UNDERGRADUATE BUSINESS AND ENVIRONMENTAL SCIENCE STUDENTS' RECYCLING BEHAVIOR AT AN APPALACHIAN UNIVERSITY

A Master's Thesis for the Corporate Environmental Management Program

by

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ABSTRACT

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Abstract

The purpose of this study was to investigate what the students know about and how they relate (attitudes) to recycling, what influence (subjective norms) them to recycle or not to recycle and what recycling related challenges (perceived behavioral control) they face in a university setting compared to their home environment. Eight students participated in the study. Four of them were majoring in an environmental science related major, and the other four were business major students. The three main variables of Ajzen's (1991) Theory of Planned Behavior, attitudes, subjective norms and perceived behavioral control, were used to examine the participants recycling behaviors. The data was collected through individual interviews. The results revealed that all of the participants had access to information on recycling, their attitudes were positive toward recycling and they found recycling challenging and inconvenient on campus because of the lack of recycling culture at the university. Adequate information and positive attitude were somewhat helpful in motivating the participants to recycle on campus. However, subjective norms and most importantly perceive behavioral controls had the largest impact on the participants' recycling behavior, the last one being the most significant variable. Comparing recycling behavior at home and on campus strengthened the role of subjective norms and perceived behavioral control in influencing recycling behavior among the participants.

Keywords

Recycling, Theory of Planned Behavior, University Campus, Social Norms, Convenience

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1. INTRODUCTION

Environmental impact, the deterioration of the natural environment, is largely a by-product of human actions; therefore, it is necessary for humans to develop an environmentally significant behavior to benefit the environment (Stern, 2000). Over the last decades, municipal solid waste in Organization for Economic Co-operation and Development (OECD) countries has grown tremendously because people's income has grown, the use of packaging materials and disposable goods have become more intensive, and there has been an increase in the purchase of durable material goods (van den Bergh, 2008). The environmental impacts of solid waste come from two distinct sources: inefficient use of material resources and the generation of environmental pollution through litter, landfills and incineration of solid waste (van den Bergh, 2008). To fight these problems, we have to find the way to manage waste in a more reasonable way.

Based on a 2012 Municipal Solid Waste (MSW) characterization report, in the United States 53.8% of the waste was discarded, 11.7% was combusted for energy, and 34.5% was recycled or composted (EPA, 2014). Whereas in the European Union (in the 28 EU countries) in 2012, 34% of municipal waste was landfilled, 24% was incinerated, and 42% was recycled or composted (Eurostat, 2014). This shows that recycling in the United States is behind of the European average. More importantly, as the data reveals, the portion of waste that ends up at landfills is much greater in the US than it is in the EU. Therefore, the US has to improve its waste management practices through incinerating more of its waste to utilize its heat energy, and most importantly by recycling a larger portion of its waste.

Inappropriate waste management contributes to the increase of methane gas in the atmosphere. Methane is a greenhouse gas that causes global warming. An estimated 65 million tonnes of methane is released due to waste treatment (25 million tonnes) and by landfills (40 million tonnes) each year (Houghton, 2009). This is quite a significant amount considering that coal mining, natural gas, and the petroleum industry all together releases 100 million tonnes of the same greenhouse gas per year. The global warming potential (GWP) of the methane gas is 25, which means that it is 25 times more powerful than another significant greenhouse gas, carbon dioxide. Methane contributes to 15% of the present level of global warming. The release of 1 tonne of carbon dioxide causes between $25 and $50 damage (e.g. as a result of more

powerful hurricanes, more severe floods and droughts, etc.) due to the effects of global warming. Because methane is a greenhouse gas 25 times more powerful than carbon dioxide, the yearly amount of methane released into the atmosphere by human activities is alarming (Houghton, 2009). This illustrates the significant negative effects of inappropriate waste management and why it is necessary to recycle.

According to Biel, Hansson and Martensson (2003), recycling is an activity that is not expensive or very time consuming, but in fact, it is financially beneficial and practical sometimes. Recycling is also widely regarded as environmentally friendly behavior. Individuals and households have to make the decision to recycle, and their behavior have a direct effect on the environment. However, these individuals' environmental impact is quite small, and they can only have a large environmental impact if many people are involved and independently do the same thing (Stern, 2000). This is where education and university recycling come to the picture. At a university, students study to become professionals in different work fields, and they are going to work at different organizations. These individuals' behaviors can have a great impact on the environment as they will be working for companies that are main contributors of environmental problems (Stern, 2000). Education that changes attitudes and beliefs is one strategy that can change individuals' behavior related to environmental issues (Stern, 1999). Therefore, universities have a substantial responsibility in educating students on recycling, and what better way to do this than involving these students in recycling activities on campus.

The goal of this study was to present the current state of recycling at the studied university and to examine what the problems with campus recycling were from the students' point of view.

2. RESEARCH TASK AND PROBLEMS

Recycling and appropriate waste management are not widely available in East Tennessee. For instance, trash bags full of garbage are lying on the shoulder of the roads, truck tires are left behind on the highways, plastic bottles are lying in the ditches next to the road, aluminum cans are shining from the bushes, and the organic food waste is let down the drains. Recycling in this environment is difficult because it is new for most of the people and many of them might be

afraid of change. However, the studied university has an established environmental club that has started university wide recycling program several years ago and it should be well established by now. The students, faculty and staff have an opportunity to recycle plastic bottles, cans and paper on campus.

The campus of the studied university is a very complex environment, where most of the necessary infrastructure for recycling is present. However, this complex environment makes it sometimes hard to recycle. For example, some health concerns were reported regarding the storing of the cardboards next to the cafeteria, difficulties were found with transporting the sorted recyclables to the recycling center in this rural area, compromises had to be made in order to operate the student run campus recycling, and also issues concerning the cooperation between student organizations were reported even before the present study. Despite the obstacles, recycling is ongoing on campus. Therefore, the present study examined the current recycling situation on campus, what challenges the interviewed students faced regarding campus recycling, what factors determined their recycling behavior, and what improvements could have been made to make campus recycling more attainable at this university.

3. THEORETICAL FRAMEWORK

3.1. Introduction to key concepts and theories

The Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1980) consists of two parts. The first part states that an individual acts in a rational manner and she or he uses the available information before doing so. The second part states that the attitude toward the specific behavior and subjective norms determines the individual's intentions. Attitude refers to the individual's own opinion on a certain behavior while subjective norms reflect the society's acceptance of that behavior. Theory of Planned Behavior (TPB; Ajzen, 1991) is an extension of TRA and explains behavior by including additional variables. These variables are called Perceived Behavior Control (PBC). PBC consists of two parts: (1) external conditions and (2) the individual's perceived ability. In terms of recycling, external conditions refer to the convenience of practicing recycling, while the individual's perceived ability refers to the individual's knowledge of the process of recycling. The individual's intention to perform a given behavior is a central factor of the TPB (Ajzen, 1991). Tudor, Barr and Gilg (2007) explained that the intentions are based on

three pillars: attitudes, subjective norms and perceived behavioral control. Attitudes refer to someone's assessment of the advantages and disadvantages of performing a specific behavior, subjective norms reflects the person's perception of the social pressure from his or her environment to perform the behavior, and perceived behavioral control covers a person's belief of how easy or hard it is to perform the specific action. The stronger the intention to perform a behavior, the more likely the performance will occur (Ajzen, 1991).

The 1987 Brundtland Report defined sustainable development as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Sustainability is built on the pillars of social, environmental and economic concerns. Houghton (2009) defined sustainability as "not cheating on our children" (p. 393.) and added to that "not cheating on our neighbors and not cheating on the rest of creation". The concept of sustainability is central to the present study because it helps to identify the main effects of recycling, which are environmental, social and economic.

Recycling is defined by the United States Environmental Protection Agency (EPA) as "the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products" (EPA, 2014).

3.2. Summary of former research in the field

Some research has been conducted on recycling at universities in the United States and in other countries. For example, a web-based survey conducted at Michigan State University examined the perceived barriers to recycling, knowledge of recycling, program preferences, and environmental attitudes. The participants of the study were students, faculty and staff members (n= 3896) (Kaplowitz, Yeboah, Thorp, & Wilson, 2009). The campus-wide survey revealed that the participants were somewhat aware of the environmental benefits of recycling, but the community members lacked knowledge of the recyclable materials and the locations where these materials could be recycled on campus (Kaplowitz, et al., 2009). The participants' high receptivity for information regarding recycling was motivated by their high knowledge of environmental benefits of recycling, and therefore, they had a positive attitude toward recycling. The study also highlighted the importance of recycling availability and its convenience on campus in having a successful campus recycling program. There was more need and willingness

from the community to learn more about how recycling is done than why it is beneficial to recycle (Kaplowitz, et al., 2009).

Another study, conducted in a public university in southeast Texas, investigated the location of plastic bottle recycling bins in the classrooms. The participants of the study were students, faculty and staff members and recycling was studied in three academic buildings. The data was collected by counting the number of plastic bottles placed in the recycling receptacles by the community in each participating building. The members of the community were not informed of the study. The results revealed that the inconveniently located recycling bins were an issue for some people, whereas when the recycling containers were placed in the classrooms near the regular trash bins, it had a significant effect in reducing plastic bottles being thrown into the regular trash bins. At the beginning of the study, the recycling bins looked exactly the same as the trash cans, but later there were different color recycling receptacles added, the numbers of these receptacles were increased throughout the buildings, and finally they were placed in every single classroom. Differentiating the bins or increasing their numbers did not increase recycling in the building, but having the recycling bins in the classrooms within two meters of the regular trash bins significantly increased plastic recycling throughout the buildings. Moreover, it is possible that placing more recycling bins in the hallways may have made the students, staff and faculty more aware of the other bins and the recycling effort, thus, increasing the amount of waste recycled. Finally, also the placement of recycling receptacles near the area of consumption had a large effect on increasing the percentage of plastic bottle recycling (O'Connor, et al., 2010).

Largo-Wight, Johnston and Wight (2013) conducted a very similar study at the University of Florida, and they found a similar result when pairing recycling receptacles with garbage cans. There was a 65-265% increase in recycling volume within the participating buildings over the eight weeks of the study without any education or promotion (Largo-Wight, et al., 2013). The recycling in three buildings was investigated during an eight week period, and data was collected by trained students, faculty and staff members. There was a control building with only outdoor recycling options, and there were two other buildings where indoor and outdoor recycling receptacles were available at certain periods of the study. It was a quasi-experimental pilot field study to test the efficacy of a can and bottle recycling intervention on campus. The intervention consisted of placing recycling receptacles next to regular trash bins in

classrooms, offices and hallways. They found that increasing the number of recycling bins alone already increased the volume of recycled materials. Adding more locations and more convenient recycling options, without education on recycling or promotions, dramatically increased recycling behavior and volume on campus (Largo-Wight, et al., 2013). Pike, Shannon, Lawrimore, McGee, Taylor, and Lamoreaux (2003) found similar results during their study at Francis Marion University in South Carolina. 13 apartment blocks with eight four-person apartments in each were participating in the study. The buildings were again divided into three groups: group 1 received recycling bins and education on recycling, group 2 only received the bins, and group 3 received no recycling equipment during the length of the study. However, all groups received an introduction session about the experiment and about what items were recycled on campus at the time. Placing recycling bins near garbage bins increased the amount of recycled materials. However, educating the students about the benefits of recycling did not result in significantly more recycling compared to students who received only recycling bins but no education on recycling (Pike, et al., 2003).

As the data of most of the studies on campus recycling in the Unites States is collected through large scale surveys or experiments with high number of participants, there is a need for more personal contact with the individual participants. All of these studies investigated the recycling behavior of students, faculty and staff in a campus environment. Therefore, in the present study the students' knowledge, attitudes, subjective norms and perceived behavioral control in relation to recycling were examined through in-depth semi-structured interviews.

Couple studies from outside of the United States applied the Theory of Planned Behavior (TBP) throughout the research process. A case study from a university in Hong Kong used TPB when studying the recycling attitude and behavior among the faculty and students. Their hypotheses included that attitude, subjective norms, and perceived behavioral control, awareness of consequences, moral norm, and convenience relate positively to recycling intention; and that recycling intention relates positively to recycling behavior. 300 questionnaires were distributed in the computer center, library and cafeteria of the university, and 205 of them were returned completed and valid. 179 students and 26 professors returned the surveys. They found that the behavioral intention regarding recycling was influenced by attitude, the subjective norms, perceived behavioral control, awareness of consequences, the moral norms, and convenience (Wan, Cheung, & Shen, 2012). According to Wan, et al. (2012), focusing on people's attitude

toward recycling was necessary and it can be done through education and promotions. Furthermore, it was also important to enhance knowledge of recycling and its environmental effects, to make recycling a social norm and trend through marketing and public relation events and to make recycling more convenient by providing more and better placed recycling locations for people to use. These variables are essential when examining recycling because they help to explain individuals' behavior toward recycling. The current study also focused on the influence of these factors of TPB on recycling behavior.

Another study, using TPB as its theoretical approach, was conducted at the University Sains Malaysia by Ramayah, Wai Chow Lee, and Lim (2012). Their hypotheses were (1) environmental knowledge and awareness are positively related to attitude, (2) attitude is positively related to recycling behavior, (3) social norms are positively related to recycling behavior, (4) convenience of recycling infrastructure is positively related to recycling behavior, and (5) cost of recycling is positively related to recycling behavior. In accordance to Ramayah et al. (2012) study, the present study investigated the effects of information on recycling, attitude, subjective norms, and perceived behavioral control on recycling behavior. However, cost of recycling was not fundamental to the present study. Ramayah, et al. (2012) conducted a survey with 200 respondents, who were first, second and third year students at the university. The results of the study showed that social norms had the greatest impact on recycling behavior, respondents' knowledge and awareness of environmental benefits was positively related to attitude, attitude also had a significant but relatively small impact on recycling behavior, while convenience of available recycling infrastructure did not have an impact on recycling behavior. The cost of recycling, however, was found to be inversely related to recycling behavior.

Interestingly, the previous research conducted at the universities in the United States and other countries focuses solely on the students' behavior toward recycling on campus but do not consider the fact that these students' recycling behavior may differ at home and that it could have an influence on their recycling behavior at the university. Therefore, in the present study the recycling attitudes and behaviors on campus and at home are also investigated and compared, among the other factors of the TPB.

4. METHODOLOGICAL CHOICES

4.1. Research design

There were eight participants, two females and six males. Two of the participants were freshmen, four were juniors and two were seniors. Half of the participants were wildlife or environmental science major students, while the other half was general business or management major students. There was also another business major student (Participant 9) but he was originally from England, and therefore, his interview was not included in the data of the present study. These majors were chosen because the two of the three building pillars of sustainability, economics and environment, are central to recycling, and therefore, the participants were expected to have some previous knowledge about the topic.

This study was qualitative and the data was collected through interviews. The interviews were semi-structured consisting of mainly open-ended questions. At first the participants demographic and background information were inquired. During the interview the participants were also asked about their recycling experiences and behaviors in order to understand their actions related to recycling, their opinions on recycling and values regarding recycling. These were important in order to determine the participants' relationship with recycling, their knowledge about recycling in general, and their opinions on the recycling situation at the university. The participants were asked about their recycling behavior first at their home, where they live when they are not at school, and on the university campus.

4.2. Data collection

Before starting the interview a written informed consent form (Appendix I) was signed by the participants. The participants were only informed about the topic at the beginning of the interview in order to stop them from preparing for the interview. The participants were assured that the data collected will be kept confidential. For this reason, the name of the university is not mentioned throughout this study. The interview guide (Appendix II) was developed in order to ensure that all predetermined themes were covered. The researcher conducted the interviews alone, one participant at the time. The interviews were recorded using a video camera and a tablet. A single interview took no more than 30 minutes. Only the researcher has access to the recordings and the collected data. The study took place on the main campus of the university. The interviews were conducted in the business building and in the environmental research center

on campus. The exact time and date of the individual interviews were set individually with the students through email correspondence with them and couple of their professors. The interviews were conducted between the 26th of February and the 5th of March, in 2014.

4.3. Data analysis

The recordings were transcribed and analyzed using a qualitative approach. Content analysis was used to identify core consistencies and meanings in the interviews. The data was analyzed deductively (Patton, 2002) by exploring the predetermined themes: information on recycling, attitudes toward recycling, subjective norms experienced by the participants, perceived behavioral control, and comparison of recycling at home and on campus. Additional patterns were not discovered.

5. EMPIRICAL RESULTS

5.1. General knowledge about recycling

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8
Four materials that can be recycled	paper, glass, cardboard, plastic	plastic, aluminum, water, paper	plastic, paper, aluminum, glass	paper, plastic, cardboard, glass	plastic, aluminum	plastic, aluminum, rubber, paper	aluminum, plastic, paper, clothes	aluminum, plastic, paper, wood
Four items that can be recycled	cleaning chemicals, plastic bottles, mattresses, cardboard boxes	plastic bottles, aluminum cans, clothes, paper bags	grocery bags, clothes, cleaning bottles, books	milk jugs, plastic bags, cardboard boxes, paper towel	plastic bottles, aluminum cans, plastic bins, anything plastic	batteries, shampoo bottles, aluminum cans, stove	batteries, aluminum cans, plastic bottles, glass bottles	aluminum cans, silverware, computers, wooden furniture
Ranking the following materials based on their value	1. Aluminum	1. Aluminum	1. Aluminum	1. Aluminum	1. Glass	1. Glass	1. Plastic	1. Glass
	2. Glass	2. Glass	2. Plastic	2. Glass	2. Plastic	2. Plastic	2. Paper	2. Plastic
	3. Paper	3. Paper	3. Paper	3. Plastic	3. Aluminum	3. Aluminum	3. Aluminum	3. Aluminum
	4. Plastic	4. Plastic	4. Glass	4. Paper	4. Paper	4. Paper	4. Glass	4. Paper

TABLE 1 – Recyclables

The participants were asked to provide four different materials and four different household items that can be recycled (see Table 1). Interestingly, only one participant was not able to give four examples of recyclable materials, although it was expected that this question would be challenging for people who do not recycle, or who recycle only one or a few specific materials. All of the participants were able to give four examples of recyclable household items. The participants were also asked to place the four materials: aluminum, glass, paper, and plastic, in the correct order based on their value (see Table 1). Interestingly, aluminum was four times correctly chosen as the most expensive out of the four materials whereas three participants thought glass and one participant thought plastic was the most expensive. Plastic was accurately chosen as the second most expensive by four participants. Paper was the third expensive, but only three participants guessed it correctly. Finally, glass was correctly placed as the least expensive by only two participants. Participant 3 was the only one who was able to place all the materials in the correct order based on their value and Participant 1 was the only one who asked about the correct order after the interview.

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8
Familiar with the concept of recycling	Yes	Yes	Yes	No (reusing)	No	Yes	Yes	No
Number of relevant university courses taken	3	2	1	1	0	0	0	0
Information sources on recycling (other than courses)	word of mouth, media, learning as doing	learning as doing, other people, Internet	word of mouth, Internet, books, library databases	Internet, TV, other people	friends, TV, common knowledge, Internet	TV, social media, Internet	high school classes, guest speakers	family, high school project,media
Familiar with the concept of sustainability	Yes	No	Yes	No	Yes	No	No	No

TABLE 2 – Recycling knowledge

Table 2 provides a summary about the participants' knowledge on recycling, the relevant courses they have taken, the sources of their information on recycling, and the participants' familiarity with the concept of sustainability. Five out of the eight participants were familiar with the concept of recycling. For instance, Participant 6 defined recycling: "When I think of recycling, I think about taking what we already have in existence and putting it back into a form

that we can reuse it." Furthermore, five participants had a good idea what the concept of recycling was and knew, at least to some extent, how recycling works. For example, Participant 2 stated that the process of recycling aluminum cans is: "after you take it to the, say, landfill they would go and do some process of melting and use that material to make more cans out of that material and then resell more cans of that". However, the other three participants were not so sure about these concept and process, and one even confused reusing with recycling: Participant 4 described recycling as "reusing items for other purposes". Four participants had taken some university level courses that included recycling at least to some extent, while the other four participants had not taken any college course related to recycling. Not surprisingly, Participant 1, as an Energy Management major, had taken the most recycling related courses. He took "Environmental Geography," Environmental Science" and "Fundamentals of Land and Energy Management". Additionally, all the participants also reported learning about recycling from several information sources. Six out of the eight participants reported learning at least something about recycling from other people, friends, family, or through word of mouth. Five of the participants mentioned Internet as their information source. Three participants mentioned TV and three mentioned media or social media as sources of recycling related knowledge. Learning by doing and high school related sources, such as classes, projects and guest speakers, were both mentioned twice. Only Participant 3 mentioned books and library databases as sources of her recycling knowledge and Participant 5 thought that some of his information on recycling is common knowledge. Surprisingly, only three participants knew the concept or the pillars of sustainability. For example, Participant 5 was able to list the three pillars of sustainability as social, environmental and economic factors. Five participants did not know what sustainability stands for. For instance, Participant 7 stated: "I'm not really familiar with the word, the general idea of it."

5.2. Attitudes

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8
Main reason to recycle	environmental	financial	social	environmental	social	environmental	financial	environmental
Two specific benefits of recycling	environmental, financial	financial, environmental	social, financial	social, financial	financial, environmental	environmental, social	social, environmental	financial, social
Two specific negative effects of not recycling	NA	environmental, envrionmental	environmental, environmental	environmental, environmental	social, environmental	environmental, social	none	environmental, financial

TABLE 3 – Recycling attitudes

Table 3 provides a summary of the participants' main reasons to recycle, two benefits of recycling and two negative effects of not recycling. Participant 1 gave an environmental reason for and provided an environmental and a financial benefit of his recycling behavior. He recycled because he did not want to have "millions" of plastic bottles polluting the Earth. He also recognized recycling as a measure to reduce emissions and waste entering the environment. His financial benefit was the following: "If a company was going to use a material and then that material goes away, they have to reinvest in the same material again, whereas, if they were able to recycle it or have that [material] return to them, it would cost a lot less to remake that product over and over again on a large scale." According to Participant 1, recycling is a very good concept, but it should be more structured and more wide-spread. "As an Energy major I feel like it's almost my duty [to recycle]." According to him, it is necessary that every person does his or her part in order to help the environment and take care of the Earth. Furthermore, Participant 1 stated that it should be financially worthwhile to recycle the plastic bottles by taking them to the recycling center, but currently it is not worth the gas money to drive there and all the way back to recycle "50 plastic bottles". He did not plan to further research recycling but instead was expecting to learn more about it during his studies. Furthermore, he wanted to recycle more in the future even if it was not very convenient "just because it's [the interview] kind of sparked my drive to recycle."

Participant 2 gave a financial reason as the main motive behind his decision to recycle. Furthermore, he reported one financial and one environmental reason as benefits of recycling, and two different environmental reasons as negative consequences of inappropriate waste management. He stated that he consumes a large amount of beverages that come in aluminum cans, and brings the empty containers to the recycling center to get money for the cans. Recycling was very important for Participant 2 for environmental purposes, so the trash is not dumped on the side of the road and it does not harm the environment. His negative effects were that inappropriate waste management "can harm animals too" and not biodegradable garbage can pollute aquatic and forested ecosystems. Other reasons for recycling that he reported were to lower the required amount of energy and cost of making something. Moreover, Participant 2 stated that identity plays an important role for him: "I am Environmental Science major, so of course I'm gonna recycle." He also reported that he recycles because it is possible to get money out of some recyclables. Finally, Participant 2 announced that he will research recycling following the interview because of his career prospects in environmental management and sustainable ecosystems.

Participant 3 gave a social reason for her recycling behavior, and she stated a social and a financial benefit of recycling and two negative environmental effects of not recycling. Her main reason to recycle on campus was to keep the campus clean and more livable. A social benefit, according to Participant 3, was that the waste incineration "dirties the air" and the more recycling results in a "healthier environment, like breathable air". According to her, by recycling people spend less money making new things using raw materials and use more of the already existing used items to turn them into usable objects again. Participant 3 was also in favor of recycling as she was in the sustainability student group of the university and also liked to reuse old things and find a new purpose for them. She learned about the "plastic island" effect on the Pacific Ocean – the accumulation of plastic waste floating on the Ocean surface – and was motivated to recycle in order to make a difference. Participant 3 recycled to keep the campus clean and to prevent future pollution caused by inappropriate waste management to the environment: "if we don't recycle now, imagine what it would be in ten years". Surprisingly, she struggled with recycling at home, but had a positive attitude toward it and constantly encouraged her family not to throw recyclables away.

For participant 4 the main reason to recycle was environmental, and she gave a social and a financial benefit of recycling and two environmental negative effects of inappropriate waste management. The main reason to recycle for her was to prevent landfills taking over forested areas, such as rainforests because she was aware of the current global problem of deforestation. Participant 4 considered recycling "wonderful" because it prevents waste from entering into nature and protects the animals from being harmed by trash. According to her, some concrete benefits of recycling were that trash is not just sitting around for people to make mess with it and it is also possible to get money for the recyclable materials. Participant 4 mentioned the problems with "car stuff, like with antifreeze" as it is waste entering the environment caused by poor waste management practices. Near Participant 4's home, trash is present in an aquatic environment and animals are exposed to it. She stated that landfills taking up valuable space are not acceptable and deforestation caused by inappropriate waste management "doesn't sit right with me [Participant 4]". When asked about researching recycling following this interview, she replied: "Yeah, I definitely will because I don't know how it [the process of recycling] works."

Participant 5 gave a social reason for his recycling behavior. Additionally, he provided a financial and an environmental benefit of recycling and a social and an environmental negative effect of inappropriate waste management. His social reason was that instead of continuously discarding things, recycling makes it possible for other people to use the same items or items made from recyclable materials again. It is a shared benefit throughout the society due to recycling. Benefits of recycling, according to him, were cost effectiveness of reusing materials and having less trash in nature. For the two negative effects related to landfills he stated: "In fact some of the goods in there that are thrown in the trash might not be sanitary, so people around there suffer [from the smell] and the environment around there might falter [from the pollution]". Participant 5 believed that recycling should be more than what it is and that more people should recycle: "every college should do, that pretty much most homes and then city should do". Participant 5 was also in favor of recycling but thought that it should be more convenient to recycle than what it is now. Not wasting materials and reusing items were also important to him.

Participant 6 had an environmental reason for recycling, and he gave a social and an environmental example for both as benefits of recycling and also as negative effects of not recycling. He recycled because there was too much trash entering the natural environment and harming it due to inappropriate waste management, therefore, he did his part to prevent it from

happening. Benefits of recycling, according to him, were saving trees during paper manufacturing and protecting human health from the harmful materials being release into nature. He mentioned "Plastic Island" as a negative effect of inappropriate waste management, and it was also an important factor why he thought that more plastic should be recycled. Another negative example was the chemicals leaking from landfills to soil, and therefore, having contaminated agricultural land that causes human health impacts over the years. Participant 6 also perceived recycling as a good thing, wished that more people would recycle, and believed that the amount of trash should be decreased by recycling a lot more plastic. He was from New York State where recycling is more supported than in most of the other states, and he urged for a nationwide recycling policy and more state to join New York to offer incentives for recycling: "…in New York, I mean it's kind of silly for you not to recycle because you're paying a deposit…"

Participant 7 gave a financial reason for his recycling behavior, and he provided a social and an environmental benefit of recycling but was not able to give any negative effects of not recycling. His reason to recycle was that it does not take much effort to take the recyclables to a recycling center and get money, for example, from the aluminum cans. Benefits were that people can use the recycled items again and that they do not run out of raw materials. When asked about whether or not he was familiar with any negative effects of inappropriate waste management, he answered: "Not really, [I] can't. I mean it's just things, it's not good for the Earth, just generals." Participant 7 perceived recycling as useful but did not think that he was going out of his way to recycle as much as it would be otherwise possible. However, he also stated that he have listened others who "preach" about going "green" and believed that everybody can put in a little effort to make a real difference. He reported that he was willing to "take the extra ten steps to help out" if he did not considered it too inconvenient to do so. Moreover, he mentioned that he will take time following the interview to learn more about the recycling process.

Participant 8 had an environmental reason to recycle, and he had a financial and a social benefit for recycling and an environmental and a financial negative effect caused by not recycling. He reported that his family spends a lot of time in nature, and therefore, recycling is a great tool for him to try to keep the natural environment clean and healthy. He believed that reusing recyclable materials decreases the cost of manufacturing as opposed to extracting raw materials, and keeping trash out of nature results in a greener, more livable, healthier

environment for humans. For a negative environmental effect he stated: “Air pollution, soil pollution, oil, not oil spills, but like the trash clumps in the oceans, which are obviously not healthy for anything.” Another negative effect was economic related: “Probably land use, like if we just pile on top, it’s just gonna spread out and it takes away from housing and other economic uses that could be, or [are] economic benefits.” Participant 8 reported that he likes recycling and hates that other people do not recycle. Furthermore, he believed that the self-image as somebody who conserves resources makes him recycle and try to reuse and find new purpose for old things. Participant 8 stated that he does not enjoy to force others to recycle but is not afraid to let others know of his opinion: “it’s right there, why not do it, just take that two steps and make it easier on all of us.” He also mentioned that he will do some research following the interview to learn more about recycling, sustainability, the value of the four recyclable materials, and benefits of recycling other than the environmental ones.

5.3. Subjective norms

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8
Gender	Male	Male	Female	Female	Male	Male	Male	Male
Age	21	20	21	22	20	21	21	18
Undergraduate Major	Energy Management	Environmental Science	Environmental Science	Wildlife and Fisheries Biology	Business Management	General Business	Business Marketing	Environmental Studies
Year of Studies	Junior	Junior	Junior	Senior	Junior	Senior	Freshman	Freshman
Home State	Tennessee	Tennessee	Florida	Tennessee	Tennessee	New York	Tennessee	Maryland
Lives on Campus	No (<10 miles)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recycles at Home	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Recycles on Campus	No	Yes	Yes	Yes	No	No	Yes	Yes
Know of anyone who recycles on campus	Yes	Yes	Yes	No	No	Yes	Yes	Yes
How many students groups that recycle on campus he or she is aware of	2	0	1	0	0	1	1	2
Part of a student group that recycles on campus	No	No	No (used to be)	No	No	No	No	Yes
Distance of the recycling center from home (miles)	2	15	NA	20	2	2	10	20

TABLE 4 – General Information

Participant 1 received information about the location of the recycling centers near campus and what they recycle by asking the locals. Therefore, he stated that word of mouth was an

important way of getting information about recycling. He said it is hard to recycle on campus and nearby because for "the majority of people, including myself, it's more difficult to recycle than it is to throw your trash away". As shown in Table 4, he stated that he knows about two student groups on campus, but the trend is that the members of these groups recycle for a month or two, and then problems with picking up the recyclables appear. Participant 1 was not part of any student organization that recycled on campus. Furthermore, he reported that his teammates recycle in their dorm room, but he was not aware of where they take the collected materials. He did not verbally encourage anybody to recycle, but believed that he might have sparked interest in some people through his actions.

Participant 2 had also learned about recycling from other people. He did not know of any student groups that focused on recycling on campus; however, he knew some people who recycled cans on campus. He was hoping that his participation in class project about recycling made a difference. He also made his family recycle at home. Additionally, he stated his opinion on people's attitude toward and behavior on recycling: "A lot of people don't even know about recycling, don't care about recycling."

For Participant 3 an important information source was word of mouth. More specifically, she asked her friends and professors about recycling to know how it is done and why they do it. She did not recycle at home because her family was not very "eco-friendly," but she was trying to win them over and shared her opinion with them: "mom you're not helping, you're basically ruining my trying to change the world." She believed it would help her to start recycle at home if she could make her family to recycle because they represent a huge barrier for her recycling. She also faced problems with recycling on campus because in her opinion people did not really know about the opportunities to recycle on campus and they did not use the recycling bins because recycling was not promoted on campus and the campus was not very "eco-friendly," either. She knew one student group that recycled; her best friend was the president of the organization and Participant 3 used to be part of the student group herself. She also had other friends and classmates who recycled on campus. She believed she influenced others to start recycling by helping them during a class to learn more about the topic.

Participant 4 also received her information on recycling partly from other people. She did not know of any student group that did recycling on campus and was only aware of a few

students who saved their cans and took them home to recycle. She gave a speech about recycling in a class, and she hoped that it encouraged others to start recycling.

Friends were also the main information source on recycling for Participant 5. He provided a glimpse into a cultural issue that did not support a positive attitude toward recycling: "sometimes we just get lazy as a culture that it takes an extra minute each day to go and try to separate all the stuff that you can actually recycle." According to him, a lot of people did not want to recycle because it was a lot easier to just take the trash and put it into the dumpster without sorting it. He believed that incentives would help people to recycle more and recycling competitions on campus would also encourage students to recycle more. He was not familiar with any student group that recycled on campus and could not name anybody who would recycle on campus. At his home it was more convenient for people to recycle because they had the necessary infrastructure and people could see each other doing it, so they were encouraged by each other's actions.

According to Participant 6, a lot of people were looking to recycle on campus and near the university, but he was surprised that incentives, like the deposit system at his home state, New York, did not exist in Tennessee. He wished that more people would recycle at the university because "too many people just throw things away". In New York, it would be "silly" for somebody not to recycle because he or she paid the deposit for the beverage container and it makes sense to recycle thanks to incentives like this one. He also mentioned that if more people recycled at the university, it would help him to recycle on campus. He considered the recycling situation on campus "horrible" because the university did not encourage students to recycle nor helped the student groups enough to be able to recycle. Hence, people just did not recycle around there. However, he was aware of one student group that did recycling on campus, and he stated that a lot of his friends tried to recycle on campus whenever the recycling bins were available. Despite that he was not a member of any student organization that recycled on campus. He believed he may have educated some people on recycling, but did not believe he had an influence on people on a large scale.

Participant 7 was influenced by people who "preach" about going "green" to recycle. He also gathered some information about recycling from guest speakers during his high school years. He believed that the university administration and student services were trying their best to make recycling available on campus by putting out recycling bins. According to him, they

could not force students to recycle, but they could have given them options to do so. He was also aware of a student group that did recycling on campus and knew many "wildlife" oriented people who also recycled on campus; however, he did not know any "business" classmates who recycled. Participant 7 was not part of any recycling organization on campus. He also thought that he may have influenced others to recycle through his actions: "I would like to think that if I get up and walk across the room to throw plastic bottles away in the recycling bin, maybe other people would be more inclined to, instead of just going to the convenient one [regular trash bin] right next to them." In his opinion, people need to be informed more about recycling to be more willing to take the extra steps in order to recycle.

Participant 8 believed that people did not care enough about recycling: "people often overlook it and think it's mumbo-jumbo or just not necessary when it really is." His professors had not taught him yet about recycling; however, he had picked up some knowledge through his involvement with one of the student groups that recycled on campus and from his family back home. Participant 8 was also, at the time of the interview, a member of that student organization. His friends did not have significant influence on him to recycle. However, his family was very "outdoorsy" and it played an important role in his actions to protect the environment through recycling. According to him, people just threw all their trash at the main dumpster behind the cafeteria without recycling any of it. He knew about another group other than his organization that recycled, but was not aware of who they were. He did not know of many people on campus who would go out of their way to recycle. However, he estimated that he saw about 30 to 40 percent of his classmates recycling after classes when recycling bins were available. He was positive that his actions might have encouraged people to recycle because "if you see somebody else to recycle, you would probably be 'oh I can do that too'".

5.4. Perceived behavioral control

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8
Materials recycled at home by the participants	plastic, glass, clothes	aluminum, plastic	none	paper, plastic, aluminum	plastic	aluminum, plastic, cellphones, refrigerator	aluminum	cardboard, glass, plastic, aluminum, steel, paper, refrigerator, old gardening tools
Materials recycled on campus by the participants	none	aluminum	paper, plastic	plastic, aluminum	none	none	paper, aluminum, plastic	paper, plastic, aluminum
Being aware of what materials are recycled on campus	paper, plastic	none	paper, plastic	plastic, aluminum	none	paper	paper, aluminum, plastic	paper, plastic, aluminum

TABLE 5 – Recycled materials

Table 5 summarizes what materials participants recycled at home and on campus as well as how aware they were about the recycling options on campus. At the time of the interview Participant 1 lived off campus, however, he lived close enough to be considered living on campus. He found recycling on campus challenging because there was no city founded recycling program near the university. He estimated that the closest recycling center was about 25 miles away from campus. However, at home, he found recycling convenient because the recycling center was located couple miles from his home, and the waste management company picked up the non-recyclable waste from his house; therefore, they did not have to worry about the disposal of that. Participant 1 thought there should be more recycling opportunities (i.e. recycling bins) on campus. He believed that the recycling bins are not conveniently available for people and they have to walk around campus to try to find and use them. Specifically, he pointed out that the main trash dump area that most people use, down by the cafeteria, should have recycling next to it. Participant 1 was aware of plastic and paper recycling on campus but he thought that if there

were more options to recycle and there were more recycling containers placed “a lot more people would be open to the idea of recycling versus just putting it all in one trash bag and tossing it out”.

At home, Participant 2 took the recyclables to the scrap yard 15 miles away from his house to get some money for them. However, during the academic year he lived on campus and was not aware of any kind of materials being recycled on campus. Therefore, he just recently started buying garbage bags to store aluminum cans in them because he wanted to start recycling them but was not able to do it on campus. Participant 2 suggested that recycling containers should be put in every building to make it convenient for people to recycle.

Participant 3 did not recycle at home and during the study she lived on campus. She knew there were “blue” recycling bins on campus, but she thought that nobody really used them. She also reported that there was very little communication regarding campus recycling and that students were doing everything alone related to recycling while a few faculty members helped out sometimes. She was aware of plastic and paper recycling on campus, but she suggested that the recycling bins should have also been placed in the dorms to make students who live there more aware. Participant 3 stated that in order to recycle aluminum cans, it is necessary to go to a recycling center where aluminum cans are deposited because there is no option to recycle them on campus.

Participant 4 collected all the recyclables together at home and they had curbside recycling service available. Therefore, there was no need to take the recyclables to the recycling center 10 miles away except for aluminum cans, for which they received money in return at that nearby location. During the study, she lived on campus. She stated that she did not find many places to recycle her cans on campus but used some of the recycling bins at the most convenient locations. According to her, the problem was that there were not many bins and, therefore, she just collected the cans and took them home when she could not recycle them on campus. It was not allowed to have trash in dorm rooms, and this rule made it hard to collect the cans separately. She did not know about any place on or near campus where she could have taken a garbage bag full of cans to recycle. Therefore, she had to take them home and used the campus recycling bins to recycle aluminum cans and plastic bottles only one by one. She also mentioned that there should be recycling containers at the main trash dump site on campus in order to make recycling more convenient.

Participant 5 started out the interview by stating that more people should recycle but recycling is not made very convenient for people. He believed that it takes more time to recycle than it takes to just throw away everything in the trash, and that there is no set place on campus where all the recyclables could be taken. During the study, he lived on campus, but he was not aware of any materials being recycled on campus. He and his roommates tried to recycle plastic bottles and collect them in their room; however, they faced a problem similar to what Participant 4 did with her aluminum cans: "we tried to get all of our plastic bottles but it's tough to do because we just have them sitting there for weeks on, bags full of bottles, and then sometimes we have to just throw them away." At home, Participant 5 reported taking the recyclables to a recycling center two miles from his house. In general, he thought it was more convenient and less time consuming to just put all the trash in a garbage bag and throw it all away without recycling any of it. Participant 5 also suggested having a separate dumpster for normal items and other dumpsters next to it for recyclable items. He believed it would make it easier to find them and not waste time looking for them. According to him, a problem with recycling and also with campus recycling was that it was not convenient enough. He believed that the best solution would be to have recycling bins more conveniently located on campus, so that students would not have to drive somewhere else to recycle.

At home, Participant 6 found recycling easy as he and his family used curbside recycling services and took their cans and bottles to a grocery store, couple miles from his home, where they used reverse vending machines to get their deposit back. On the contrary, Participant 6 had noticed that on and around campus everything went into the trash. Although, Participant 6 lived on campus during the study, he was not aware of any recycling facilities near campus. He also mentioned that a student recycling group used to have "blue" recycling bins throughout the campus, but people started to put trash in them and the group had to take the bins away. He was aware of textbook recycling in the bookstore but did not think that any other kind of materials were recycled on campus after the "blue" recycling bins had been removed.

Participant 7 recycled at home because it was convenient and it also brought some money. There was a recycling center 10 miles from his house, and it was on the way to his mother's work place. Participant 7 lived on campus during the study but he only recycled when it was convenient. For example, he reported using the recycling bins for paper next to the printers or the "aluminum only" and "plastic bottle only" bins around campus. When asked about how

convenient recycling on campus was compared to just throwing everything in the regular trash, Participant 7 responded: “That would be more convenient to throw it just away anywhere, but it’s convenient enough where I don’t have to walk a mile to put in that little bit of effort.” He did not find it hard to choose from the different trash bins and recycling containers, either: “It takes very little effort to put in [the recyclables] in a particular box.” It did not require much extra effort from Subject 7 to walk across the classroom and throw the recyclables into the recycling bin instead of the regular trash can, which was more conveniently located.

At home, Participant 8 used curbside recycling services. He put all the recyclable into a bin without sorting them and it was picked up from his house. However, if something could not fit in the recycling container, such as his old refrigerator, he needed to take it to a specialized recycling place about 20 miles from his house. During the study, Participant 8 lived on campus and was a member of one of the student groups that did recycling on campus. Therefore, he was aware of the placement of the recycling bins: “We have bins located sparsely throughout buildings and collect those once a week.” Participant 8 knew about aluminum, paper and plastic recycling on campus. He reported similar problems with recycling than the other participants. For example, he mentioned that students generate lots of recyclable trash in their dorms but the recycling bins are located elsewhere. Moreover, he pointed out that the students take the trash out to the main dumpster site where there is no recycling available. Another problem stated by Participant 8 was that while the “tiny blue bins” are not visible enough and out of people’s way (“they are kind of hiding”), the big plastic trash cans can be seen from far away and, therefore, it is more convenient to throw everything in them as people walk by them all the time. He also mentioned that recycling works on campus if a person has only one or a few items to recycle, but the process is not convenient at all with bulk or multiple items.

5.5. Comparing behavior at home and on campus

5.5.1. Attitudes

There was no significant difference between the attitudes at home and on campus toward recycling. Most of the reasons to recycle were related to environmental concerns, such as Participants 1’s reason at home: “to help the environment and try to take care of the Earth,” and Participant 3’s reason on campus: “I guess basically helping the environment.” There were also social and financial reasons, such as decreasing the smell and increasing the sanitation of

landfills near urban environment (Participant 5) and receiving money for aluminum cans at the scrap yard (Participant 2). Interestingly, although Participant 3 had a strong environmental concern both at home and on campus that motivated her to recycle, she was not able to recycle at home because her family did not support her effort. When asked what the main reason was for her to recycle on campus, she replied: "Because basically since it's not my own house, I like to keep the campus clean." Therefore, it appeared that she was focused on taking care of a common good and keeping the university campus clean, because she was not able to protect the environment through recycling at her own home.

5.5.2. Subjective norms

Most of the participants stated that people are not very concerned about recycling on or near the campus of the university and therefore most people in the area do not recycle. Participants 1, 5 and 6, who recycled at home but not on campus, stated that people do not want to recycle on campus and they just put all the waste into the trash without recycling any of it. Hence, this negative recycling environment was one of the main reasons why these participants did not recycle on campus, even though they did at home. Interestingly, only Participant 7 believed that the administration was trying its best to support recycling efforts on campus. The statement of Participant 6 well summarized all the participants' opinion on the situation on campus: "everything goes to the trash around here." Participant 6 believed that a reason for this negative norm on and near campus was the lack of education on recycling as compared to what was present at his home: "I know I'm educated by recycling just because I'm from New York and we do recycle all the time, but I think around here where a lot of people aren't recycling more education on the issue would really help." Another reason that Participants 5 and 6 acknowledged was the lack of incentives to encourage students to recycle. Participant 5 described recycling in Knoxville "it's included also with our garbage cost" while Participant 6 explained that in New York "you have to pay a deposit on everything, and then you go and recycle it, and then you get your deposit back, so it's an incentive". The strength of subjective norm was well expressed in the answer of Participant 3 when she was asked why she was not recycling at home although she did recycle on campus. She stated: "I tried but my mom and brother are not very eco-friendly, so I'm trying like slowly win them into it, so it's kind of hard."

5.5.3. Perceived behavioral control

Most of the participants stated that campus recycling at the university was not convenient enough. Participants 1, 5 and 6 did not recycle on campus, even though they recycled at home, because it was not as convenient as it was at their respective homes. Participant 6 also mentioned the lack of and the problems with the recycling infrastructure in the area compared to his home in the state of New York. Similarly, other participants also pointed out the lack of infrastructure and its inadequateness on campus. Overall, the inadequate convenience level and the lack of infrastructure were the main reasons other than the subjective norms which caused people not to recycle on campus even if they did at home.

6. DISCUSSION

6.1. General knowledge about recycling

In accordance to Biel et al. (2003), the results of the present study showed that the current level of education had no significant impact on recycling behavior. For instance, although Participant 1 had the most relevant university coursework among the participants of the present study, he did not recycle on campus, whereas Participants 4, 5 and 8 could not describe recycling with their own words but were still recycling at home, on campus or at both locations. Furthermore, as the data reveals all of the participants were able to give at least two examples for materials that can be recycled and four examples for recyclable household items. Therefore, knowing what materials and objects are recyclable did not have a direct effect on the participants' recycling behavior. Overall, in line with Stern's (1999) findings, information had little or no effect when there were important barriers to overcome (e.g. financial cost or inconvenience) in order to recycle.

Information is an intervention in the personal domain, and providing information for individuals can change their behavior and produce some positive environmental results (Stern, 1999). Wan, et al. (2012) found that educating people to recycle and the knowledge of the recycling process helps to increase the recycling rate. Moreover, to have a successful university recycling scheme it is necessary to enhance knowledge and understanding of recycling through promotional programs about how to handle, sort and store the recyclables (Wan, et al. 2012). Interestingly, all the participants of the present study recycled at home or on campus even if

some were not very aware of or familiar with the process of recycling. For example, Participants 1, 5 and 6 did not recycle on campus; however, only Participant 5 could not describe either the process or the definition of recycling with his own words, although he was recycling at home: "I just know that they find a way in order to get that product and to recycle it away. Not very fluent with the actual process of recycling." Most of the participants stated a need for learning more about the process of recycling and the recycling opportunities on and near the campus.

All of the participants were able to name at least a few different information sources on recycling, such as word of mouth, Internet, TV, and media. However, among those who did not recycle on campus, Participants 5 and 6 had not taken any courses related to recycling during their college career, therefore, suggesting that providing them with further education on recycling may influence their recycling behavior in a positive way. On the other hand, Participants 7 and 8 recycled on campus but had also not taken any recycling related courses which suggested that education alone did not determine a person's recycling behavior. According to Stern (1999), even if it is carefully designed and delivered, information can only moderately change environmentally significant behavior. Kaplowitz, et al. (2009) also found in their study that there was more need and willingness from the community to learn about how recycling is done than why it is beneficial to recycle. In the current study, Participant 7 was unable to give two examples of negative effects caused by inappropriate waste management: "…all I know is, it got to be not good. I know there is a bunch of documentaries on it, but I don't particularly know why [it is bad]", yet he was still recycling and wanted to learn about the process of recycling.

Information about recyclable material prices was also investigated in the current study to see its effect on recycling behavior. The participants' answers about the prices of the different materials were compared to an up to date UK database because there was no relevant data available from the United States. According to a British website www.letsrecycle.com, the price of aluminum cans was between £650 and £690 per tonne during the month of February and March of 2014. During the same time period, the price of mixed plastic bottles (the colored and clear PET and the HDPE bottles) was between £40 and £100 per tonne, the price of white paper was between £38 and £50 per tonne, and the price of green glass was between £15 and £24 per tonne (Letsrecycle.com, 2014). Although, these prices are from the UK, they describe the price range of different materials and, therefore, made it possible to estimate participants' awareness

about the prices of these materials. Aluminum was correctly placed as the most expensive material by half of the participants. Interestingly though, Participant 7 who stated financial reasons as the main motive for his recycling behavior did not know aluminum was the most expensive material. Moreover, although glass price was the lowest out of these materials, only two participants placed it to the bottom, whereas six of the participants ranked it among the top two. Surprisingly, only Participant 3 had the ranking right according to the British recycling prices. Moreover, although seven out of the eight participants were recycling at least two of these materials at home or on campus and even though some of the participants gave financial reasons and benefits as outcomes of their recycling behavior, the participants were not aware of the values of the materials that they were recycling. Participants 2 and 4 collected aluminum cans on campus to be taken to off-campus recycling centers for money, and they placed aluminum as the most valuable material and gave financial reasons for recycling. Therefore, knowing the value of a recyclable material might make students recycle more of that material if it is relatively valuable, like in case of aluminum. Accordingly, information should be provided on the value of the recyclable materials to encourage students to recycle, however, it might make students to recycle more of the more valuable materials and less of the not so valuable ones.

6.2. Attitudes

Ramayah, et al. (2012) found in their study that the respondents' knowledge and awareness of environmental benefits was positively related to attitude. In the present study, the participants' reasons for recycling behavior varied among environmental, financial and social reasons. Not surprisingly, the environmental reasons were most often reported followed by financial and social reasons. A simple, but powerful reason was given by Participant 4: "Just so that it [trash] didn't go to a landfill somewhere. It takes up space and they cut down forest land to use as landfill." The participants were able to report environmental, financial and social benefits of recycling. The most reported environmental benefits were related to preventing trash from entering the environment and polluting it either seeping into the ground from landfills or floating on the surface of the Ocean. The most reported financial benefits were receiving money for the recyclables at the recycling centers and saving on production costs by reducing the use of raw materials. The most reported social benefits were preventing toxic chemicals from entering our food sources and decreasing the smell and unpleasant aesthetic effects of discarded garbage and

landfills on people. Six of the eight participants also gave negative effects of not recycling which included environmental, financial and social consequences. Interestingly, environmental consequences, such as destruction of the natural environment including animals and plants, were stated by all the participants, whereas financial (e.g. landfills taking up valuable land that could be used for other income generating purposes) and social consequences (e.g. polluted drinking water) were recognized by only some of the participants. Overall, the participants of the present study were familiar with the consequences of their actions and were able to name some negative consequences of not recycling and positive ones for recycling. All of the participants also had a positive attitude toward recycling and they were able to give reasons why they recycle. For example, Participant 3 stated: "I'm a giant tree hugger and I'm also a vegetarian, so I like to take old things and see what I can do to make them new again, to be able to use them [again]".

According to Stern (2000), there are four types of causal variables that influence environmentally significant behavior, and the first one is the attitudinal factors, including norms, beliefs and values. These attitudinal factors were examined in the present study. (1) moral norms to perform or not to perform a certain action that has an environmental impact, (2) personal beliefs about the consequences of taking certain actions for self, others and the environment, (3) values about products, frugality, luxury, and waste, and (4) the importance of spending time with family are all examples of attitudinal factors that result in environmental impact (Stern, 2000). Participants 1 and 2 identified recycling as necessary action for them to protect the environment because of their chosen study fields. Participant 3 had been and Participant 8 was part of a student group that recycled on campus, and therefore, their recycling activities also had a moral base. Participant 6, on the other hand, formed strong moral norms toward recycling in a recycle centric area, in the state of New York. Overall, in accordance with Stern's (2000) findings, in the present study the moral norms increased the participants' willingness and likelihood to recycle.

According to Ajzen's (1991) Theory of Planned behavior, people learn to favor behaviors that have largely desirable effects and they form unfavorable attitudes toward behaviors that are associated with undesirable consequences. Table 3 shows the different examples of the positive effects of recycling and the negative effects of inappropriate waste management. There were sixteen positive and twelve negative examples given by the participants. Financial benefits were given a total of six times, and it was followed by five-five environmental and financial benefits. It is interesting to see that there was not a dominant type of example for the benefits of recycling.

However, the twelve negative effects were dominated by environmental examples (9 times), and there were also two social and one financial examples provided by the participants. It was expected that environmental impacts would be the most reported as also Stern (2000) discussed about the attitudinal factors mostly in terms of their environmental impacts. The financial and social effects of inappropriate waste management are less well known but were reported by some of the participants in the present study.

The participants of the present study were aware of the consequences of their actions but all of them did not turn their positive attitudes toward recycling into action, at least not on campus. The results revealed that three out of eight participants chose not to recycle on campus, although they had a positive attitude toward recycling. According to Pike et al. (2003), educating the students about the benefits of recycling did not result in significantly more recycling compared to students who received only recycling bins but no education on recycling. These findings are consistent with the findings of the current study, as the knowledge about recycling and supportive attitude toward environmental values from the participants was not enough to make them recycle in every situation.

Two studies investigated the attitude-behavior relationship at universities in depth. Wan, et al. (2012) found that to have a successful university recycling scheme it is necessary to focus on people's attitude toward recycling by highlighting the benefits of recycling on the environment through promotional messages. Therefore, the knowledge of the benefits of recycling behavior among the participants of the present study might have contributed to their recycling behavior since all of them who recycled knew the benefits. For most of the participants, the benefits of recycling and the negative effects of not recycling were closely related to the reasons why they chose to recycle. For example, the importance of spending time in nature with family was very well presented as a reason to recycle by Participant 8: "Main reason, my family is very outdoorsy" and they recycle a lot "cause it keeps the environment cleaner and more healthy". However, the participants who did not recycle knew these effects as well. Therefore, from this study, it is hard to determine the level of importance and the exact role of attitude in influencing recycling. However, making students, who have no previous knowledge about recycling, aware of the environmental, social and economic consequences of recycling and/or not recycling could have a positive impact on recycling behavior at the studied university. Ramayah, et al. (2012) found that the respondents' attitude also had a significant but

relatively small impact on recycling behavior. The findings of the present study were congruent with this as the differences of recycling at home and on campus suggested that attitude only had a minor influence on the recycling behavior.

6.3. Subjective norms

Ramayah, et al., (2012) found that social norms have the greatest impact on recycling behavior. However they also recognized that the norms might only have an initial effect and people might change their recycling behavior caused by changes coming from globalization of business, education and lifestyle. The present study also found that the subjective norms had a strong effect on the participants' recycling behavior. Furthermore, Abbott, Nandeibam, and O'Shea (2013) found that the effect of social norms on the individual's behavior depends on how homogeneous the population is concerning a certain issue, for example recycling. The high level of conformity will more likely predispose the individual to comply with the social norms. This was illustrated in the present study in the comment of Participant 6, who stated: "I wish that more people would recycle, so that way I could recycle myself." Furthermore, Participant 3 was not able to recycle at home because her brother and mother had decided not to recycle. When she was asked what could change her behavior to start recycling at home she responded: "Basically, it's changing my family's viewpoints." Interestingly though, the negative recycling environment at home for Participant 3, made her want to recycle even more on campus where she perceived the current situation as much more positive.

Social influence is a key element in shaping attitudes and behavior, as it can be used to bring belief and attitude changes resulting in green behavior, reinforce desired behaviors and disseminate information about them (Goldsmith & Goldsmith, 2011). In other words, the perception of others' recycling efforts is an important driver in how much someone recycles (Abbott, et al. 2013). In the present study, seven participants recycled at home, but three of them did not recycle on campus. Moreover, even the ones who recycled on campus reported that the social influence was strong and not supportive as people did not know enough about recycling in the area, everything was just thrown away without recycling, faculty and staff members were not supportive enough, there was no incentive to motivate recycling on campus, and there was a laziness coming from the culture. Participant 6 mentioned that the people on and near the university look for some recycling opportunities but the lack of incentives stops them from

recycling. Unfortunately, at the end, those who are not recycling influence the students on campus in a negative way, even if they want to recycle. Participants 1, 2, 3, 5, 6, 7, and 8 provided concrete examples why people do not recycle on this campus. Among them, Participants 1, 5 and 6 were not recycling on campus.

According to Yeh and Vaughn (2008), a person only discards items of zero or negative net value. It is convenient to leave the empty beverage containers next to the road, near park benches or in the bushes. Usually, the beverage container has no value after it loses its content, and people are not motivated to choose to recycle when it is easier to just throw the recyclables in the regular trash. However, if the price of the beverage includes a deposit fee for its container that can be recovered by individuals who recycle the empty container, the economic incentive influences some consumers to recycle. Stern (1999) also pointed out that per-can fees for trash disposal in some American States have increased the recycling rates and therefore reduced the trash volume. Therefore, some kind of incentive system could really help the progress of the campus recycling of the studied university. In the present study, Participants 5 and 6 reported the lack of incentives as a main reason why people do not recycle on the campus. Participant 5 suggested that the university should organize recycling drives and competitions to encourage people to recycle more. He proposed a recycling competition where athletic teams or dorms could compete against each other: "Make it like an actual competition here on campus because that would help students get into it I feel a little bit more." Participant 6 emphasized the importance of the deposit system. According to him "it just makes sense to recycle, so you can get your money back".

External or contextual forces that influence recycling behavior include, among other things, interpersonal influences, community expectations, advertising, government regulations, and the availability of public policies that support the behavior, and various features of the broad social, economic and political context (Stern, 2000). The results of the present study suggest that regulations and public policy would also be a necessary form of action for the state, city or university administration. For example, Participant 6 stated: "There is no government incentive or anything like that [in Tennessee]." The insufficient support toward recycling and the regulations on trash collection inside the dorms had negative effects on the participants' recycling behavior on campus. For instance, Participant 4 reported that students are not allowed to accumulate trash in their dorms and, therefore: "There is no place to put it [recyclables].

Because you can't have trash in your room, so if I was going to have two separate trash bags one for food and one for recycle, there is nowhere for me to take the recycling." Moreover, Participant 6, as part of the university student government had a good insight into how things work on campus and a strong opinion on the administrations involvement with recycling and the recycling situation on campus: "It's horrible, there is, there is nothing, people don't recycle around here. I mean just bottom line, and the university isn't doing anything to try to encourage them either. I feel like they're just kind of watching us throw everything away." He continued with an example from the past involving the university administration and one of the student groups that does recycling on campus: "And with the blue bins, I feel like they should have helped [name of the student group] out more by installing them in different locations around campus cause I know [name of the student group] did ask for that cause I'm the [his title] of our SGA here on campus, and there was one thing they continuously asked for, and we took it to administration and they never did anything with it, so…" Therefore, the results of the present study highlight the findings of Stern (1999) about the importance of institutional support in encouraging pro-environmental behavior and also the findings of Stern (2000) about the impact of public policies on recycling behavior.

Usually, guest speakers are respected by the audience in terms of bringing something new into the everyday routine by coming from outside of the community and being experts in their chosen fields. Moreover, the role of celebrities is also important in motivating people to engage in certain behavior. It is necessary to position participation in recycling activities as a social norm with the help of a celebrity or other influential persons in order to have a successful university recycling program (Wan, et al., 2012). Surprisingly, in the present study, Participant 7 was the only one who stated that he learned about recycling from guest speakers in high school. Therefore, guest speakers, celebrities or other influential people could have a positive impact on the recycling program of the studied university. The university should provide incentives for the students to recycle and also shape its administrative actions to be more supportive of recycling on campus through recycling competitions that encourage and regulations that help students to recycle.

6.4. Perceived behavioral control

The best way to increase the effectiveness of interventions is to combine monetary incentives with nonfinancial incentives such as convenience (Stern, 1999). In the present study, the inconvenience of recycling on campus was reported as an important barrier faced by all of the participants when they recycled or tried to recycle on campus. For example, Participant 6 used to use the recycling bin near his dorm before they removed it. He described the shortcomings of the recycling situation on campus regarding its convenience: "I know when we had those blue bins available, we all tried to use them as much as we possibly could, so like I said if those blue bins were more scattered throughout campus, I think more people would have, you know, got on board with it and recycled." Participant 5 also believed that "the only problem is that it's not very convenient for people to recycle". Biel et al. (2003) found that it is very important how the recycling infrastructure is organized, including how close, practical and aesthetically pleasing it is for people to achieve a positive behavioral response related to recycling. Surprisingly, in the present study, all of the participants found campus recycling inconvenient, although in reality many of them would have not even had to travel as far as they did at home to recycle. This revealed that some of the participants were not aware of the recycling infrastructure on campus which might have influenced their perception of the campus recycling not being convenient. Stern (2000) also well stated that recycling behavior is also influenced by the physical difficulty of a specific behavior and capabilities and constraints provided by the built environment. The results of the present student reflected that as participants perceived driving to a known location, where all the recyclables can be recycled as more convenient than looking for a few "tiny blue bins" scattered throughout the campus. Therefore, as suggested by Wan, et al. (2012) there is a need to make recycling activities more convenient by providing more options for students to recycle on campus, and as the present study suggested also to make people more aware of the opportunities to recycle. In conclusion, the results showed that the difference in convenience made some participant recycle at home, but not on campus. Participant 1's words also supported this conclusion: "It's just not convenient like it is at home; it's a little more difficult…".

According to Ajzen (1991), the more resources and opportunities an individual believes he or she has and the fewer barriers he or she anticipates, the greater should be the individual's perceived control over the behavior. Only Participants 2 and 5 were not aware of any materials

that could be recycled on this campus. Participant 2 collected aluminum cans on campus; however, he took them somewhere else to get money for them. Participant 5 did not recycle on campus nor was he aware of any material that he could have recycled there. However, Participants 1 and 6 did not recycle on campus even if they were aware of materials that could have been recycled. Although, awareness of recycling options on campus played a positive role in recycling behavior for the participants, the convenience of recycling still had the strongest influence on their recycling behavior. A significantly different result was found by, Ramayah, et al. (2012) as the convenience of available recycling infrastructure did not have an impact on recycling behavior at their study. However, in the current study, convenience was mentioned by every single one of the eight participants as a factor strongly related to their recycling behavior, either at home or on campus.

Largo-Wight, et al. (2013) found that the best way to increase recycling behavior is to add receptacles to make recycling easy and convenient. Interestingly, also the participants of the present study spent a relative large amount of time talking about the placement of recycling bins and the convenience of them on campus. For instance, Participants 1, 4 and 8 raised the issue of not having recycling available at the close proximity of the main dumpster site on campus. Their concern was supported by the findings of Largo-Wight, et al. (2013) who discovered that pairing recycling receptacles with garbage cans resulted in a 65 to 265% increase in recycling volume within participating buildings over the eight weeks of their study without any education or promotion. Pike, et al. (2003) also found that placing recycling bins near garbage bins increased the amount of recycled materials. Participant 7 did not mind walking across the classroom to use the recycling bins as opposed to throwing the recyclable materials into the more conveniently located trash can; however, he did mention that the trash bins were more conveniently located than the recycling receptacles. Furthermore, many participants of the present study thought that the amount and placement of recycling bins on campus could be better. For example, Participant 2 stated that recycling bins should be placed in every building on campus to make it more convenient for people to recycle. The study by O'Connor, et al. (2010) supported this by finding that the placement of recycling receptacles near the area of consumption significantly increased the percentage of recycled plastic bottles. Participant 5 would also place bins at more locations and make them more convenient. Participant 6 would have also had the recycling bins more scattered throughout campus in order to involve more people in recycling. O'Connor et al.

(2010) further suggested that placing more recycling bins in the hallways may have made the students, staff and faculty more aware of the other bins and the recycling effort, thus, increasing the amount of waste recycled. In the present study, the same issue was raised as Participant 3 suggested that recycling bins should be placed in dorms to increase the awareness on recycling among the students who live there.

In conclusion, the present study revealed that the convenience of recycling was the most important factor influencing recycling behavior on campus. Hence, the university should focus on making recycling on campus more convenient. Furthermore, the participants were not satisfied with the placement and number of recycling bins on campus. Therefore, the university should place recycling bins at more locations near regular trash bins, and provide a central location for bulk recycling preferably at the main trash dump site. Placing recycling bins near the area of consumption, such as class rooms and dorms would have the largest impact on increasing recycling behavior. The influence of perceived behavioral control on the participants' recycling behavior is the strongest of the variables that affect their recycling behavior on campus. Therefore, it is necessary for the university to make the necessary actions in order to make recycling more convenient for the students before focusing on improving the effects of the other variables.

6.5. Comparing recycling behavior at home and on campus

There have been several studies focusing on household recycling (Goldsmith & Goldsmith, 2011) or recycling on college campuses (Kaplowitz, et al., 2009). However, none of these studies compared the recycling behavior of students at home and on campus. Therefore, the present study provided a unique opportunity in terms of investigating and comparing recycling behavior in two locations. All of the participants of the present study lived on or near campus during the study but moved back home when there were breaks from school. The findings of the present study revealed that comparing recycling behavior at two different locations helps to get a clearer image of the roles of the different factors influencing recycling behavior.

Ajzen (1991) stated that the correlation of past and future behavior is an indication of the stability and reliability of the behavior (Ajzen, 1991). In the present study, half of the participants' recycling behavior did not differ at home and on campus (i.e. stable and reliable behavior), whereas the other half's did (i.e. Participant 3 recycled only on campus while

Participants 1, 5 and 6 recycled only at home). Stern (1999) highlighted the importance of information in influencing a behavior that results in positive impact on the environment. The results of the present study showed that information on and attitude toward recycling were not relevant factors in explaining the behavioral differences at home and on campus. Social norms and convenience of the infrastructure, on the other hand, played a major role in determining the participants' recycling behavior. According to Stern (2000), a new context can make old habits untenable, and therefore, result in the change of attitudes and values. Although for some participants in the present study the recycling habits learned at home were not transferred to the university context, there appeared to be no change of attitude and values. For Participants 1, 5 and 6 the old habits of recycling their waste did become untenable on campus, however, their attitudes and values did not change. Individuals with positive attitudes toward recycling and sufficient knowledge on its benefits and negative effects of not recycling will find the way to recycle regardless of the location. Participants did not have to change their attitude toward recycling and find new values because they were able to and did recycle either at home, on campus or at both places.

According to Stern (2000), certain attitudinal factors created a general predisposition to act, which resulted in a specific action shaped by personal capabilities and contextual forces. Participant 5 recycled at home, was aware of the environmental consequences of recycling, had a positive attitude toward recycling, and knew what sustainability means. However, he reported not knowing of anybody who recycled on campus, was not aware of or part of any student groups that would recycle, did not know what materials can be recycled on campus, had not taken any recycling related university level courses yet, and therefore did not recycle on campus. Due to the difference in the subjective norms and perceived behavioral controls factors between home and on campus, he changed his behavior from recycling at home to not recycling on campus. Therefore, as Ajzen (1991) stated, it is not viable to assume that past behavior is a valid measure of habit, that the past action will be repeated in the future, as it may reflect the influence of many other internal and external factors.

Participant 1 recycled at home, where the recycling center was couple miles away from his house. However, he did not recycle on campus because he thought the closest recycling center was 25 minutes away and, therefore, it was not convenient for him to recycle. Participant 2 recycled at home and on campus. However, he was not using the campus recycling facilities

because he was not aware of them as he collected the recyclables on campus but took them to a scrap yard to recycle them elsewhere. Participant 3 could not recycle at home because she could not convince her family to join her effort. Nevertheless, she was excited to recycle on campus. A couple difficulties she reported regarding recycling on campus was lack of interest from the students and not enough support from faculty and staff. Participant 4 recycled both at home and on campus. Despite that she was struggling to sort all her recyclables, to locate the recycling bins and to bring her recyclables to those locations on campus. Therefore, she took her aluminum cans home time to time to recycle them there. Participant 5 was mentioned in the previous paragraph. Participant 6 recycled at home but not on campus because of the insufficient recycling infrastructure and support from the university administration for recycling. Participant 7 recycled both at home and on campus, and he also found the campus recycling infrastructure convenient enough and thought that the university administration does enough to support recycling efforts on campus. Finally, Participant 8 also recycled both at home and on campus. However, he found it troublesome to bring his recyclables to the bins located sparsely on campus. He was frustrated because people on campus just threw the trash in the main dumpster without recycling any of it.

6.6. Conclusions

Inconvenience of recycling, lack of awareness about recycling or lack of social norms concerning recycling was reported by seven out of eight participants as the main problems of on campus recycling. Despite the problems, half of the participants found a way to use the recycling infrastructure on campus, and one of them changed her behavior from not recycling at home to start recycling on campus. In the present study the subjective norms and the perceived behavioral control related to campus recycling served as barriers to recycle, and explained the difference between recycling behavior at home and on campus. Although, the participants of this study were familiar and aware of recycling, other students of the studied university might benefit from receiving extra information on this topic in order to help them to start recycling. Being aware of the consequences of someone's waste related actions is the base for establishing a positive attitude toward recycling behavior. The participants were familiar with the consequences of recycling and not recycling, therefore, they had a positive attitude toward recycling. However, the university also needs to teach the other students, who might not be as familiar with the

consequences of their actions, about the effects of inappropriate waste management and the benefits of recycling. Additionally, the present study suggested that it is very important to provide a positive atmosphere for recycling through different kinds of incentives and waste management regulations provided by the administration of the university. Therefore, it is recommended that the university would provide opportunities for the students to engage in recycling competition, incentives to encourage them to recycle and campus wide regulations to increase the amount of waste recycled. Moreover, inviting guest speakers, such as celebrities and other influential people, to influence the students' recycling behavior would also be useful in order to encourage recycling on campus. Finally, making recycling more convenient should be the priority for this university because it can be done with relatively small effort, in a short amount of time and without making any significant investment.

Redistributing the already existing recycling bins at the right locations (near the place of consumption, for example in classrooms and dorms and at the main trash dumpster) would already have a significant effect on recycling according to the findings of the current study. Later, it would be possible to place recycling bins at even more locations making recycling more convenient for the students. After focusing on the perceived behavioral control by increasing the level of convenience, the subjective norms related to recycling at this university would also improve as more and more people would participate in campus recycling making it part of the culture at this university. While perceived behavioral control and subjective norms were found to have the largest impact on recycling behavior among the participants, information and attitude played less significant roles. These findings were also supported and enhanced by the comparison of the participants' recycling behavior at home and on campus. The participants found recycling more convenient and seven of them also reported better recycling culture at home than on campus. Therefore, these findings also highlight the importance of impacts of the subjective norms and the perceived behavioral control on the participants' recycling behavior on campus.

7. EVALUATION OF THE RESEARCH AND IDEAS FOR FURTHER RESEARCH

In the present study only eight students were interviewed, and the participants were chosen by their study majors in order to have participants with some previous knowledge on recycling. Other than business and environmental science major students, social sciences majors could also be included in future research, for example. In the future, a larger group of students should be chosen with different majors, at different stages of their studies, from different states, and different genders to get a better picture and to be able to generalize the results. Comparing the students of different universities from one geographic location or throughout the United States would also give a more comprehensive result. However, the current study provides a good base for future research as it investigated the participants recycling behavior at more than one location and was able to include participants with a variety of recycling backgrounds. Research regarding recycling behavior at university settings is scarce and therefore more qualitative and quantitative studies should be conducted examining this issue. In the current study, the participants were interviewed face to face and the findings were rich in detail. Therefore, more interview based studies should be done in the future in order to get valuable results regarding recycling at universities. Focusing on different locations, such as home and university campus helped to better show the strength between the variables of the Theory of Planned Behavior and the participants' recycling behavior, even if only a small number of participants were involved in this study.

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APPENDICES

Appendix I – Informed consent

Informed Consent

"Undergraduate business and environmental science students' behavior toward and opinion on recycling at a private Appalachian university"

University of Jyväskylä
School of Business and Economics

Researcher
Andras Pauko
andraspauko@gmail.com

During this interview, the researcher will ask a series of questions from you. These questions are related to recycling, your behavior toward recycling and your opinion on recycling. The interview will take approximately 25 minutes. There is no right or wrong answer to any of the questions, but it is very important that your answers reflect your true behavior toward, own opinion on and personal experience with this topic. Audio and video recording will be done during this interview to collect and store the data from your conversation with the researcher. All information will be kept confidential. Only the researcher mentioned above will have access to this information. Your name won't be mentioned throughout this study or in the researcher's Master's Thesis. You will be given a personal identification code that will be used to analyze the data that is collected during this interview. Your name and signature will only appear on this form and only the researcher will know what personal identification code is. Upon completion of this interview, all data will be kept in a secure place that is accessible only to the researcher. The audio/video recordings will be destroyed upon the completion of the researcher's Master's

Thesis. This Informed Consent form will be kept in a secure place for the required 3 years and will be destroyed afterwards.

Participant's Agreement:

I am aware that my participation in this interview is voluntary. If, for any reason, at any time, I wish to stop my participation, I may do so without having to give an explanation. I understand the intent and purpose of this research.

I am aware the data will be used for a Master`s Thesis. I have the right to review, comment on, and/or withdraw information prior to the paper's submission. The data gathered in this study is confidential with respect to my personal identity.

I have read the above form and, with the understanding that I can withdraw at any time, and for whatever reason, I consent to participate in this interview. I grant permission for the use of this information for a Master`s Thesis.

Participant's Signature

Date and Place

Appendix II – Interview guide

1. What is your gender?
2. What is your age?
3. What is your undergraduate major?
4. In what year are you in your undergraduate studies?
5. What is your home state? (Where you live when you are not attending classes at this university.)

6. Do you live on campus during the academic year? If no, approximately how far do you live from this campus in miles?
7. How would you describe recycling with your own words?
8. How do you relate to recycling? What is your opinion on recycling?
9. What are 4 specific materials that can be recycled?
10. What are 4 household items, that first come to your mind, that can be recycled?
11. Have you learned anything about recycling throughout your studies at this university? If yes, in which class/classes?
12. Other than your studies, from where do you receive your information about recycling? (media, friends, products, etc.)
13. Do you recycle at home? (home state)
14. YES for Q12: What is the main reason behind your decision to recycle at home?
15. YES for Q12: Where do you take your recyclables? Approximately, how far is the recycling center from your home in miles?
16. YES for Q12: What do you recycle?
17. NO for Q12: What is the main reason behind your decision not to recycle at home?
18. NO for Q12: Is there available infrastructure (collection center) where you live? If yes, approximately how far is it from where you live in miles?
19. NO for Q12: In your opinion, what could make you start recycling at home? (more information, financial incentives, etc.)
20. Do you recycle on this campus?
21. YES for Q19: What is the main reason behind your decision to recycle on this campus?
22. YES for Q19: What is your opinion on campus recycling? (convenient, hard, etc.)
23. NO for Q19: What is the main reason behind your decision not to recycle on this campus?

24. NO for Q19: What could change your behavior and help you start recycling on campus?
25. What can you recycle on this campus?
26. Are you aware of any student group that does recycling on this campus?
27. Do you know anyone among your classmates or friends on campus who uses the recycling facilities of this campus?
28. What do you think happens to the waste that is not taken to a recycling facility?
29. Are you aware of any negative effect that is caused by inappropriate waste management? Can you give me 2 examples?
30. What are 2 benefits of recycling that come to your mind?
31. Can you rank the following materials – glass, aluminum, plastic, and paper – based on their value as raw material? Try to guess. :)
32. Are you familiar with the concept of sustainability? What is it?
33. Have you influenced anybody to start recycling or recycle either verbally or just through your actions?
34. Are you aware of the process of recycling? What do you think happens to, for example, a plastic bottle after you throw it in a recycling bin?
35. Is there anything else you would like to add about recycling or do you have any questions about recycling?
36. Are you going to take time and learn more about recycling following this interview, do some research? What kind of research?