

Factors Affecting Environmental Concern in Bloomington-Normal Residents

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I. INTRODUCTION

Currently, environmental issues have become spotlighted in the media. The recent loosening of environmental standards by the Bush administration, the increase in the use of pesticides on food sources and residential lawns, and the attempts to solve the global warming crisis have alerted the general public about how human actions affect the environment. Bloomington-Normal is working to increase public awareness of environmental issues as well as initiating change in the community. In addition to city-sponsored recycling programs, there are also non-profit organizations pursuing various environmental campaigns, such as Living Upstream and the Ecology Action Center. Living Upstream educates the community on the effects of the toxins we are exposed to every day and promotes the consumption of organic foods and other ways to reduce our exposure to toxins. The Ecology Action Center educates the community about a variety of environmental issues and facilitates eco-friendly programs throughout Bloomington-Normal.

Different cities are in different stages in their environmental concern and action. It is important for the local environmental organizations to know where the community stands on various issues

and behaviors in order to improve services offered to the community that strengthen the community's eco-friendly actions. This study focuses on what actions residents are taking to lessen their impact on the environment. These actions demonstrate their concern for the environment. Finding out what influences environmentally friendly actions is a difficult process because of the complexity and the number of factors that contribute to these decisions. Not only are the factors numerous, but they also vary in intensity. This study uncovers a few of the contributing factors to environmental concern of Bloomington-Normal residents.

II. LITERATURE REVIEW

Recent research has focused on factors of pro-environmental attitudes. These attitudes are thought to be predictors and reasons for environmentally friendly behavior. We contend, however, that it is not enough to know people's reasons for their attitudes when trying to find out current environmental concern of community members. A community's political, educational, and environmental organizations need to know a community's eco-actions in order to serve the community effectively. As Christianson and Arcury

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(1992) remark in their study on residents' environmental attitudes and opinions on environmental policy in central and eastern Kentucky counties, it is important to be informed about the action of a community before making political and/or educational decisions.

Research, however, has focused on pro-environmental attitudes in order to understand environmental concern and behaviors. It has yielded various models that illustrate the relationship between belief systems, value systems, and pro-environmental attitudes. The dominant social paradigm (DSP) is the foundation of a society's rationale that rests on the pursuit of economic self-interest, democratic politics, technological efficiency, and the greatest good for society (Kilbourn, 2001). The study of university students' environmental attitudes in England, Denmark, and the United States shows that there is a significant relationship between the DSP and pro-environmental attitudes. As the belief in the DSP becomes more prevalent, the perception of environmental problems decreases, as does the perception that a significant amount of change is needed to protect the environment. In other words, as adherence to the DSP increases, people are less likely to believe that the environment is in trouble and that less action is needed because technology will solve the problem when needed and the democratic government will amend and pass effective laws. Other models focus on the social-psychological factors involved in pro-environmental attitudes. In his study on Hiiumaa island residents' values and social identity, Uljas (2001) asserts that social identity plays a key role in the development of an environmental consciousness. People adopt an attitude and belief system of a particular group while distancing and differentiating themselves from other groups in order to further identify their membership in that particular group. This membership reinforces their will to act or not act according to the norms and values of that particular group. Stern, Dietz and Kalof (1993) also elaborate on how group norms contribute to environmental concern and have distinguished different value orientations of a person or group that would promote environmentalism. In their study of university students in New York, Stern et al. find that environmental concern can stem from altru-

ism of humans, anxiety for other species in the biosphere, or self-interest. A synthesis of these three factors and their respective intensities gives a more adequate picture of how willing people are to take action.

Other researchers have also identified individual factors that contribute to pro-environmental attitudes. For example, Arp (1994) interviewed Louisiana residents and Weaver (2002) used data from the *International Social Survey Programme* (ISSP) in order to understand the factors affecting environmental attitudes. Both Arp and Weaver find a significant relationship between political orientation and eco-friendly attitudes. Both of these researchers agree that liberals are more likely than conservatives to possess pro-environmental attitudes. Additionally, a significant relationship has been found by Kanagy and Nelson (1995) and Weaver (2002) between religiosity and eco-friendly attitudes. Kanagy and Nelson, who use a national survey by the Gallup Organization, and Weaver agree that more religious people will exhibit less environmental concern than less religious people. In her study of small town residents in Poland, Rokicka (2002) identifies additional factors that contribute to pro-environmental attitudes, such as peer encouragement, education, attitude towards the community, and political involvement. The relationships that these studies explore may directly or indirectly influence environmental action.

Results regarding factors that influence environmental attitudes, used to understand environmental behavior, vary between studies because the results depend heavily on the methodology of the study - the attitudinal scale used. In their study of residents of the Southern Appalachians, Tarrant and Cordell (1997) examine the influence of gender, residence, income, age, and political orientation on environmental action using five attitudinal scales. While they find no significant differences in the tests of residency or age across the five scales, a significant correlation between gender and attitude-behavior exists on only one of the five scales used. Additionally, a significant correlation emerged between education level and attitude-behavior on only two of

the five scales. Income and political orientation also only had a significant attitude-behavior correlation on two scales. This study raises the question: how effective are studies of attitudes in understanding environmental concern and behavior? While attitudes are important, what are the Bloomington-Normal residents *actually* doing, regarding the environment? What factors affect this action?

While recent research has focused on environmental attitudes, as functions of environmental concern, this study will focus on environmental action and the factors that affect it. People who are performing environmentally friendly actions possess a concern for the environment. More specifically, this research tested the following hypotheses among Bloomington-Normal residents:

1) Residents possessing a high level of education have a greater concern for the environment than residents with a low level of education. As Rokicka (2002) asserts, a higher level of education is correlated to pro-environmental attitudes. This correlation is attributed to the fact that education increases a greater awareness of the natural environment and how humans affect it. While Rokicka focuses on attitudes, we aim to see if this correlation relates to environmental action as well.

2) High-income households show a greater concern for the environment than low-income households. This difference is due to higher income households having the freedom to choose their actions based on their interests and not on their financial resources.

3) Non-religious residents have a greater concern for the environment than religious residents. As Kanagy and Nelson (1995)

and Weaver (2002) indicate, the less religious a person considers his or herself, the more eco-friendly attitudes she/he possess. While this correlation involves environmental attitudes, we aim to see if this correlation relates to environmental action.

4) Liberal residents have a greater concern for the environment than conservative residents. Arp (1994) and Weaver (2002) find that liberals are more likely than conservatives to possess pro-environmental attitudes. We aim to see if this correlation also holds true for environmental behavior.

5) Female residents have a greater concern for the environment than male residents. As Stern et al. (1993) discuss, women possess a stronger altruistic value orientation than men. They are more aware of the effects of their actions, develop beliefs about these consequences, and therefore, are more concerned for the local environment. This greater concern for the environment by women is considered a “mother effect” (Stern, 1993). While Stern et al. focus on environmental attitude, we aim to see if this “mother effect” also holds true for environmental behavior.

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III. METHODOLOGY

A. Survey Design

The sample was drawn using a stratified sampling procedure. The May 2003 Verizon Bloomington-Normal McLean County telephone book was divided equally into twenty-one sections, one section for each of the twenty-one students in the class. Each student systematically sampled from the listings that were obviously non-commercial establishments. We wanted to be at least 95% confident that our responses would not have a sampling error of more than 5%. Therefore, our desired sample

size was 420; however, we interviewed 415. Each student drew twenty sampling units from his/her assigned section of the phone book to reach the desired 420 sampling units. The columns of listings were measured in inches and their total length was divided by twenty. A one-inch window was drawn around the K^{th} interval. Sampling units were randomly selected from within the window. If a student found that no one within the window was able or willing to answer the questionnaire, the window was extended equally in each direction until a respondent was found.

The data was collected using Computer Assisted Telephone Interviewing (CATI). Students submitted their questions and compiled them into an omnibus survey. With Survey System software, the questionnaire was entered into the computer. The program skipped to the appropriate contingency questions when applicable and only accepted valid codes. Interviewers had the questionnaire on the computer monitor in front of them as they interviewed the respondents. When a potential respondent answered the phone, the student interviewer introduced himself/herself as part of Illinois Wesleyan's Methods of Social Research class and made sure that the respondent was at least eighteen years of age. Once a respondent agreed to the omnibus survey, the respondent was assured that all his/her responses would be held completely confidential and that there would be no way to track down a response to a particular respondent. Interviewers also gave respondents contact information of the class professor and the IRB chair at IWU, in case they had any questions regarding the survey. Respondents were also given an opportunity to refuse to answer questions or to stop the survey at any time. Interviewers read the question word for word, listed the available response categories, and entered codes corresponding to the respondent's answer. The complete questionnaire was automatically saved to a computer file and compiled later using Excel before being exported into SPSS.

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After compiling our data into a SPSS file, we assembled the demographic distribution of Bloomington-Normal sample respondents. The majority of sample respondents (63.7%) were female. Seventy-five percent of sample respondents were at least 31 years of age. Most (56.3%) respondents are currently married. Nearly all (95.6%) of sample respondents had at least a high school degree or its equivalent. The most common religious affiliation was Protestant (39.5%).

B. Measurement

We looked at environmental concern of Bloomington-Normal residents and how political orientation, education level, religiosity, household income, and length of time in the community affect it. In this section we discuss how the different variables in our hypotheses are measured.

1. Dependent Variable

Concern for the environment: The dependent variable, concern for the environment, is measured using the answers (1. Always, 2. Often, 3. Sometimes, or 4. Never) to the questions: How often do you make a special effort to buy fruits and vegetables grown without pesticides or chemicals?

How often do you cut back on driving a car for environmental reasons? How often do you make a special effort to sort glass or cans or plastic or papers and so on for recycling?

These questions were combined to form an index reflecting a respondent's concern for the environment. The response number of each of the question was added together to form a score (3-12). A score of 3-6 was considered “very concerned,” a score of 7-9 was considered “moderately concerned,” and a score of 10-12 was considered “not concerned.”

Environmental concern is not just saying that you are environmentally concerned, but putting those

thoughts into action. For this reason, we chose questions that reflected a respondent's action and not attitude or opinion. Because environmental concern cannot be directly measured nor can one action be used to define environmental concern, a variety of questions were compiled to reflect this complexity. These questions were selected from the GSS survey and were chosen because they encompassed different aspects of environmentally friendly actions.

2. Independent Variables

In addition to gender, there are four other independent variables used in this study, namely political orientation, education level, religiosity, and income and length of time in the community.

Political orientation: Since we are concerned with how respondents categorize their political views, this question divides up the political philosophy spectrum into degrees of liberalism and conservatism. The question used to measure political orientation was "how would you characterize your political orientation?" Possible response categories were Far left, Liberal, Middle-of-the-road, Conservative, or Far right.

Education level: Focusing on formal rather than informal education, this question reflects the tiers of education a respondent may obtain. "Which of the following describes the highest level of education attained?" was the question used to measure education level. Possible responses were Less than a High School Diploma, High School Diploma or GED, Associates/Junior College, Bachelor's degree, or Graduate Degree.

Religiosity: Wanting to measure to what extent a person considers himself/herself religious regardless of his/her attendance or participation in religious services, this question measures the degree to which a person considers religion in his/her life. The question used to measure religiosity was "How would you characterize how religious you are?" Possible responses were Very religious, Somewhat religious, Not very religious, or Not at

all religious.

Household Income: We wanted household rather than individual income because many homes pool their finances together in order to pay for their lifestyle. This question divides these incomes into brackets that give an estimate of the household income. "In the last fiscal year, what was your total household income?" was the question used to measure household income. Possible response categories are Under \$5,000, \$5,000-\$9,999, \$10,000-\$19,999, \$20,000-\$29,999, \$30,000-\$39,999, \$40,000-\$49,999, \$50,000-\$59,999, \$60,000-\$69,999, \$70,000-\$79,999, \$80,000-\$89,999, \$90,000-\$99,999, or Over \$100,000.

3. Control Variable

Gender will be used as a control variable, and all hypotheses will be tested using this control variable.

IV. RESULTS AND DISCUSSION

This section is going to discuss the univariate analysis to describe the different variables and multivariate analysis in order to test our hypotheses. We performed both a univariate and bivariate analyses on our data before using the elaboration model in order to interpret the relationship between variables and their significance.

A. Univariate Analysis

Almost sixty percent (58.8%) never cut back on driving for environmental reasons, and 40.7% of respondents never buy organic fruits and vegetables (grown without pesticides or other chemicals). However, 43.6% of respondents always sort items for recycling. 50% of respondents scored a nine or above. From the index, only 12.8% of residents are very environmentally concerned.

As for the independent variables studied, 46.5% of respondents consider themselves somewhat religious. 50% of sample respondents' households earn at least \$30,000 per year. The most common political orientation given by respondents was middle-of-the-road (37.3%).

B. Bivariate Analysis

The bivariate analysis was used to examine possible relationships between each independent variable and environmental concern. In order to test the hypothesis that respondents with a higher level of education are more environmentally concerned, a cross-tabulation was performed on the relationship between education level and concern for the environment. There was not a difference between “very concerned” respondents that have a high school level education or less and those that have had some college or more. Our χ^2 value was not significant and therefore, the hypothesis was not confirmed. Education level does not affect environmental concern. This finding may be due to the number of sample respondents surveyed.

A cross-tabulation between political orientation and concern for the environment was performed in order to test the hypothesis that liberals are more environmentally concerned than conservatives. 22% of liberals are very environmentally concerned, compared to 10.6% of conservatives that are very environmentally concerned. This χ^2 was significant and therefore, the hypothesis was confirmed. These results show that political orientation does affect environmental concern.

The hypothesis that households with a higher income are more environmentally concerned than those with lower household incomes was not confirmed in the direction hypothesized. 12.3% of households that brought in \$29,999 or less were very environmentally concerned, compared to the 6.8% of households that had \$60,000 or more who were very environmentally concerned. The bivariate analysis yielded a relationship that is significant at the .1 level. Therefore, household income level affects environmental concern, although in a different direction than predicted. The reason why the results contradict our hypothesized relationship may be due to the fact that half of our sample respondents are under the age of 45 and that Bloomington-Normal is a college community, therefore there is a need to test for age.

The results of the hypothesis testing show that less religious respondents are more environmentally concerned than very religious respondents. Religiosity affects environmental concern. The bivariate analysis

produced a significant relationship at the .05 level. Even though there was a significant relationship, the relationship is in an opposite direction than hypothesized. About eighteen percent (17.6%) of very religious respondents were very environmentally concerned, compared with 13.5% of respondents who were not religious and very environmentally concerned.

A bivariate analysis of gender revealed no significant relationship between gender and environmental concern. About eleven percent (11.1%) of men were very environmentally concerned, compared with the 13.4% of women who were very environmentally concerned. This percentage difference is not great enough to confirm our research hypothesis that women are more environmentally concerned than men.

C. Elaboration Model

In addition to the bivariate relationships, the elaboration model was used to examine the relationship of environmental concern and each independent variable (household income, education level, religiosity, and political orientation) for males and females. The model was also used to explore possible interactions of household income, education level, religiosity, and political orientation with gender.

The elaboration model is not applicable to a multivariate analysis of environmental concern and education level controlling for gender because neither the bivariate nor the multivariate analysis show significant relationships. However, it appears that there is a tendency that confirms our hypothesis that those residents with a higher level of education are more likely to be environmentally concerned than those with a lower level of education. There is more than a five percent difference between concern for the environment and level of education while controlling for gender for men. Although it is a small percentage (11.4%) among men, those who have a higher education are more than two times more likely to be environmentally concerned than men with a lower level of education. In terms of environmental concern and education, men more strongly manifest

this relationship than women. Women do not show such a percentage difference.

This difference between men and women may be due to the fact that women surveyed may receive more informal education that would affect their level of environmental concern, and our measurements were not adequate. It could also be due to the fact that women have a greater foundation in nurturing those people around them, including their family. Her education background, then, would not affect this base. Men, however, do not have this caring foundation and are thus affected more by their education background.

The multivariate analysis of political orientation revealed a significant relationship for women, but not a significant relationship for men.

This finding shows a specification model: the relationship seen in the bivariate analysis is due to gender. Specifically, the relationship between political orientation and environmental concern in which liberals are more likely to be environmentally concerned than conservatives occurs among women and not among for men. However, even though there was no significant relationship between environmental concern and political orientation among men and a smaller partial relationship than the original, there is a tendency among men that confirms our hypothesis regarding political orientation and environmental concern. Although it is a small percentage (11.3%) among men, liberals are more than three times more likely to be environmentally concerned than conservatives. A possible reason why the relationship is significant for women, but not for men is due to the small sample size and the great proportion of women in the sample.

Similar to the multivariate analysis of political orientation, the multivariate analysis of household income shows a significant relationship for women, but not a significant relationship for men. This finding illustrates a specification model: the relationship between household income and environ-

mental concern occurs among women and not among men. However, even though among men there was not a significant relationship between environmental concern and household income and a smaller partial relationship than the original, there is a tendency that confirms our hypothesis regarding household income and environmental concern. Although it is a small percentage (13.5%) among men, residents from households with a higher income are almost three times more likely to be environmentally concerned

than those from households with a lower income. A possible reason why the relationship is significant for women, but not for men is due to the small sample size and the great proportion of women in the sample.

Unlike the results for political orientation and household income, the multivariate analysis using religiosity revealed an explanation model. The relationship between religiosity and environmental concern disappears when the control variable is introduced. Gender explains away the significant relationship in the original relationship. Not very religious residents are no less environmentally concerned than very religious residents. One of the reasons why gender explains this relationship away is that socialization of both men and women have a more profound effect on their environmental concern than how religious they perceive themselves.

V. SUMMARY AND CONCLUSION

Previous research has focused on the effects of political orientation, religiosity, education level, income, and gender on environmental attitudes. Unlike previous research on environmental concern, we focus on environmental behavior. It takes more than eco-friendly attitudes to do something about the environment and to show environmental concern.

Our findings for education level show that there is not a significant relationship between education and concern for the environment. The percentage differences, however, indicate a relationship that

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is similar to Rokicka's study (2002) on environmental attitudes. A higher level of education is positively correlated to environmental concern, especially for men. As noted above, perhaps our measurements of education do not appropriately describe the education for both genders.

The bivariate analysis, using household income, indicates a significant relationship between income and environmental concern. The direction of this relationship is opposite to our hypothesized relationship; respondents from lower-income households are more environmentally concerned than those from higher-income households. Gender reverses this finding for both men and women. The multivariate analysis finding shows that respondents from higher-income households are more environmentally concerned than those from lower-income households. The multivariate analysis reveals that this connection occurs significantly among women, but men still show a great percentage difference between levels of household income - a difference between men and women that may be due to our sample size. But the question remains, why is there a reversal between the bivariate and multivariate analyses? Is it just due to gender differences or another unknown factor?

Our test using religiosity indicates a contrast with studies done by Kanagy and Nelson (1995) and Weaver (2002) on environmental attitudes. Our bivariate analysis indicates a significant relationship between religiosity and environmental concern; more religious respondents are more environmentally concerned. This finding contradicts our hypothesis. However, gender explained away a significant relationship between religiosity and environmental concern. This explanation may be due to the fact that gender roles play a more influential role than how religious a person considers his or herself.

Our results parallel those found in studies by Arp (1994) and Weaver (2002) on environmental attitudes. There exists a significant relationship between political orientation and concern for the environment: liberals are more concerned for the environment than conservatives. Among women, the relationship between political orientation and environmental concern is significant. It should be noted that

there is a great difference between liberal and conservative men and their environmental concern. Thus, our sample size may influence the difference in significance between political orientation and concern for the environment while controlling for gender.

Our analyses do not reveal a significant relationship between gender and concern for the environment. We could not verify that Stern's hypothesized "mother effect" can also be attributed to environmental behavior or concern. Perhaps a larger sample size and an equal number of male and female respondents would reveal a significant relationship between gender and environmental concern.

The findings from this study may differ from or are similar to the literature because of our sample size. Since the chi-square value is dependent on sample size, what would the result be if we sampled a larger number of Bloomington-Normal residents? Another factor that may have influenced our results is that the omnibus survey was quite long and some respondents ended the survey before its completion, due to its length. A survey was considered complete at question #43, which is the middle of the survey. Our questions on environmental behavior began at question #78. We may have had less missing responses than if the questions had been placed at the beginning or middle of the survey.

Even though there may be some weaknesses in the study, there are questions that future studies need to address. Since our study cannot be used to generalize about the entire country's behaviors, how does Bloomington-Normal's environmental actions compare to the state and other cities in the nation? What could Bloomington-Normal learn from cities and states where a high level of environmental concern is demonstrated?

Bloomington-Normal respondents are not very environmentally concerned when it comes to their behavior. While their attitudes might be environmentally friendly, they lack the motivation to put these attitudes into action. It might also be that some other factor is required to elicit environmental action. Convenience, education, and perceived health risks may all be motivations that would increase en-

vironmental behavior. Other independent variables that may influence environmental behavior are community pride, length of time spent in the community, and level of connectedness one feels with nature. It should also be noted that the self-reported behavior in this study might not be congruent with actual behavior due to respondents' notions of social desirability or of what they *should* or *wished* that they were doing.

While our study does not show one determining factor of environmental concern based on action, it does show the complexity of the situation and how different factors are interconnected. Overall, there is a significant relationship between education level, household income, political orientation, religiosity, and environmental concern. However, when gender is added as the control variable, the effects are different among men and women. This type of study that focuses on environmental concern as behavior rather than attitudes has not really been attempted previously, but it is a topic that should be looked into further by future researchers in order to better understand an individual and community's relationship with the environment. This understanding will also help local environmental organizations to know where the community stands on various issues and behaviors in order to improve services offered to the community that strengthen the community's eco-friendly actions.

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