity Assumed	384.408	10	38.441	21.449	.000	.139	214.493	1.000
	Greenhouse-Geisser	384.408	8.093	47.499	21.449	.000	.139	173.588	1.000
	Huynh-Feldt	384.408	8.666	44.358	21.449	.000	.139	185.881	1.000
	Lower-bound	384.408	1.000	384.408	21.449	.000	.139	21.449	.996
Error(Effectiveness)	Sphericity Assumed	2383.592	1330	1.792					
	Greenhouse-Geisser	2383.592	1076.360	2.214					
	Huynh-Feldt	2383.592	1152.587	2.068					
	Lower-bound	2383.592	133.000	17.922					

a. Computed using alpha = .05

Pairwise Comparisons

Measure: MEASURE_1

(I) Effectiveness	(J) Effectiveness	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-.560*	.134	.003	-1.014	-.106
	3	-.194	.145	1.000	-.685	.297
	4	.224	.173	1.000	-.362	.810
	5	.410	.163	.719	-.143	.964
	6	1.119*	.145	.000	.626	1.612
	7	.336	.156	1.000	-.195	.867
	8	.851*	.190	.001	.205	1.496
	9	-.075	.158	1.000	-.612	.463
	10	-.455	.151	.171	-.968	.058
	11	-.381	.164	1.000	-.936	.175
2	1	.560*	.134	.003	.106	1.014
	3	.366	.124	.211	-.056	.787
	4	.784*	.144	.000	.295	1.272
	5	.970*	.146	.000	.475	1.466
	6	1.679*	.149	.000	1.174	2.184
	7	.896*	.161	.000	.348	1.443
	8	1.410*	.190	.000	.764	2.057
	9	.485	.157	.132	-.047	1.017
	10	.104	.145	1.000	-.386	.595
	11	.179	.154	1.000	-.343	.701
3	1	.194	.145	1.000	-.297	.685
	2	-.366	.124	.211	-.787	.056
	4	.418	.133	.113	-.033	.869
	5	.604*	.151	.006	.092	1.117
	6	1.313*	.160	.000	.769	1.858
	7	.530	.165	.089	-.029	1.089
	8	1.045*	.192	.000	.393	1.697
	9	.119	.150	1.000	-.390	.629
	10	-.261	.152	1.000	-.778	.256

	11	-.187	.156	1.000	-.718	.344
4	1	-.224	.173	1.000	-.810	.362
	2	-.784*	.144	.000	-1.272	-.295
	3	-.418	.133	.113	-.869	.033
	5	.187	.132	1.000	-.261	.634
	6	.896*	.173	.000	.308	1.483
	7	.112	.171	1.000	-.468	.692
	8	.627	.197	.098	-.041	1.294
	9	-.299	.171	1.000	-.880	.283
	10	-.679*	.177	.010	-1.278	-.080
	11	-.604	.187	.086	-1.240	.031
5	1	-.410	.163	.719	-.964	.143
	2	-.970*	.146	.000	-1.466	-.475
	3	-.604*	.151	.006	-1.117	-.092
	4	-.187	.132	1.000	-.634	.261
	6	.709*	.171	.003	.129	1.288
	7	-.075	.167	1.000	-.640	.491
	8	.440	.193	1.000	-.214	1.095
	9	-.485	.177	.381	-1.085	.115
	10	-.866*	.182	.000	-1.483	-.248
	11	-.791*	.174	.001	-1.382	-.200
6	1	-1.119*	.145	.000	-1.612	-.626
	2	-1.679*	.149	.000	-2.184	-1.174
	3	-1.313*	.160	.000	-1.858	-.769
	4	-.896*	.173	.000	-1.483	-.308
	5	-.709*	.171	.003	-1.288	-.129
	7	-.784*	.155	.000	-1.311	-.256
	8	-.269	.170	1.000	-.845	.308
	9	-1.194*	.168	.000	-1.765	-.623
	10	-1.575*	.147	.000	-2.075	-1.075
	11	-1.500*	.151	.000	-2.013	-.987
7	1	-.336	.156	1.000	-.867	.195
	2	-.896*	.161	.000	-1.443	-.348
	3	-.530	.165	.089	-1.089	.029
	4	-.112	.171	1.000	-.692	.468
	5	.075	.167	1.000	-.491	.640
	6	.784*	.155	.000	.256	1.311
	8	.515	.187	.375	-.121	1.151

	9	-.410	.153	.458	-.930	.110
	10	-.791*	.158	.000	-1.328	-.254
	11	-.716*	.157	.001	-1.250	-.182
8	1	-.851*	.190	.001	-1.496	-.205
	2	-1.410*	.190	.000	-2.057	-.764
	3	-1.045*	.192	.000	-1.697	-.393
	4	-.627	.197	.098	-1.294	.041
	5	-.440	.193	1.000	-1.095	.214
	6	.269	.170	1.000	-.308	.845
	7	-.515	.187	.375	-1.151	.121
	9	-.925*	.193	.000	-1.580	-.271
	10	-1.306*	.181	.000	-1.919	-.692
	11	-1.231*	.186	.000	-1.863	-.599
9	1	.075	.158	1.000	-.463	.612
	2	-.485	.157	.132	-1.017	.047
	3	-.119	.150	1.000	-.629	.390
	4	.299	.171	1.000	-.283	.880
	5	.485	.177	.381	-.115	1.085
	6	1.194*	.168	.000	.623	1.765
	7	.410	.153	.458	-.110	.930
	8	.925*	.193	.000	.271	1.580
	10	-.381	.141	.428	-.859	.097
	11	-.306	.170	1.000	-.881	.269
10	1	.455	.151	.171	-.058	.968
	2	-.104	.145	1.000	-.595	.386
	3	.261	.152	1.000	-.256	.778
	4	.679*	.177	.010	.080	1.278
	5	.866*	.182	.000	.248	1.483
	6	1.575*	.147	.000	1.075	2.075
	7	.791*	.158	.000	.254	1.328
	8	1.306*	.181	.000	.692	1.919
	9	.381	.141	.428	-.097	.859
	11	.075	.144	1.000	-.414	.563
11	1	.381	.164	1.000	-.175	.936
	2	-.179	.154	1.000	-.701	.343
	3	.187	.156	1.000	-.344	.718
	4	.604	.187	.086	-.031	1.240

5	.791*	.174	.001	.200	1.382
6	1.500*	.151	.000	.987	2.013
7	.716*	.157	.001	.182	1.250
8	1.231*	.186	.000	.599	1.863
9	.306	.170	1.000	-.269	.881
10	-.075	.144	1.000	-.563	.414

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

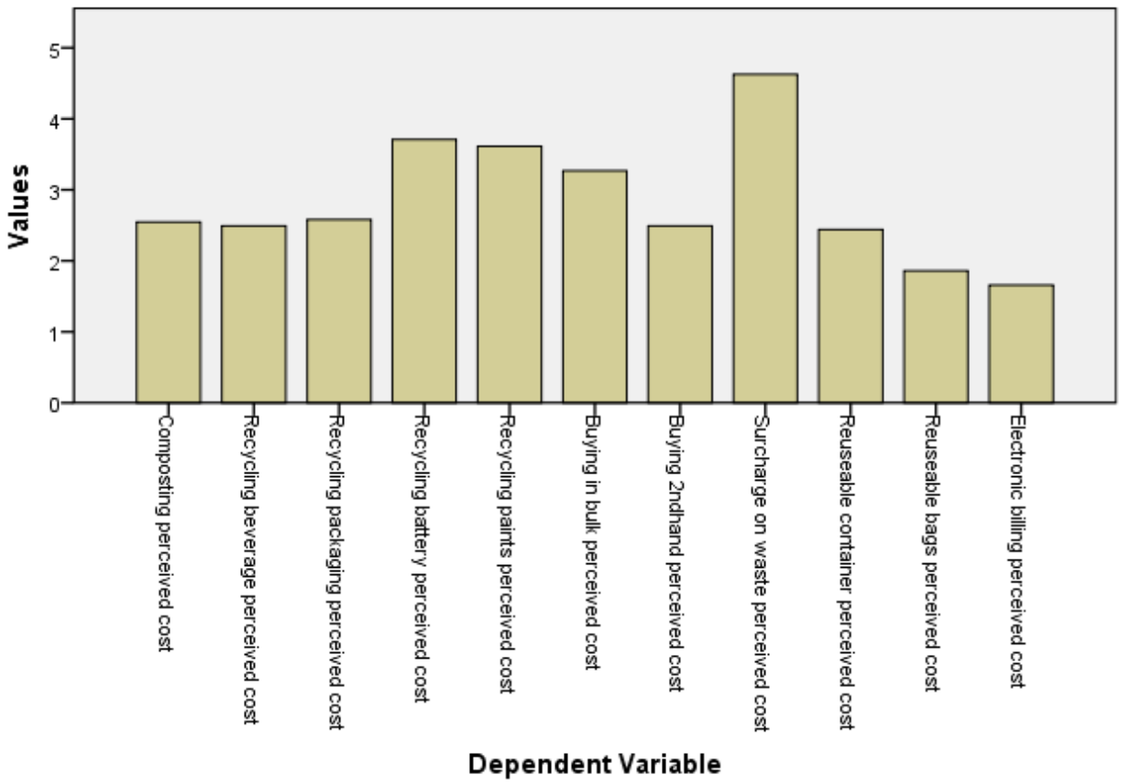
b. Adjustment for multiple comparisons: Bonferroni.

Perceived Cost (D.3)

Descriptive Statistics

	Mean	Std. Deviation	N
Composting perceived cost	2.5448	1.39610	134
Recycling beverage perceived cost	2.4925	1.57874	134
Recycling packaging perceived cost	2.58209	1.576608	134
Recycling battery perceived cost	3.7090	1.55028	134
Recycling paints perceived cost	3.6119	1.44530	134
Buying in bulk perceived cost	3.2687	1.43094	134
Buying 2ndhand perceived cost	2.4925	1.33065	134
Surcharge on waste perceived cost	4.6269	1.53981	134
Reuseable container perceived cost	2.4403	1.54876	134
Reuseable bags perceived cost	1.8582	1.28703	134
Electronic billing perceived cost	1.6567	1.29838	134

Descriptive Statistics
Mean



Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Cost	Sphericity Assumed	1024.619	10	102.462	57.369	.000	.301	573.694	1.000
	Greenhouse-Geisser	1024.619	6.663	153.767	57.369	.000	.301	382.277	1.000
	Huynh-Feldt	1024.619	7.052	145.299	57.369	.000	.301	404.558	1.000
	Lower-bound	1024.619	1.000	1024.619	57.369	.000	.301	57.369	1.000
Error(Cost)	Sphericity Assumed	2375.381	1330	1.786					
	Greenhouse-Geisser	2375.381	886.237	2.680					
	Huynh-Feldt	2375.381	937.889	2.533					
	Lower-bound	2375.381	133.000	17.860					

a. Computed using alpha = .05

Pairwise Comparisons

Measure: MEASURE_1

(I) Cost	(J) Cost	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	.052	.139	1.000	-.418	.523
	3	-.037	.130	1.000	-.480	.405
	4	-1.164*	.143	.000	-1.651	-.678
	5	-1.067*	.158	.000	-1.604	-.530
	6	-.724*	.171	.002	-1.304	-.144
	7	.052	.172	1.000	-.532	.637
	8	-2.082*	.187	.000	-2.716	-1.448
	9	.104	.190	1.000	-.539	.748
	10	.687*	.156	.001	.156	1.217
	11	.888*	.151	.000	.376	1.400
2	1	-.052	.139	1.000	-.523	.418
	3	-.090	.120	1.000	-.495	.316
	4	-1.216*	.141	.000	-1.694	-.739
	5	-1.119*	.164	.000	-1.676	-.562
	6	-.776*	.193	.006	-1.433	-.119
	7	.000	.184	1.000	-.624	.624
	8	-2.134*	.201	.000	-2.816	-1.452
	9	.052	.181	1.000	-.561	.666
	10	.634*	.144	.001	.145	1.124
	11	.836*	.142	.000	.355	1.317
3	1	.037	.130	1.000	-.405	.480
	2	.090	.120	1.000	-.316	.495
	4	-1.127*	.138	.000	-1.595	-.659
	5	-1.030*	.165	.000	-1.589	-.471
	6	-.687*	.180	.012	-1.298	-.075
	7	.090	.179	1.000	-.519	.698
	8	-2.045*	.193	.000	-2.699	-1.391
	9	.142	.190	1.000	-.503	.787
	10	.724*	.154	.000	.200	1.248
	11	.925*	.144	.000	.436	1.415
4	1	1.164*	.143	.000	.678	1.651
	2	1.216*	.141	.000	.739	1.694
	3	1.127*	.138	.000	.659	1.595
	5	.097	.129	1.000	-.340	.534

	6	.440	.175	.724	-.154	1.035
	7	1.216*	.183	.000	.594	1.838
	8	-.918*	.189	.000	-1.560	-.276
	9	1.269*	.191	.000	.621	1.916
	10	1.851*	.164	.000	1.296	2.406
	11	2.052*	.163	.000	1.500	2.605
5	1	1.067*	.158	.000	.530	1.604
	2	1.119*	.164	.000	.562	1.676
	3	1.030*	.165	.000	.471	1.589
	4	-.097	.129	1.000	-.534	.340
	6	.343	.171	1.000	-.237	.923
	7	1.119*	.182	.000	.501	1.738
	8	-1.015*	.162	.000	-1.566	-.464
	9	1.172*	.183	.000	.550	1.793
	10	1.754*	.153	.000	1.235	2.273
	11	1.955*	.157	.000	1.421	2.490
6	1	.724*	.171	.002	.144	1.304
	2	.776*	.193	.006	.119	1.433
	3	.687*	.180	.012	.075	1.298
	4	-.440	.175	.724	-1.035	.154
	5	-.343	.171	1.000	-.923	.237
	7	.776*	.140	.000	.302	1.250
	8	-1.358*	.161	.000	-1.906	-.810
	9	.828*	.157	.000	.297	1.360
	10	1.410*	.156	.000	.879	1.942
	11	1.612*	.160	.000	1.068	2.156
7	1	-.052	.172	1.000	-.637	.532
	2	.000	.184	1.000	-.624	.624
	3	-.090	.179	1.000	-.698	.519
	4	-1.216*	.183	.000	-1.838	-.594
	5	-1.119*	.182	.000	-1.738	-.501
	6	-.776*	.140	.000	-1.250	-.302
	8	-2.134*	.167	.000	-2.701	-1.567
	9	.052	.157	1.000	-.481	.586
	10	.634*	.143	.001	.150	1.119
	11	.836*	.160	.000	.293	1.379
8	1	2.082*	.187	.000	1.448	2.716
	2	2.134*	.201	.000	1.452	2.816

	3	2.045*	.193	.000	1.391	2.699
	4	.918*	.189	.000	.276	1.560
	5	1.015*	.162	.000	.464	1.566
	6	1.358*	.161	.000	.810	1.906
	7	2.134*	.167	.000	1.567	2.701
	9	2.187*	.179	.000	1.581	2.793
	10	2.769*	.171	.000	2.187	3.350
	11	2.970*	.177	.000	2.369	3.572
9	1	-.104	.190	1.000	-.748	.539
	2	-.052	.181	1.000	-.666	.561
	3	-.142	.190	1.000	-.787	.503
	4	-1.269*	.191	.000	-1.916	-.621
	5	-1.172*	.183	.000	-1.793	-.550
	6	-.828*	.157	.000	-1.360	-.297
	7	-.052	.157	1.000	-.586	.481
	8	-2.187*	.179	.000	-2.793	-1.581
	10	.582*	.125	.000	.156	1.008
	11	.784*	.130	.000	.341	1.226
10	1	-.687*	.156	.001	-1.217	-.156
	2	-.634*	.144	.001	-1.124	-.145
	3	-.724*	.154	.000	-1.248	-.200
	4	-1.851*	.164	.000	-2.406	-1.296
	5	-1.754*	.153	.000	-2.273	-1.235
	6	-1.410*	.156	.000	-1.942	-.879
	7	-.634*	.143	.001	-1.119	-.150
	8	-2.769*	.171	.000	-3.350	-2.187
	9	-.582*	.125	.000	-1.008	-.156
	11	.201	.106	1.000	-.159	.562
11	1	-.888*	.151	.000	-1.400	-.376
	2	-.836*	.142	.000	-1.317	-.355
	3	-.925*	.144	.000	-1.415	-.436
	4	-2.052*	.163	.000	-2.605	-1.500
	5	-1.955*	.157	.000	-2.490	-1.421
	6	-1.612*	.160	.000	-2.156	-1.068
	7	-.836*	.160	.000	-1.379	-.293
	8	-2.970*	.177	.000	-3.572	-2.369
	9	-.784*	.130	.000	-1.226	-.341

10	-.201	.106	1.000	-.562	.159

Based on estimated marginal means

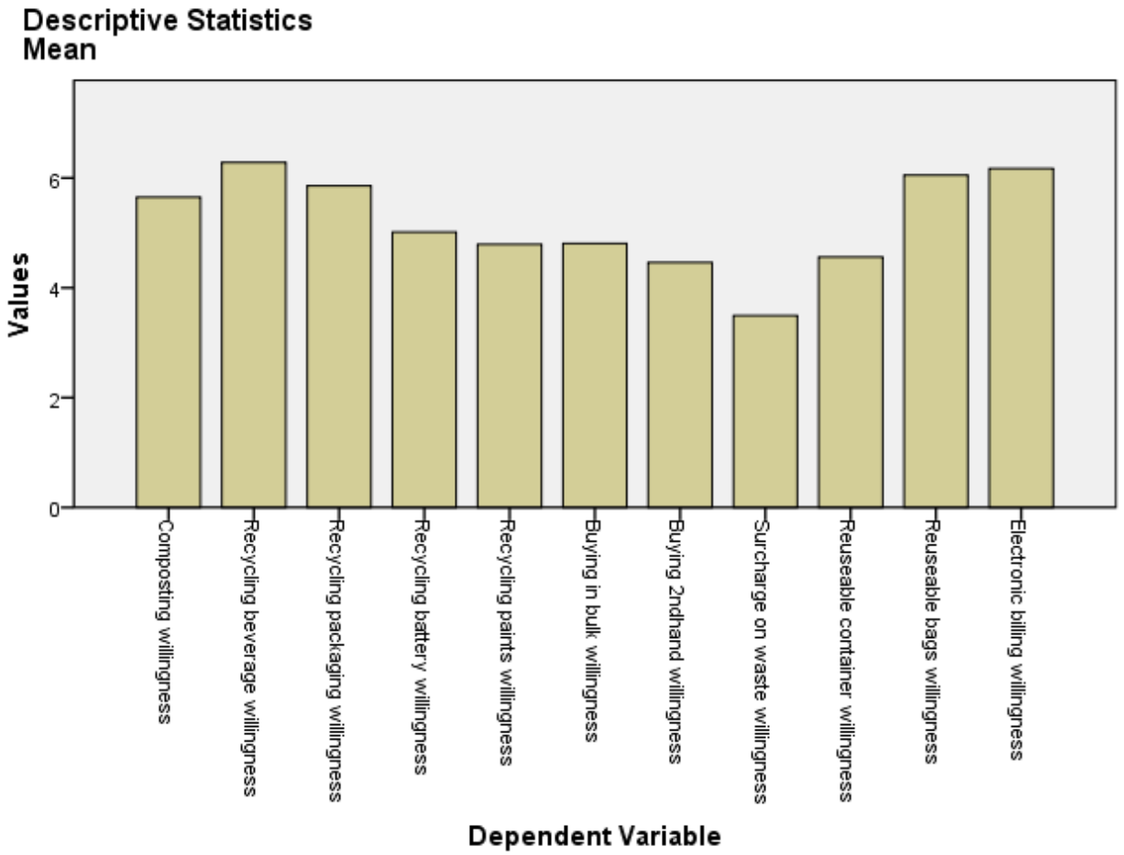
*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Willingness (D.4)

Descriptive Statistics

	Mean	Std. Deviation	N
Composting willingness	5.6493	1.47795	134
Recycling beverage willingness	6.2836	1.10781	134
Recycling packaging willingness	5.8582	1.25748	134
Recycling battery willingness	5.0149	1.47146	134
Recycling paints willingness	4.7910	1.72149	134
Buying in bulk willingness	4.8060	1.47906	134
Buying 2ndhand willingness	4.4627	1.66637	134
Surcharge on waste willingness	3.4925	1.65773	134
Reuseable container willingness	4.5597	1.75795	134
Reuseable bags willingness	6.0522	1.28798	134
Electronic billing willingness	6.1716	1.27159	134



Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter
Willingness	Sphericity Assumed	1032.484	10	103.248	62.567	.000	.320	625.666
	Greenhouse-Geisser	1032.484	8.020	128.738	62.567	.000	.320	501.788
	Huynh-Feldt	1032.484	8.583	120.296	62.567	.000	.320	537.002
	Lower-bound	1032.484	1.000	1032.484	62.567	.000	.320	62.567
Error(Willingness)	Sphericity Assumed	2194.788	1330	1.650				
	Greenhouse-Geisser	2194.788	1066.669	2.058				
	Huynh-Feldt	2194.788	1141.525	1.923				
	Lower-bound	2194.788	133.000	16.502				

a. Computed using alpha = .05

Pairwise Comparisons

Measure: MEASURE_1

(I) Willingness	(J) Willingness	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-.634*	.119	.000	-1.039	-.230
	3	-.209	.117	1.000	-.605	.187
	4	.634*	.152	.003	.120	1.148
	5	.858*	.166	.000	.296	1.420
	6	.843*	.164	.000	.288	1.399
	7	1.187*	.185	.000	.559	1.815
	8	2.157*	.180	.000	1.547	2.767
	9	1.090*	.174	.000	.499	1.680
	10	-.403	.129	.124	-.842	.036
	11	-.522*	.148	.031	-1.024	-.021
2	1	.634*	.119	.000	.230	1.039
	3	.425*	.090	.000	.120	.731
	4	1.269*	.125	.000	.845	1.693
	5	1.493*	.151	.000	.979	2.006
	6	1.478*	.153	.000	.959	1.996
	7	1.821*	.168	.000	1.252	2.390
	8	2.791*	.156	.000	2.263	3.319
	9	1.724*	.154	.000	1.201	2.247
	10	.231	.118	1.000	-.170	.633
	11	.112	.126	1.000	-.314	.538
3	1	.209	.117	1.000	-.187	.605
	2	-.425*	.090	.000	-.731	-.120
	4	.843*	.123	.000	.427	1.259
	5	1.067*	.153	.000	.548	1.586
	6	1.052*	.145	.000	.562	1.543
	7	1.396*	.173	.000	.808	1.983
	8	2.366*	.154	.000	1.844	2.887
	9	1.299*	.163	.000	.746	1.851
	10	-.194	.119	1.000	-.598	.210
	11	-.313	.134	1.000	-.767	.140
4	1	-.634*	.152	.003	-1.148	-.120
	2	-1.269*	.125	.000	-1.693	-.845

	3	-.843*	.123	.000	-1.259	-.427
	5	.224	.132	1.000	-.225	.672
	6	.209	.154	1.000	-.313	.731
	7	.552	.167	.067	-.015	1.119
	8	1.522*	.156	.000	.994	2.050
	9	.455	.153	.187	-.063	.973
	10	-1.037*	.124	.000	-1.459	-.616
	11	-1.157*	.151	.000	-1.667	-.646
5	1	-.858*	.166	.000	-1.420	-.296
	2	-1.493*	.151	.000	-2.006	-.979
	3	-1.067*	.153	.000	-1.586	-.548
	4	-.224	.132	1.000	-.672	.225
	6	-.015	.176	1.000	-.611	.581
	7	.328	.184	1.000	-.297	.954
	8	1.299*	.176	.000	.701	1.896
	9	.231	.186	1.000	-.398	.861
	10	-1.261*	.163	.000	-1.815	-.708
	11	-1.381*	.172	.000	-1.966	-.796
6	1	-.843*	.164	.000	-1.399	-.288
	2	-1.478*	.153	.000	-1.996	-.959
	3	-1.052*	.145	.000	-1.543	-.562
	4	-.209	.154	1.000	-.731	.313
	5	.015	.176	1.000	-.581	.611
	7	.343	.163	1.000	-.210	.897
	8	1.313*	.176	.000	.717	1.910
	9	.246	.179	1.000	-.360	.853
	10	-1.246*	.143	.000	-1.731	-.762
	11	-1.366*	.149	.000	-1.870	-.862
7	1	-1.187*	.185	.000	-1.815	-.559
	2	-1.821*	.168	.000	-2.390	-1.252
	3	-1.396*	.173	.000	-1.983	-.808
	4	-.552	.167	.067	-1.119	.015
	5	-.328	.184	1.000	-.954	.297
	6	-.343	.163	1.000	-.897	.210
	8	.970*	.174	.000	.378	1.562
	9	-.097	.182	1.000	-.714	.520
	10	-1.590*	.171	.000	-2.171	-1.009
	11	-1.709*	.173	.000	-2.296	-1.122

8	1	-2.157*	.180	.000	-2.767	-1.547
	2	-2.791*	.156	.000	-3.319	-2.263
	3	-2.366*	.154	.000	-2.887	-1.844
	4	-1.522*	.156	.000	-2.050	-.994
	5	-1.299*	.176	.000	-1.896	-.701
	6	-1.313*	.176	.000	-1.910	-.717
	7	-.970*	.174	.000	-1.562	-.378
	9	-1.067*	.191	.000	-1.716	-.418
	10	-2.560*	.158	.000	-3.097	-2.022
	11	-2.679*	.174	.000	-3.269	-2.089
9	1	-1.090*	.174	.000	-1.680	-.499
	2	-1.724*	.154	.000	-2.247	-1.201
	3	-1.299*	.163	.000	-1.851	-.746
	4	-.455	.153	.187	-.973	.063
	5	-.231	.186	1.000	-.861	.398
	6	-.246	.179	1.000	-.853	.360
	7	.097	.182	1.000	-.520	.714
	8	1.067*	.191	.000	.418	1.716
	10	-1.493*	.156	.000	-2.022	-.963
	11	-1.612*	.189	.000	-2.252	-.972
10	1	.403	.129	.124	-.036	.842
	2	-.231	.118	1.000	-.633	.170
	3	.194	.119	1.000	-.210	.598
	4	1.037*	.124	.000	.616	1.459
	5	1.261*	.163	.000	.708	1.815
	6	1.246*	.143	.000	.762	1.731
	7	1.590*	.171	.000	1.009	2.171
	8	2.560*	.158	.000	2.022	3.097
	9	1.493*	.156	.000	.963	2.022
	11	-.119	.139	1.000	-.592	.354
11	1	.522*	.148	.031	.021	1.024
	2	-.112	.126	1.000	-.538	.314
	3	.313	.134	1.000	-.140	.767
	4	1.157*	.151	.000	.646	1.667
	5	1.381*	.172	.000	.796	1.966
	6	1.366*	.149	.000	.862	1.870
	7	1.709*	.173	.000	1.122	2.296

8	2.679*	.174	.000	2.089	3.269
9	1.612*	.189	.000	.972	2.252
10	.119	.139	1.000	-.354	.592

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix E
Correlation Tables

Composting (E.1)

Descriptive Statistics

	Mean	Std. Deviation	N
Composting frequency	4.4254	2.18118	134
Composting perceived effectiveness	5.2836	1.48482	134
Composting perceived cost	2.5448	1.39610	134
Composting willingness	5.6493	1.47795	134

Correlations

		Composting frequency	Composting perceived effectiveness	Composting perceived cost	Composting willingness
Composting frequency	Pearson Correlation	1	.529**	.037	.693**
	Sig. (2-tailed)		.000	.672	.000
	N	134	134	134	134
Composting perceived effectiveness	Pearson Correlation	.529**	1	.001	.474**
	Sig. (2-tailed)	.000		.990	.000
	N	134	134	134	134
Composting perceived cost	Pearson Correlation	.037	.001	1	-.093
	Sig. (2-tailed)	.672	.990		.288
	N	134	134	134	134
Composting willingness	Pearson Correlation	.693**	.474**	-.093	1
	Sig. (2-tailed)	.000	.000	.288	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

Recycling Beverage Containers (E.2)

Descriptive Statistics

	Mean	Std. Deviation	N
Recycling beverage frequency	6.1269	1.21037	134
Recycling beverage perceived effectiveness	5.8433	1.30271	134
Recycling beverage perceived cost	2.4925	1.57874	134
Recycling beverage willingness	6.2836	1.10781	134

Correlations

		Recycling beverage frequency	Recycling beverage perceived effectiveness	Recycling beverage perceived cost	Recycling beverage willingness
Recycling beverage frequency	Pearson Correlation	1	.513**	-.155	.769**
	Sig. (2-tailed)		.000	.074	.000
	N	134	134	134	134
Recycling beverage perceived effectiveness	Pearson Correlation	.513**	1	-.193*	.463**
	Sig. (2-tailed)	.000		.026	.000
	N	134	134	134	134
Recycling beverage perceived cost	Pearson Correlation	-.155	-.193*	1	-.197*
	Sig. (2-tailed)	.074	.026		.023
	N	134	134	134	134
Recycling beverage willingness	Pearson Correlation	.769**	.463**	-.197*	1
	Sig. (2-tailed)	.000	.000	.023	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Recycling Packaging (E.3)

Descriptive Statistics

	Mean	Std. Deviation	N
Recycling packaging frequency	5.3134	1.54831	134
Recycling packaging perceived effectiveness	5.4776	1.42331	134
Recycling packaging perceived cost	2.58209	1.576608	134
Recycling packaging willingness	5.8582	1.25748	134

Correlations

		Recycling packaging frequency	Recycling packaging perceived effectiveness	Recycling packaging perceived cost	Recycling packaging willingness
Recycling packaging frequency	Pearson Correlation	1	.467**	-.004	.707**
	Sig. (2-tailed)		.000	.959	.000
	N	134	134	134	134
Recycling packaging perceived effectiveness	Pearson Correlation	.467**	1	.036	.483**
	Sig. (2-tailed)	.000		.680	.000
	N	134	134	134	134
Recycling packaging perceived cost	Pearson Correlation	-.004	.036	1	-.159
	Sig. (2-tailed)	.959	.680		.066
	N	134	134	134	134
Recycling packaging willingness	Pearson Correlation	.707**	.483**	-.159	1
	Sig. (2-tailed)	.000	.000	.066	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

Recycling Batteries and Electronics (E.4)

Descriptive Statistics

	Mean	Std. Deviation	N
Recycling battery frequency	3.3209	2.05049	134
Recycling battery perceived effectiveness	5.0597	1.60713	134
Recycling battery perceived cost	3.7090	1.55028	134
Recycling battery willingness	5.0149	1.47146	134

Correlations

		Recycling battery frequency	Recycling battery perceived effectiveness	Recycling battery perceived cost	Recycling battery willingness
Recycling battery frequency	Pearson Correlation	1	.434**	-.027	.611**
	Sig. (2-tailed)		.000	.755	.000
	N	134	134	134	134
Recycling battery perceived effectiveness	Pearson Correlation	.434**	1	-.065	.451**
	Sig. (2-tailed)	.000		.453	.000
	N	134	134	134	134
Recycling battery perceived cost	Pearson Correlation	-.027	-.065	1	-.100
	Sig. (2-tailed)	.755	.453		.249
	N	134	134	134	134
Recycling battery willingness	Pearson Correlation	.611**	.451**	-.100	1
	Sig. (2-tailed)	.000	.000	.249	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

Recycling Paints and Gases (E.5)

Descriptive Statistics

	Mean	Std. Deviation	N
Recycling paints frequency	2.6866	2.00907	134
Recycling paints perceived effectiveness	4.8731	1.68327	134
Recycling paints perceived cost	3.6119	1.44530	134
Recycling paints willingness	4.7910	1.72149	134

Correlations

		Recycling paints frequency	Recycling paints perceived effectiveness	Recycling paints perceived cost	Recycling paints willingness
Recycling paints frequency	Pearson Correlation	1	.339**	-.089	.396**
	Sig. (2-tailed)		.000	.308	.000
	N	134	134	134	134
Recycling paints perceived effectiveness	Pearson Correlation	.339**	1	-.030	.409**
	Sig. (2-tailed)	.000		.734	.000
	N	134	134	134	134
Recycling paints perceived cost	Pearson Correlation	-.089	-.030	1	-.196*
	Sig. (2-tailed)	.308	.734		.023
	N	134	134	134	134
Recycling paints willingness	Pearson Correlation	.396**	.409**	-.196*	1
	Sig. (2-tailed)	.000	.000	.023	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Buying in Bulk (E.6)

Descriptive Statistics

	Mean	Std. Deviation	N
Buying in bulk frequency	4.1119	1.43878	134
Buying in bulk perceived effectiveness	4.1642	1.43109	134
Buying in bulk perceived cost	3.2687	1.43094	134
Buying in bulk willingness	4.8060	1.47906	134

Correlations

		Buying in bulk frequency	Buying in bulk perceived effectiveness	Buying in bulk perceived cost	Buying in bulk willingness
Buying in bulk frequency	Pearson Correlation	1	.290**	-.088	.463**
	Sig. (2-tailed)		.001	.313	.000
	N	134	134	134	134
Buying in bulk perceived effectiveness	Pearson Correlation	.290**	1	-.187*	.530**
	Sig. (2-tailed)	.001		.031	.000
	N	134	134	134	134
Buying in bulk perceived cost	Pearson Correlation	-.088	-.187*	1	-.320**
	Sig. (2-tailed)	.313	.031		.000
	N	134	134	134	134
Buying in bulk willingness	Pearson Correlation	.463**	.530**	-.320**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Buying Second Hand (E.7)

Descriptive Statistics

	Mean	Std. Deviation	N
Buying 2ndhand frequency	3.3881	1.55070	134
Buying 2ndhand perceived effectiveness	4.9478	1.47315	134
Buying 2ndhand perceived cost	2.4925	1.33065	134
Buying 2ndhand willingness	4.4627	1.66637	134

Correlations

		Buying 2ndhand frequency	Buying 2ndhand perceived effectiveness	Buying 2ndhand perceived cost	Buying 2ndhand willingness
Buying 2ndhand frequency	Pearson Correlation	1	.266**	-.002	.721**
	Sig. (2-tailed)		.002	.980	.000
	N	134	134	134	134
Buying 2ndhand perceived effectiveness	Pearson Correlation	.266**	1	-.179*	.411**
	Sig. (2-tailed)	.002		.039	.000
	N	134	134	134	134
Buying 2ndhand perceived cost	Pearson Correlation	-.002	-.179*	1	-.158
	Sig. (2-tailed)	.980	.039		.069
	N	134	134	134	134
Buying 2ndhand willingness	Pearson Correlation	.721**	.411**	-.158	1
	Sig. (2-tailed)	.000	.000	.069	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Paying a Surcharge on Excess Waste (E.8)

Descriptive Statistics

	Mean	Std. Deviation	N
Surcharge on waste frequency	1.7761	1.39625	134
Surcharge on waste perceived effectiveness	4.4328	1.83716	134
Surcharge on waste perceived cost	4.6269	1.53981	134
Surcharge on waste willingness	3.4925	1.65773	134

Correlations

		Surcharge on waste frequency	Surcharge on waste perceived effectiveness	Surcharge on waste perceived cost	Surcharge on waste willingness
Surcharge on waste frequency	Pearson Correlation	1	.105	-.074	.334**
	Sig. (2-tailed)		.225	.395	.000
	N	134	134	134	134
Surcharge on waste perceived effectiveness	Pearson Correlation	.105	1	.063	.450**
	Sig. (2-tailed)	.225		.471	.000
	N	134	134	134	134
Surcharge on waste perceived cost	Pearson Correlation	-.074	.063	1	-.104
	Sig. (2-tailed)	.395	.471		.231
	N	134	134	134	134
Surcharge on waste willingness	Pearson Correlation	.334**	.450**	-.104	1
	Sig. (2-tailed)	.000	.000	.231	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

Bringing Re-usable containers to Cafés and Restaurants (E.9)

Descriptive Statistics

	Mean	Std. Deviation	N
Reuseable container frequency	2.6940	1.77801	134
Reuseable container perceived effectiveness	5.3582	1.58187	134
Reuseable container perceived cost	2.4403	1.54876	134
Reuseable container willingness	4.5597	1.75795	134

Correlations

		Reuseable container frequency	Reuseable container perceived effectiveness	Reuseable container perceived cost	Reuseable container willingness
Reuseable container frequency	Pearson Correlation	1	.355**	.254**	.560**
	Sig. (2-tailed)		.000	.003	.000
	N	134	134	134	134
Reuseable container perceived effectiveness	Pearson Correlation	.355**	1	.000	.525**
	Sig. (2-tailed)	.000		.996	.000
	N	134	134	134	134
Reuseable container perceived cost	Pearson Correlation	.254**	.000	1	-.028
	Sig. (2-tailed)	.003	.996		.751
	N	134	134	134	134
Reuseable container willingness	Pearson Correlation	.560**	.525**	-.028	1
	Sig. (2-tailed)	.000	.000	.751	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Bringing Re-usable Bags to the Supermarket (E.10)

Descriptive Statistics

	Mean	Std. Deviation	N
Reuseable bags frequency	4.8881	1.93372	134
Reuseable bags perceived effectiveness	5.7388	1.37611	134
Reuseable bags perceived cost	1.8582	1.28703	134
Reuseable bags willingness	6.0522	1.28798	134

Correlations

		Reuseable bags frequency	Reuseable bags perceived effectiveness	Reuseable bags perceived cost	Reuseable bags willingness
Reuseable bags frequency	Pearson Correlation	1	.348**	-.055	.657**
	Sig. (2-tailed)		.000	.530	.000
	N	134	134	134	134
Reuseable bags perceived effectiveness	Pearson Correlation	.348**	1	-.182*	.568**
	Sig. (2-tailed)	.000		.035	.000
	N	134	134	134	134
Reuseable bags perceived cost	Pearson Correlation	-.055	-.182*	1	-.286**
	Sig. (2-tailed)	.530	.035		.001
	N	134	134	134	134
Reuseable bags willingness	Pearson Correlation	.657**	.568**	-.286**	1
	Sig. (2-tailed)	.000	.000	.001	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Switching Billing from Paper Mail to Electronic (E.11)

Descriptive Statistics

	Mean	Std. Deviation	N
Electronic billing frequency	5.6567	1.38794	134
Electronic billing perceived effectiveness	5.6642	1.47635	134
Electronic billing perceived cost	1.6567	1.29838	134
Electronic billing willingness	6.1716	1.27159	134

Correlations

		Electronic billing frequency	Electronic billing perceived effectiveness	Electronic billing perceived cost	Electronic billing willingness
Electronic billing frequency	Pearson Correlation	1	.472**	-.166	.570**
	Sig. (2-tailed)		.000	.055	.000
	N	134	134	134	134
Electronic billing perceived effectiveness	Pearson Correlation	.472**	1	-.166	.496**
	Sig. (2-tailed)	.000		.055	.000
	N	134	134	134	134
Electronic billing perceived cost	Pearson Correlation	-.166	-.166	1	-.196*
	Sig. (2-tailed)	.055	.055		.023
	N	134	134	134	134
Electronic billing willingness	Pearson Correlation	.570**	.496**	-.196*	1
	Sig. (2-tailed)	.000	.000	.023	
	N	134	134	134	134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix F

Methodological Issues

The main issue we faced was that we felt our instructions were unclear. Only much after the initial meeting with our client were we informed that we were to use administered survey measures as opposed to the ones we created. We also received mixed messages

about which statistical measures to use (we were initially told to do a 2 way ANOVA) this complications slowed our initial progress and we had to led us having to rush and revise our project multiple times.