

---

## Contemporary Journal of Anthropology and Sociology

---

### **Forging environmental stewards of the future: Assessing recycling attitudes and behaviors in a university setting**

Rhae G. Hoskins  
Recreation and Park Administration Department  
Eastern Kentucky University

&

Ryan L. Sharp<sup>1</sup>  
Eastern Kentucky University

---

**Abstract:** This study seeks to analyze attitudes and values toward recycling, as well as recycling behaviors, among university students. Multiple demographic factors are examined, including gender, age, location, and rural versus urban populations. Previous research has shown inconsistent results in environmental attitudes across these variables, thus this study aimed to investigate many of these same variables, but within the student body of Eastern Kentucky University (EKU). A questionnaire was given to students, and a total of 730 completed surveys were returned. The survey focused on general perceptions of recycling, specific perceptions of recycling on campus, EKU students' experiences with recycling both on and off campus, and standard demographic information. It was found that female students were more likely to have stronger values and attitudes toward recycling, but males were more likely to participate in pro-environmental behaviors. Upperclassmen had stronger values toward recycling than underclassmen, implying that maturity may be an indicator of environmentalism. Upon investigating recycling behavior across different regions of Kentucky, students from Southeastern Kentucky recycled the least. Surprising results showed that students from metropolitan areas did not exhibit stronger environmental values than students from rural areas. Possible reasons for these results are discussed, as are limitations of the study. The results provide policy makers with the information to draft a sound recycling policy at the university and may provide a starting point for other similar universities.

---

---

<sup>1</sup> Please direct all correspondence to the Recreation and Park Administration Department, Eastern Kentucky University, Begley 405, Richmond, KY 40475. 859-622-1837 / [ryan.sharp@eku.edu](mailto:ryan.sharp@eku.edu).

## INTRODUCTION

Recycling provides many environmental benefits, including less pollution, reduced landfill space, and conservation of natural resources (Schultz 1998).<sup>2</sup> With the power to keep thousands of tons of reusable materials out of landfills, recycling is a realistic way for people to make a difference. Even though recycling programs have been marketed to the public for the past 25 years, there is still a need for even more encouragement to gain public support and influence attitudes and behaviors if the state of the environment is to improve (Nixon et al. 2009). Recycling behavior is a valid measure of environmental attitudes because it is quantifiable, in that asking someone if he or she recycles will generally yield a “yes” or “no” response. Other pro-environmental behaviors such as using mass transportation may not be as clear, since there could be a number of motivations for doing so that have nothing to do with protecting the environment. For example, someone may report that he or she always uses public transportation, but this may be because he or she does not own a vehicle, chooses to avoid driving in heavy traffic, and so on. In fact, Sobel (2008) suggests that *behaviors* can lead to changes in knowledge and attitudes. Personality, attitudes, knowledge and skill all contribute to pro-environmental behavior (Nisbet et al., 2009), and thus for this study we have decided to focus on the “skill” of recycling as a pathway to pro-environmental behaviors.

## LITERATURE REVIEW

Since the birth of environmentalism in the 1960’s, there has been a dramatic increase in sociological research

surrounding green attitudes, values, and the resulting behaviors. The environmental movement of the 60’s began as a reaction to the introduction of the atomic age, as well as Rachel Carson’s hard-hitting book about the dangers of pesticides (Pak, 2011). In 1970, President Nixon signed the National Environmental Policy Act into law, the Environmental Protection Agency was begun, and Americans celebrated the very first Earth Day (Pak, 2011). With the 1980’s came the concept of “sustainability”, and the increased popularity of utilitarianism (Pak, 2011). The major contrast between the beginnings of the environmental movement in the 1960’s and today is a matter of context. Previously, environmental problems were primarily observable (e.g. air and water pollution), however, today the issues are more geographically dispersed and less observable (e.g. climate change) (Dunlap et al., 2000). This adds to the fundamental problem of the relationship between modern society and the physical environment we all depend on. Although recycling is a physical act that can help reduce the impacts to the environment through a decrease in landfill material, it still may fall into this less observable category in terms of how we perceive our impacts on the natural environment. However, how individuals understand issues like recycling have a fundamental importance in addressing waste. The policies and educational programs that are developed to help promote recycling must be grounded in social research (Barr, 2007).

A tremendous amount of research has been conducted on environmental attitudes based on virtually all demographic factors, including age, ethnicity, gender, socioeconomic status, and education. Despite the large body of data, the results are inconsistent at best. Some demographics yield consistent outcomes, such as education level, liberal political views, and Caucasian

---

<sup>2</sup> This study was meant to examine pro-environmental behaviors related to recycling and the influence recycling may have on said behaviors. It is not meant to address actual environmental benefits of recycling.

ethnicity (Van Liere & Dunlap, 1980; Buttel, 1987; Jones et al., 1999). Other standard demographic variables have been contradictory, such as gender, urban vs. rural residence, and religious affiliation (Klineberg, et al., 1998).

Overall, integration of social influence and attitudes may provide greater predictive value for recycling behaviors (Schwab et al., 2012). Also, environmental attitudes and beliefs play an important role, statistically, and excluding the statistical analysis can lead to biased estimates on people's willingness to recycle (Nixon et al., 2009). The correlations that exist between environmental behavior and attitudes (Diekmann & Preisendorfer, 2003) can serve as segue for examining recycling behaviors. Thus, understanding recycling attitudes and behaviors among students can provide a global view of their environmental consciousness.

## **INFLUENCE OF DEMOGRAPHIC FACTORS ON ENVIRONMENTAL VALUES**

### **Gender**

Gender is one of the most commonly studied demographic variables in environmental research. On one hand, it has been found that women generally have stronger values than men concerning the protection of the natural environment (Zelezny et al., 2000). For example, female subjects in a study by Klineberg et al., (1998) were discovered to be more likely to support government intervention to control pollution, despite negative effects on industry. It seems as though environmental concern would be the strongest predictor of "green" behaviors, but research shows that pro-environmental attitudes do not necessarily yield pro-environmental actions (Walton & Austin 2011). Some studies have shown that while females show more

concern for the environment than males, they do not manifest this concern through behaviors more than males (Blocker & Eckberg, 1997). Other studies have shown that women report more concern *and* participation in pro-environment behavior, such as recycling, driving less, and making organic purchases (Hunter, et al. 2004). Despite much of the varied results, women tend to be more concerned with others' welfare (Eagley, 1987); women are more concerned with interpersonal relationships (Konrad et al., 2000) and tend to be more environmentally conscious (Banerjee & McKeage, 1994) than men. The difference between men and women and how they perceive relationships and the natural environment can be critical information when developing education materials or drafting recycling policy. Also, men and women tend to have differing levels of importance attached to different aspects of the environment (Humpel et al., 2004).

### **Age**

Age is another variable that has shown inconsistencies throughout years of research. In some cases, a positive correlation has been found between age and pro-environmental behavior (Johnson et al., 2004). However, a preponderance of other studies have found the opposite to be true (Buttel, 1987), indicating that younger people show more concern for environmental issues (Klineberg et al., 1998). These mixed results can possibly be explained by generational changes, since the studies span from the 1980's through today. Buttel's 1987 study indicated that youth were more pro-environment, but this younger generation would have become almost twenty years older during the 2004 Johnson et al. study, which showed more environmentalism tendencies in older subjects. A recent study by Evanschitzky and Wunderlich (2006) did find that younger

folks tend to be more ecologically knowledgeable, which is most likely attributed to the availability of more information through sources such as the Internet. Understanding age differences regarding environmental behaviors, and specifically recycling, can help policy makers understand whether more needs to be done at the high school level and/or during the first year of a students' career at a university (Ratnapradipa et al., 2011) to encourage recycling behaviors.

### **Rural vs. Urban Populations**

Environmental attitudes among residents of urban populations have been compared to those of rural areas in many studies. Since areas with larger populations generally suffer more from negative environmental consequences such as pollution, urban residents have been shown to display greater levels of environmental concern and behavior (Buttel 1987). This concept is referred to as "differential exposure" by Jones, et al., (1999), which is defined by the assumption that "urban residents are more concerned because they are more apt to be exposed to environmental degradation than are rural residents" (p. 484). Other research implies that rural residents have stronger utilitarian values due to dependence on the local extraction of natural resources, which is referred to as the "extractive-commodity theory" (Jones et al. 1999). A study of the Southern Appalachian Ecoregion found that about four out of ten rural residents view their land as "a part of their cultural landscape to be revered and shared", rather than as a commodity (Jones et al., 1999, p. 484). However, like the aforementioned demographic factors, while many studies have found that urban residents have stronger environmental values, others have found no difference between urban and rural environmentalism (Jones et al., 1999). Walton and Austin (2011) found that the

metropolitan area of Louisville, Kentucky provides a variety of recycling conditions among different residential area. For example, local taxes cover fees for some communities, allowing them free curbside recycling. Residents of some areas must pay a small fee for the service, and others are not offered pick-up at all. This provides a very interesting scenario from a research standpoint, since it offers "varying levels of structural facilitation of the personal pro-environmental behavior of recycling" within a single sample (Walton & Austin, 2011, p. 269). The results of the study revealed that more than 82% receiving free curbside pick-up report that they recycle "most of the time" or "always"; Out of those without curbside pick-up, only 36% responded in this manner. Dersken and Gartrell (1993) also found that the main difference between recyclers and non-recyclers is whether or not their communities offer curbside recycling. In other words, it seems that across all demographic factors, the greatest indicator of recycling behavior is convenience, and that access to recycling services can mediate the influence of socioeconomic and demographic variables on recycling behavior (Berge, 1997).

### **Social Norms**

In addition to convenience, motivation seems to be another strong indicator of recycling behavior. Social norms, defined as "sets of beliefs about the behavior of others", are an important source of motivation (Schultz, 1998, p. 26). Since an individual's behavior alone has very little impact on the environment, it is crucial to stress the importance of collective pro-environment behavior. For example, one person choosing to recycle will most likely see no direct results. However, once a behavior becomes normative, a difference may be observed. It is natural for someone to refrain from adopting a certain behavior if

he or she sees a cost but no reward (Bratt, 1999). While some communities offer a modest incentive for recycling, for the most part, it is an altruistic behavior. An individual is more likely to partake in recycling if his or her neighbors, friends, or other members of the community do so (Shultz, 1998). Seeing the street lined with recycling bins on pick-up day is motivating, either indicating that residents believe in strength in numbers, or they feel pressured to partake in socially desirable behavior. In fact, a study conducted by Schawb et al. (2012) found that recycling behaviors and attitudes became more similar amongst neighbors over time, thus lending credence to the street lined with recycling bins idea. Social influence can play a critical role in the formation of recycling behaviors and attitudes and has the potential to have a chain reaction type impact (Barr, 2007). This is also supported by Giddens' structuration theory as interpreted by Jones and Karsten (2008). Structures in society (i.e. recycling) are not unbending or unalterable; instead they are perpetuated by society. Therefore, in terms of recycling, the more people doing it, the more access that may be available, the better the normative feedback effects on recycling.

## RESEARCH OBJECTIVES

Past research has produced a wide variety of results over many demographic factors when it comes to environmentalism and recycling. This study aims to investigate many of these same variables, but within the student body of Eastern Kentucky University (EKU), which may also serve as a starting point for universities in similar settings. We were interested in finding out how EKU students feel about recycling, whether or not they participate in recycling, and if there is a connection between these values and actual behavior. We wanted to investigate several variables, including

gender, age, student status, and hometown populations. We were also curious to see if there is a difference between recycling attitudes and behaviors of students from different regions of Kentucky.

This study was initially conceived to provide information for the university on the recycling behaviors of students at EKU. This was done to inform a pending recycling policy on campus. Having a clear understanding of students' attitudes towards, and thus behaviors regarding recycling will help the university, and potentially others, develop sound and informed policy that will have a better chance at success than if this information had not been collected.

Objective 1: To understand if there is a difference between male and female EKU students' recycling attitudes and behaviors. If a difference does exist, males and females may need to be targeted differently by recycling educational programs.

Objective 2: To investigate recycling values and behaviors among different age groups and academic status (i.e. freshman, sophomore, etc.). As discussed above, age may be an important factor in how individuals understand recycling and the connection it has to pro environmental behaviors. Also, if there is a difference in attitudes and behaviors between first year students and graduating students, this may be a sign of age being a factor.

Objective 3: To analyze environmental attitudes and recycling behaviors among students from different regions of Kentucky. Understanding socioeconomic and geographic variables in accordance with attitudinal variables will improve the explanatory power of the analysis (Nixon et al., 2009)

Objective 4: To discover if students from more populated areas tend to recycle more or less than students from less populated areas. In many cases, areas of lower population may have limited access to

recycling or may not have the civic funds to provide recycling opportunities. Due to these limitations, many incoming students may not know how to recycle (Ratnapradipa, et al., 2011). Understanding this variable can help policy makers understand the constraints to recycling on campus.

## **METHODS**

### **Sample Description**

During a portion of the spring semester of 2012 (March 14-19), researchers conducted a study at the Richmond campus of Eastern Kentucky University. Students were asked to complete a survey for the first 5-10 minutes of randomly selected classes during the study period ( $N = 730$ ). The survey participants were students over the age of 18 years. The primary survey locations were in classrooms across the ECU campus. Classrooms were used because they provided the best opportunities to reach the most students in a short period of time. Participants were asked if they were willing to participate in a survey and if they agreed, were then asked to fill out a short survey (5-10 minutes). Survey administrators were provided with a script in order to insure consistency of delivery and in an attempt to not influence the students. Methodology was adapted from those outlined by Dillman (2007) and a total of 759 students were contacted and asked to complete the survey, 730 completed it for a response rate of 96%.

### **Questionnaire Design and Analysis**

For a guiding framework, the researchers selected an exploratory survey design (Vaske, 2008) to examine and begin to understand students' general global-level beliefs regarding recycling. The first portion of the survey examined general perceptions of recycling as well as specific perceptions

of recycling on the ECU campus. Students' perceptions were evaluated on a seven-point Likert-type scale anchored with strongly disagree (1) to strongly agree (7). In the second portion of the survey, researchers analyzed ECU students' experiences with recycling both on and off campus, using continuous and ordinal scales. Researchers also collected standard demographic information from each student such as sex, age, ethnicity and academic status (i.e. freshman, sophomore, etc.) to further understand the characteristics of the sample. Researchers used standard calculations for leverage, kurtosis, and skewness to identify statistical outliers and to verify univariate and multivariate normality of the data (Tabachnick & Fidell, 2012). After confirming appropriate measurement qualities, researchers computed descriptive statistics (frequencies and distributions) and ANOVA using SPSS 19.0.

### **Limitations**

One of the major limitations of this study is the lack of ethnic diversity in the sample. As past research suggests, there is strong evidence that non-Hispanic whites have stronger concern for the environment than minorities (Jones et al., 1999). However, we did not have an adequate sample for analysis (although our sample did mirror campus demographics). Also, our geographic regions provided uneven samples, with less than 2% of our sample coming from Western Kentucky. Further, the division of the state into four areas was done arbitrarily by us, as there was no reputable or time-tested method available. Our overall sample was limited to university students, which could also create a problem with our study, as some could argue that college students may have a different worldview than non-college students. Finally, we did not ask students their perceptions of what was done with the

recycled material collected on campus, as there is a great deal of mistrust about this aspect of the recycling process (e.g. are items collected in recycling bins thrown in the general trash).

## RESULTS

### Descriptive Results

Our sample included more females (62.7%) than males (36.4%). Most of our participants fell under the 18-24 age group (78.4%). Eastern Kentucky University has a predominately Caucasian student base, with whites making up 85.4% (Eastern Kentucky University, 2011). Our sample mirrored this, showing 87.3%. Nearly thirty-nine percent (38.9%) of our subjects went to high school in the Central Kentucky area. Only 1.8% listed Western Kentucky zip codes. Sixteen percent were out-of-state students. There was an even distribution of Freshmen, Sophomores, Juniors and Seniors in our sample (21.2%, 23.7%, 22.3%, 22.9%, respectively). Students listing their status as “First-year transfer undergraduate”, “Graduate Student”, or “other” made up a combined 8.8% of the sample.

Objective 1: To see if there is a difference between male and female ECU students’ recycling attitudes and behaviors.

Gender played a significant role in determining recycling attitudes for multiple items in the questionnaire. Females agreed more strongly than males with the statement that their primary reason for recycling is to reduce the impacts of their waste on the natural environment [ $F(1,716) = 8.233, p = 0.004$ ]. Females also felt more strongly than males that recycling is a socially responsible thing to do [ $F(1,717) = 12.027, p = 0.001$ ]. Finally, in response to the statement “I believe recycling will provide a better future for my family and me”, females agreed more strongly than males [ $F(1,717) = 20.112, p =$

0.000] with females reporting a mean of 5.84 and males reporting a mean of 5.38.

Gender also played a role when it came to recycling behaviors. It was found that males recycle significantly more often than females [ $F(1,717) = 4.293, p = 0.039$ ] with males reporting a mean of 2.93 and females reporting a mean of 2.74. On this particular questionnaire item, 1 represents “Always”, 2 is “Once a day”, 3 is “Once a week”, 4 is “Once a month”, and 5 represents “Never”. Several items on the questionnaire related to on-campus recycling at ECU. For instance, participants were asked if they would support a small fee to improve the recycling capabilities of the ECU campus. Male students were more willing to pay a fee than female students [ $F(1,701) = 9.805, p = 0.002$ ].

Objective 2: To investigate recycling values and behaviors among different age groups as well as student status.

Recycling values and behaviors were examined among different student statuses, ranging from “first-year undergraduate” to “graduate student”. Seniors agreed more strongly than freshmen that recycling is a socially responsible thing to do [ $F(6, 710) = 2.445, p = 0.024$ ]. Likewise, seniors believed more strongly than freshmen that recycling will provide a better future for themselves and their families [ $F(6,710) = 2.270, p = 0.035$ ].

Differences were also found between the different age groups represented in our sample. Out of four assigned age groups, students over the age of 46 were found to recycle most often, followed by the 36-45 range. Next, was the 18-24 group, with students between the ages of 25 and 35 recycling the least often [ $F(3, 704) = 3.653, p = 0.012$ ].

Objective 3: To analyze environmental attitudes and recycling behaviors among students from different regions of Kentucky.

For the purposes of this questionnaire, the state of Kentucky was divided into four regions, and students from out of state were included in a fifth group (Table 1). Northern Kentucky, in this case, consists of the region including the Louisville area and above. Western Kentucky makes up anything to the west of this region. The remaining half of the state was divided into Central Kentucky and Southeastern Kentucky, with counties to

the east of EKU's location in Madison County making up the Southeastern region. Kentucky was divided this way based on the natural shape of the state, and also in an attempt to have a balanced population distribution. Participants from Western Kentucky were found to recycle the most often, while the Southeastern Kentucky group recycled the least often [ $F(4, 680) = 4.582, p = 0.001$ ].

**Table 1.** EKU student responses to “How often do you recycle?” based on regional location of high school attended\*

Location	% of sample	<i>M</i>	<i>SD</i>
Western Kentucky	1.8	2.42	1.379
Northern Kentucky	19.7	2.98	1.242
Central Kentucky	38.9	2.67	1.146
Southeast Kentucky	18.1	3.13	1.153
Other State	16.0	2.70	1.232

\*1=Always to 5=Never

Objective 4: Do students from more populated areas tend to recycle more or less than students from less populated areas. Using six population classes and an out-of-state category, subjects' recycling attitudes and behaviors were analyzed based on the populations of the zip codes in which they attended high school (Table 2). The six Kentucky city population classes ranged from 999 residents or less to 100,000 or more, and were based on the classification system from Section 156 of the 1891 Kentucky Constitution (KLC Research

Report, 2011). A significant difference was found between hometown populations of 3,000-7,999 and students from other states [ $F(7,715) = 2.138, p = 0.038$ ]. In this case, students within this population class have a stronger belief that recycling will provide a better future for themselves and their families than out-of-state students. No difference was found between Kentucky city populations of 100,000 or more and Kentucky cities with fewer than 1,000 residents.

**Table 2.** EKU student responses to “I believe recycling will provide a better future for my family and me” based on hometown population class\*

Population Class	% of sample	<i>M</i>	<i>SD</i>
100,000 or more	12.3	5.31	1.253
20,000-99,999	17.3	5.59	1.414
8,000-19,999	17.3	5.68	1.343
3,000-7,999	16.2	6.01	1.180
1,000-2,999	10.4	5.79	1.320
999 or less	5.1	5.57	1.444
Other State	15.9	5.42	1.528

\*1=Strongly Disagree to 7=Strongly Agree

A cross-tabulation analysis found that students from out of state, students from cities of over 100,000 residents, cities with populations between 20,000 and 99,999 residents, and cities with populations between 3,000 and 7,999 residents tended to be initially introduced to recycling by family members. Students from cities with populations between 1,000 and 2,999 had a more evenly distributed response to their initial introduction (group or organization; family; on their own; friends). While the sample of students from cities with populations of 999 residents or less was small, the largest response to this item was “on my own.”

## DISCUSSION

At the beginning of this research project, we had some preconceived notions upon which we formed hypotheses. Many of these hypotheses were formed based on past research, and other assumptions were based purely upon life experiences. For example, we expected females to have stronger pro-environmental attitudes and behaviors. We assumed that students from Southeastern Kentucky would recycle less than people from out of state and other regions of Kentucky. We thought that students from metropolitan areas would partake in recycling more often than those from rural areas. Finally, we figured that older students would be more environmentally responsible than younger ones.

As had been found in previous studies, female students were more likely to have stronger values and attitudes toward recycling, but males were more likely to participate in pro-environmental behaviors. There are several possible explanations for this. First, females were found to recycle primarily to reduce the impacts of waste on the natural environment, indicating that females in our sample cared more strongly for the environment than males. Secondly,

females, more so than males, believed that recycling is the socially responsible thing to do. This suggests that female college students are more concerned with social norms and “doing the right thing” than males. Finally, females believed that recycling provides a better future for themselves and their families, indicating that women, at least in a university setting, tend to worry more about starting or maintaining a family than men. On the other hand, males were found to score higher on items related to actual behaviors. Males were found to recycle more often and were more willing to pay a fee for ECU to improve its recycling capabilities.

When it came to age and student status, we found that upperclassmen had stronger values toward recycling than underclassmen. This indicates that maturity may be a significant predictor of pro-environmental attitudes and behaviors. Seniors agreed more strongly than freshmen that recycling is a socially responsible thing to do, and also that recycling will provide a better future for themselves and their families. This is not surprising, since many university seniors are beginning to plan life after college, including careers, marriage, and having children. What we did find to be surprising, however, is that students between the ages of twenty-five and thirty-five recycled the least. We had hypothesized that the youngest group (18-24) would recycle the least, due to immaturity, lack of education, and the fact that some freshmen may have recently moved from rural areas in which recycling was not a priority. By the time they graduate from ECU, however, they may have received environmental education thus impacting their beliefs or behaviors.

While students from Western Kentucky were found to recycle the most out of our five regions (Western KY, Northern KY, Central KY, Southeastern KY, and out of state), to be fair we did not have a large

sample from the area. In fact, less than 2% of our sample listed a Western Kentucky zip code. Central Kentucky students recycled the second most frequently, followed by out-of-state students and Northern Kentucky students. Students from Southeastern Kentucky recycled the least. There is a multitude of possible causes for this finding. Southeastern Kentucky contains mostly rural areas, many of which do not offer any type of recycling programs, and certainly do not offer curbside pick-up. Kentucky Division of Solid Waste provides a report every year of the waste streams (including recycling) for the entire state. This report clearly shows that the availability of recycling centers (thus what can be recycled) and the amount recycled is much less in Southeastern Kentucky than some other regions of the state (Statewide Solid Waste Management Reports, n.d.).

The ability to recycle in the way of access to containers is important. Simple actions such as moving a recycling container from the hallway to the inside of a classroom can make a difference (Ludwig et al. 1998). The difference could also be related to general environmental attitudes of the area, which may be heavily influenced by the strong presence of the coal industry. In fact, future research could focus on Southeastern Kentucky environmental attitudes as a result of the coal industry, as very little literature can be found on this matter.

Students were asked to list their high school zip codes for a couple of reasons. First, we wanted to know which region of Kentucky they came from, or if they grew up out of state. Secondly, we wanted to analyze the populations of these cities to see if there was a difference in recycling behaviors and attitudes among these population classes. We assumed that students from cities of 100,000 residents or more would have stronger environmental

values, and would recycle more often than student from rural towns. However, the only statistically significant difference found was between students from cities with populations of 3,000-7,999 and students from other states. When asked how they were initially introduced to recycling, 45% of students from populations over 100,000 answered "family". In cities with populations of 20,000-99,999, 37% responded with "family" as well. However, family played a smaller role in more rural, less populated cities. For example, 39% of students from towns with fewer than 999 residents stated that they were introduced to recycling on their own. This could also be explained by a lack of recycling facilities and services in rural areas.

## CONCLUSIONS

This research can help us understand attitudes towards recycling, which can hopefully reveal ways to increase pro-environmental behavior. As explained by Barr (2007) recycling is a convenience-based, normative behavior. With more people taking part in the activity, the more likely the behavior is to take root. Having access to the means to recycle, having the knowledge of what to recycle, and also having a greater understanding of why recycling is important are all important when considering the creation of recycling policy on a university campus. Developing a recycling "habit" for students on a university campus can be a proxy for developing other pro-environmental behaviors (Nixon, 2009). Of course the issue of human perceptions and behaviors is not easy to understand nor is it easy to explain. Therefore, we do not claim that only those that displayed pro-recycling attitudes exhibited pro environmental behaviors. The issue is made up of a combination of values, knowledge attitudes and emotional involvement, or what

Kollmuss and Agyeman (2002) call “pro-environmental consciousness.” This study intended to shed light on students and how demographics may influence attitudes and behaviors regarding recycling. This was done to help the university in the development of a recycling policy that took these factors into consideration.

Administrators at ECU, and other similar universities, should take the results of this study and understand that small changes can have large impacts. For example, since it was found that female college students are more likely to report environmental concern but are less likely to do anything about it, perhaps we can now figure out a way to bridge this gap when developing outreach materials. Marketing to different demographics, in this case gender, based on their preferences is not a new concept (Wolin 2003), and using the known difference in gender could help direct marketing material to these different segments to increase recycling. Since younger students tend to recycle less than upperclassmen, perhaps ECU can strive harder to reach these particular students. Pike et al. (2003) suggest requiring recycling specific classes when students arrive on campus. Although the classes in the Pike study were not found to significantly increase recycling behaviors over time, the students did express the success of a project-based recycling curriculum.

Since Southeastern Kentucky students recycle less than others, perhaps initiatives can be developed to implement recycling facilities in this area or implement recycling educational programs in the secondary schools. The lack of recycling facilities and services is a major issue that requires more research. Additional studies could determine why there is a lack of said facilities. Is it a socioeconomic issue? Previously mentioned studies have shown convenience to be an

important factor in recycling, thus, would people recycle if these services were available? If recycling were made to be convenient, even with curbside pickup, would people be more willing to participate? Or is it an environmental awareness and/or education issue? Does it have anything to do with social norms in the area? These are all questions to be addressed in future research. Also, understanding the constraints to recycling is a good first step in developing sound policy.

Ultimately, those that recycle will do so when it is convenient, they understand why it is important, they see others doing it and it somehow benefits them. The findings of this research can be used to inform policy in such a way that targets specific groups (e.g. freshmen, males, those from certain parts of the state) to meet the recycling goals of the university.

## REFERENCES

- Banerjee, B. & McKeage, K. (1994). How green is my value: Exploring the relationship between environmentalism and materialism. In Allen, C.T. & John, D.R. (Eds.), *Advances in Consumer Research* 22. Association for Consumer Research, Provo, UT, 147-152.
- Barr, S. (2007). Factors influencing environmental attitudes and behaviors: A U.K. case study of household waste management. *Environment and Behavior*, 39(4), 435-473.
- Berge, I.E. (1997). The demographics of recycling and the structure of environmental behavior. *Environmental Behavior*, 29, 515-532.
- Blocker, T.J., & Eckberg, D.L. (1997). Gender and environmentalism: Results from the 1993 General Social Survey. *Social Science Quarterly*, 78(4), 841-858.
- Bratt, C. (1999). The impact of norms and assumed consequences on recycling

- behavior. *Environment and Behavior*, 31(5), 630-656.
- Buttel, F.H. (1987). New directions in Environmental Sociology. *Annual Review of Sociology*, 13, 465-488.
- Dersken, L. & Gartrell, J. (1993). The social context of recycling. *American Sociological Review*, 58, 434-442.
- Diekmann, A. & Preisendorfer, P. (2003). Green and greenback: The behavioral effect of environmental attitudes in low cost and high cost situations. *Rationality and Society*, 15(4), 441-472.
- Dillman, D. A. (2007). *Mail and internet surveys: The tailored design method*. Hoboken: John Wiley & Son, Inc.
- Dunlap, R.E., VanLiere, K.D., Mertig, A.G. & Jones, R.E. (2000). Measuring endorsements of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues*, 56(3), 425-442.
- “Eastern Kentucky University” (2011). Eastern Kentucky University Fast Facts.
- Evanschitzky, H. & Wunderlich, M. (2006). An examination of moderator effects: The four-stage loyalty model. *Journal of Service Research*, 8(4), 330-345.
- Humpel, N., Owen, N., Iverson, D., Leslie, E. & Bauman, A. (2004). Perceived environment attributes, residential location, and walking for particular purposes. *American Journal of Preventative Medicine*, 26(2), 119-125.
- Hunter, L.M., Hatch, A., & Johnson, A. (2004). Cross-national gender variation in environmental behaviors. *Social Science Quarterly*, 85(3), 677-694.
- Jones, M.R. & Karsten, H. (2008). Giddens’s structuration theory and information systems research. *MIS Quarterly*, 32(1), 127-157.
- Jones, R.E., Fly, J.M., & Cordell, H.K. (1999). How green is my valley? Tracking rural and urban environmentalism in the Southern Appalachian Ecoregion. *Rural Sociology*, 64(3), 482-499.
- “KLC Research Report” (2011). Kentucky League of Cities, The Basics of Kentucky Cities.
- Klineberg, S.L., McKeever, M, & Rothenbach, B. (1998). Demographic predictors of environmental concern: It does make a difference how it’s measured. *Social Science Quarterly*, 79(4), 734-753.
- Kollmuss, A. & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239-260.
- Ludwig, T., Gray, T. & Rowell, A. (1998). Increasing recycling in a low-income urban community following a public outreach program. *Environment and Behavior*, 29, 769-792.
- Nisbet, E.K., Zelenski, J.M. & Murphy, S.A. (2009). The nature relatedness scale: Linking individual’s connection with nature to environmental concern and behavior. *Environment and Behavior*, 41(5), 715-740.
- Nixon, H., Saphores, J.D.M., Ogunseitan, O.A. & Sharpiro, A.A. (2009). Understanding preferences for recycling electronic waste in California. *Environment and Behavior*, 41(1), 101-124.
- Pak, M.S. (2011). Environmentalism then and now: From fears to opportunities, 1970-2010. *Environmental Science & Technology*, 45(1), 5-9.
- Pike, L., Shannon, T., Lawrimore, K., McGee, A., Taylor, M. & Lamoreaux, G. (2003). Science education and sustainability initiatives: A campus recycling case study shows the importance of opportunity. *International Journal of Sustainability in Higher Education*, 4(3), 218-229.

- Ratnapradipa, D., Brown, S.L., Middleton, W.K. & Wodika, A.B. (2011). Measuring environmental health perception among college students. *The Health Educator*, 43(2), 13-20.
- Schawb, N., Harton, H.C. & Cullum, J.G. (2012). The effects of emergent norms and attitudes on recycling behavior. *Environment and Behavior*, 1-20.
- Schultz, P.W. (1998). Changing behavior with normative feedback interventions: A field experiment on curbside recycling. *Basic and Applied Social Psychology*, 21(1), 25-36.
- Sobel, D. (2008). *Childhood and Nature*. Stenhouse Publishers, Portland, ME.
- Statewide Solid Waste Management Reports (n.d.). State of Kentucky Department for Environmental Protection.
- Tabachnick, B., & Fidell, L. (2012). *Using multivariate statistics*. New York: Pearson.
- Van Liere, K.D. & Dunlap, R.E. (1980). The social bases of environmental concern: a review of hypotheses, explanations, and empirical evidence. *Public Opinion Quarterly*, 44, 181-197.
- Vaske, J.J. (2008). *Survey research and analysis: Applications in parks, recreation, and human dimensions*. State College, PA.
- Walton, T., & Austin, D.M. (2011). Pro-environmental behavior in an urban social structural context. *Sociological Spectrum*, 31, 260-287.
- Wolin, L. D. (2003). Gender issues in advertising--An oversight synthesis of research: 1970-2002. *Journal of Advertising Research*, 43(1), 111-129.