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An Investigation of Gender Differences in Pro-environmental Attitudes and Behaviors

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### Abstract

Environmental responsibility has become an increasing concern in today's world. "Green" practices have become the norm with a growth in recycling options on school campuses and in cities, emissions restrictions for cars, and many brands positioning themselves as eco-friendly. The purpose of this study was to determine whether there are gender differences regarding pro-environmental attitudes and behaviors among college students as predicted by socialization and social role theories, ecofeminism, and social norms. Participants were 313 University of Connecticut students (124 male, 189 female) who took part in an online survey measuring their attitudes towards the environment and conservation behavior. This study found that pro-environmental attitudes did affect pro-environmental behaviors, with females reporting more favorable and appreciative attitudes towards the environment. Students perceived that they recycled and conserved more than other students and friends both at home and on campus. They, however, perceived their recycling and conservation habits on campus to be less than their family's, but nearly the same at home. Individuals were also influenced by social norms of their family, friends, and other students' perceived pro-ecological behaviors. Family, friends, and other students significantly influenced pro-environmental behaviors both at home and on campus, with family acting as the most influential referent. This study replicated previous research as well as contributed to current literature on pro-environmental attitudes and behaviors.

### An Investigation of Gender Differences in Pro-environmental Attitudes and Behaviors

The international agenda is shifting so that environmental concern and sustainability are spearheading the “green” movement. The constant pursuit of a higher standard of living among developed countries has increased pollution and waste; individuals are willing to spend more resources for consumption of goods and services (Subramanian, 2000). As the largest consumers of fossil fuels, developing countries have been most accountable for the pollution and toxic waste – but with great power, comes great responsibility. Research in some of these countries has found that females have a more favorable attitude towards the environment than do men, likely due to socialization and social role differences (Zelezny, Chua, & Aldrich, 2000). Ecofeminist literature further asserts gender differences in human relationships with the environment, with women relating more to the environment on an empathic level (Bloodhart & Swim, 2010; Stephens, Jacobson, & King, 2010). Social norms are also influential factors in predicting pro-ecological behavior (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). The purpose of this study was to investigate gender differences in conservation attitudes and behaviors.

The global state of the environment is changing at a rapid pace as a result of several anthropogenic changes. Ecologists have found the magnitude of this change to be “so large” and “so strongly linked to ecosystem processes and society’s use of natural resources,” that the world’s biodiversity, the variety of life, has been compromised (see Sala et al., 2000 for a review of this literature). Due to greenhouse gas emissions, the hole in the protective ozone layer over the Antarctic has been growing at an alarming rate, posing a threat to the climate, environment, and biodiversity (Anderson et al., 1997). Transportation systems, storm water, sewage, and other waste disposal methods continue to have substantial adverse impacts on the environment,

including biodiversity and water quality (Sala et al, 2000). Since the early 1990s, environmental awareness in developed countries has increased and concerns have been raised about the “viability of such indiscriminate disposal practices” (Subramanian, 2000, p. 254).

Increased conservation efforts and instillation of an ethic of care in current and future generations have become imperative in order to mitigate the detrimental effects that anthropogenic activities have had on the environment. In 1997, the Kyoto Protocol was adopted by participating parties, and put into force in 2005. The Protocol, part of the United Nations Framework Convention on Climate Change (UNFCCC), outlined an international initiative to reduce the greenhouse gas emission rate. The UNFCCC is an environmental treaty with the goal of preventing hazardous human-caused interference of the climate system. The treaty recognized that the brunt of culpability lay with developed nations, as they were the ones most responsible for fossil fuel burning and energy, water, and material consumption in the past 150 years, as well as those with the most resources to expend to make a significant difference (United Nations, 1998). Due to the implementation of these regulations to reduce human-induced effects, substantial progress has been made in “better management of the waste streams and more efficient utilization of the land resources” (Subramanian, 2000, p. 254).

As a result of the increased attention to global ecology, environmentalism has become a matter of increasing importance in today's culture. "Green" practices are being encouraged, with the regulation of auto-emission levels for cars, LEED rating systems for sustainable building, the positioning of brands towards eco-friendliness, and recycling options on campuses and cities setting the standard for behavior. With the growing popularity of plastic, manufacturers have also been exploring new designs and material combinations to simplify soft drink bottle constructions and reduce waste products (Subramanian, 2000). Increased awareness of the

environmental issues support exploration and implementation of practices that make products and processes less harmful to the environment (Subramanian, 2000). Although institutional standards have been implemented to set a minimum bar for efficient sustainability, environmental change must grow from an individual level as well.

The idea that women may have more positive attitudes regarding the environment has been supported by a number of studies. Tikka, Kuitunen, and Tynys (2000) found that female students had a more positive view of nature and the environment than men. Males were also more concerned with mastering the environment while females took a more emotional and nurturing approach. Female students also showed more environmental responsibility (e.g., recycling) than male students. In a study by Aydin and Cepni (2010), students' attitudes towards environmental issues also showed significant gender differences in favor of females. In the past few decades, as the state of the environment has become more critical, scales have been devised to examine the importance individuals place on various ecological and environmental facets. The Environmentally Responsible Behavior (ERB) measure, composed by Mobley, Vagias, and DeWard (2009) is a composite scale consisting of 17 items measuring the frequency of different environmentally responsible behaviors over the past 12 months. Likewise, the New Ecological Paradigm (NEP) has been instrumental in measuring environmental attitudes over the past four decades. Unlike many other scales, the NEP focuses on human-environmental relationships. It is the most prevalent scale, and many studies testing it have reported that women endorse the NEP to a greater extent than men (Casey & Scott, 2006; Dunlap, Van Liere, & Mertig, 2000; Hampel, Boldero, & Holdsworth, 1996; Rideout, Hushen, Perkins, & Tate, 2005). Zelezny et al. (2000) found that women reported significantly more general environmental concern than men, although the effect of gender on NEP environmental attitudes was small.

*Socialization of Men and Women*

Socialization theory can provide a lens through which psychologists can come to understand the gender differences in pro-environmental attitudes and behaviors. This theory proposes that behavior can be predicted through socialization – the process by which individuals are shaped by expectations within the frame of cultural norms (Zelezny et al., 2000). Gender expectations are particularly salient, with women considered to be more caring, interdependent, nurturing, and men expected to be more aggressive and competitive. Research has found that females across cultures are socialized to be more expressive, caring, interdependent, nurturing, cooperative, and helpful in caregiving roles. Males, on the other hand, are socialized to be more independent and competitive (see Zelezny et al., 2000 for a review of this literature). Socialization is tied into social role theory (Eagly, 1987), which posits that individuals are placed into different roles corresponding to their gender. Because women are perceived as more “caring” and men as more “assertive,” they are placed into roles that cater to these traits, respectively, with women as homemakers and men as moneymakers.

According to Eagly (1978), individuals are distributed into social roles that are hierarchically arranged, with a disparity between the statuses of men and women. The normative pressures typical to Western society establish that females “shall yield to social influence and males shall remain relatively independent” (p. 87). Middlebrook (1974) postulated that passivity and yielding have been emphasized in the feminine role in United States culture, so that when little girls are socialized into their roles, they may be cultured to yield. Due to social role theory, perceivers’ implicit theories of influence can affect how they act towards individuals of either gender (Eagly, 1983). Gender roles consist of norms that specify how men and women should behave. Status characteristics such as sex affect behavior because people have expectations about

their own and others' competence based on them (see Eagly, 1983 for a review of this literature). Perceivers then believe in the stereotypic sex differences that men are dominant and influential and women are submissive and easily influenced, to the extent they believe that the men and women they observe are related through hierarchical roles that give men higher status. Consequently, individuals will behave in ways that confirm these expectancies, as consistent with normative social influence.

A growing area of study, ecofeminism, has expanded upon socialization and social role theories to propose the idea that there are gender differences in human relations with nature and pro-environmental behavior. Ecofeminism proposes that women are more likely to care for the environment because a) they are socialized into nurturing roles, making them more sympathetic to environmental woes, and b) women relate to the environment on the same level, as they are both being dominated by patriarchal systems.

#### *Environmentalism and Ecofeminism*

Francoise d'Eaubonne's piece, "Le féminisme ou la mort" was responsible for the conception of the term "Ecofeminism" in 1974 (see Uhls, 1996) According to Ynestra King (1990), a prominent feminist and ecofeminist, ecofeminist theory originated from nature analysis, including that of human nature, and the "historic position of women in relation to those forms of domination" (p. 117). Ecofeminism has been gaining ground recently with the exponential advancement of technology, which has become a major component of human existence. King (1990) argues that technology needs to become less of a "tool for domination and oppression" and more a means of fulfilling the responsibility to sustain (p. 115). A major concern is that society is losing touch with the earth, and needs to acknowledge its dependency on it and reintegrate its materialistic lifestyle into the "ecological patterns by which nature sustains life"

(Ruether, 1993, p. 21). D'Eaubonne urged women to take up responsibility of preserving and restoring the ecological balance of the Earth and to develop their potential in order to partake in the upcoming "ecological revolution" (see Uhls, 1996).

Ecofeminism posits that the treatment of both women and the natural environment results from an overarching, patriarchal society, and that hegemonic systems of power materialize both as "domination of men over women and as domination of people over the environment" (Bloodhart & Swim, 2010, p. 187). Initially, it was assumed that since women were engaged in reproductive, nurturing, and life-sustaining activities, they were provided a greater awareness of the processes of nature and a keener insight into the cycles of life. It was this knowledge that would "point the way out of a male-constructed, male-dominated environmental catastrophe" (Sandilands, 1998, p. 237).

Consequently, ecofeminism asserts that there are differences in how men relate to women and the environment, and how women relate to themselves and the environment. This theory maintains that the representation of women in particular social roles and activities, or the way women are socialized, as 'natural creatures' has created an ability for them to see both sides – the cultural and the natural (Sandilands, 1998). 'Nature ecofeminists' perceive that there is an essential biological and psychological link between woman and nature. They believe women can be closer to nature because of their "positions as mothers, homemakers and carers," while men concentrate more on mastering nature (Stephens et al., 2010, p. 554). 'Cultural ecofeminists', on the other hand, aim to de-emphasize the connection between women and nature, which they consider a degrading concept imposed on them by a "socially constructed patriarchal order" (Stephens et al., 2010, p. 554). They believe that women will be subordinate to men, so long as nature is subordinate to culture, and that any attempt to save the Earth will be compromised until

the relationship between men and women becomes more equal (Stephens et al., 2010).

As a result of these different expectations for men and women, behaviors prescribed to each gender could differ in an environmental context. The divergent paths males and females take in their occupational and domestic roles may be related to gender differences in environmental concern. For example, female presence in environmental politics is more pronounced than in other genre of politics, suggesting that there might be factors within the experience of young girls that are pertinent to their apparent greater concern about the environment in adult life (Hampel et al., 1996). Hampel et al. (1996) found that the gender differences in environmental behaviors can appear as early as adolescence. Although boys typically score higher than girls on tests of environmental knowledge (Eagly, 1978; Hampel et al., 1996, Tikka et al., 2000), some evidence shows that boys are likely to be less concerned about the environment, because they are more apt to define themselves in terms of being future paid workers than are girls (Dwyer, 1991).

Associations of the natural environment with women and femininity are abundant. Bloodhart and Swim (2010) note the personification of *Mother* Nature. Socialization and the media may perpetuate female roles with harmony over the environment, and male roles over mastery of the environment. Previous research (see Hampel et al., 1996 for a complete review of this literature) has found a stronger correlation between 'appreciative' outdoor activities (e.g., hiking, gardening, and photography) and environmental concern, than with 'consumptive' activities (e.g., hunting and fishing). Hampel et al. (1996) found that secondary (high) school boys participate significantly more often in consumptive behaviors than do secondary school girls, regardless of their level of environmental concern. This may be a reflection of the influence of media, where activities such as fishing are almost exclusively portrayed as a masculine hobby

(Hampel et al., 1996). Sahin, Ertepinar, and Teksoz (2012) found that gender had a significant direct effect on individuals' outdoor activities. Males in the study spent more time outside (e.g. walking, camping), but female students reportedly took more pro-ecological actions as a result of their favorable attitudes and values towards the environment.

Zelezny et al. (2000), offer an alternative explanation for this link between women and nature, as the tendency of female socialization to be oriented toward others, or toward taking responsibility for ameliorating social problems. There has been consistent research that women, being members of a low status group, are aware of and have more empathy for others in lower status groups (see Zelezny et al., 2000 for a review of this literature). In high stress situations, women are more inclined to reach out to others and depend on social groups and fostering bonds with living things more so than do men, consistent of tend and befriend theory (Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000). Findings by Sevillano, Aragonés, and Schultz (2007) showed that having a high degree of empathy induces perspective taking and increased concern towards a perceived individual. They discovered that perspective taking did not only increase the concern for an organism and the entire group to which the organism belonged; rather, taking perspective also led to a general increase in concern for the welfare of all living organisms. For example, taking the perspective of a bear will not only lead to an increase in concern for the welfare of that specific bear, or all bears, but in other life forms, as well. Organisms included in Sevillano et al.'s (2007) biocentric scale included plants, animals, marine life, and birds.

Bloodhart and Swim (2010) discussed that the basis upon which ecofeminist principles were adopted was not gender, but the relations among attitudes and behaviors which could be endorsed by either sex. For example, those who subscribed to a sexist ideology would be more likely to support the exploitation of nature – regardless of their sex. Wang (1999) found that

those who support more traditional attitudes towards women and gender roles were less likely to endorse pro-environmental relationship between humans and nature. Similarly, Smith (2001) discovered that the rejection of traditional gender roles mediated the positive relationship between women and pro-environmental beliefs. This suggests that there is nothing innate about women making them more attuned to the environment; rather, that women are more likely to be connected to nature than men because of their predilection towards feminist ideals that reject domination and exploitation (see Bloodhart & Swim 2010 for a review of this literature). Therefore, women are not “naturally more natural” than men, but instead, byproducts of a society that expects them to fulfill a role that is nurturing and submissive to hegemonic principle (Bloodhart & Swim, 2010, p. 188).

To ascertain the degree that social role theory and ecofeminist values play a role in pro-ecological attitudes and behaviors, this study hypothesizes that:

*Hypothesis 1.1.* Women will have more positive attitudes toward the environment compared to men.

*Hypothesis 1.2.* Women will engage in more environmental conservation behavior, as outlined in the ERB, compared to men.

*Hypothesis 1.3.* What is important to males and females in conserving resources will differ; females will care more about societal and environmental benefits.

#### *Social Norms and Environmental Conservation*

This study also examined the effect that normative social influence has on pro-environmental attitudes and behavior, since much of human behavior occurs as a result of perceived expectations about how individuals should behave (Deutsch & Gerard, 1955). Being accepted by a group is the basis of conformity according to normative social influence. Asch

(1973) first studied the influence of others' behaviors on personal actions, and found that a group's rules, or social norms, are a strong predictor of individual behavior. Social norms are unwritten rules dictating appropriate or normal behavior.

The social norm approach has gained ground in the past three decades in environmental branding and marketing strategy health campaigns (Schultz et al., 2007). Research has shown that the expectations and knowledge people have of others' behavior has some influence in how they themselves behave. People incorrectly perceive others' behaviors when it comes to judging how much others engage in positive behavior (e.g., energy conservation) in that they tend to underestimate the amount to which others engage in desirable behaviors, as compared to themselves (see Schultz et al., 2007 for a review of this literature). According to the social norm approach, individual behavior can be changed upon one seeing just how mistaken he or she is in their judgment. Since individuals base their own behavior on their perception of peer norms, their behavior will change to meet the mean.

Schultz et al. (2007) specifically studied how introducing normative information would change environmental behaviors of participating households. All households received feedback about how much energy they consumed and descriptive information about the average energy consumption of other households in their neighborhood. During the observation period, households were divided into two categories: whether a household was above the baseline measure or whether it was below it. Half of the participating households were randomly assigned to receive solely the descriptive information – how much their neighbors had consumed on average. The latter half received the normative information and an injunctive message – a smiley face if they consumed less energy, and a frown face if they had consumed more. A descriptive norm relays what is typical, what people normally do, and an injunctive norm relays

what one *should* do – what society consider to be right or wrong. Households that consumed less than the baseline in both groups adjusted their behavior to meet the baseline, therefore consuming more than previously, supportive of descriptive norm governing behavior. This aversion to deviating from the norm is supported by other studies, showing that those who do deviate, whether they are below or over the average, will adjust their behavior in order to meet the norm (Schultz et al., 2007; Berkowitz, 2004). However, there was a boomerang effect in the first group, where those who consumed more on average actually consumed even higher amounts of energy after receiving the normative information. Shultz et al. (2007) found that the injunctive norm acted as a buffer to those who were already high consumers. Once the injunctive component was added, consumption levels decreased. Using both descriptive and injunctive norms in tandem did more to change behavior than just one by itself. Goldstein, Cialdini, and Griskevicius (2008) found similar results in a hotel setting, where normative messages increased towel reuse by over 28 percent.

Regarding normative social influence, for example, Nolan et al. (2008) found that participants reported conservation practices of their neighbors as being least likely to motivate their own conservation. Conversely, conservation practices of others (i.e., social norms) highly predicted individual conservation. We were interested in University of Connecticut students' perceptions of the pro-environmental habits of others, friends, and family. Participants were asked how often they thought other students, their friends, and their family members recycle, conserve energy, and conserve water, as well as how often they themselves perform each behavior. Participants were also asked how often they perform each behavior on campus and at home. This study tested whether other students, friends, or family influence participants the most, and in which context.

We were also interested in exploring potential gender differences indicative of differences in social norms between genders. Gender norms can explain the expectations individuals place upon themselves and others. Eagly (1983) discussed the implication of gender in social norm theory, as many of the expectations that people convey about behavior are derived from social roles, and that traditional and hierarchical gender norms influence expectations of others' behavior. Consequently, "the impact of gender should focus primarily on normative social influence that arises in role-regulated contexts" (p. 971).

Based on the social norms literature, this study further hypothesized that:

*Hypothesis 2.1.* Both men and women will be more likely to engage in recycling, water conserving, and energy conserving behaviors if they think others, their friends, and their family are engaging in energy conserving behavior.

*Hypothesis 2.2.* Other students' behaviors will be most influential because they will be more indicative of the norm.

*Hypothesis 2.3.* Females will recycle, conserve water, and conserve energy more than men.

*Hypothesis 2.4.* There will be a difference in the amount men and women engage in recycling, water conserving, and energy conserving behaviors at home and on campus.

The goal of this study was to add to current literature and determine the extent to which there are gender differences or similarities regarding conservation attitudes and self-reported behaviors. This study aimed to ascertain whether there was a gender difference regarding pro-ecological attitudes and behaviors, as social role theory and ecofeminism theorize. Furthermore, this study examined the role of social norms in governing behavior of undergraduate college students both at home and on campus.

Method

### *Participants*

Participants were University of Connecticut undergraduates (124 male, 189 female) with a mean age of 18.8 years ( $SD = 1.00$ ). A plurality of students identified as White/Caucasian (69%). When asked about political views, 41.2% were moderate and 40.6% identified as liberal. A plurality of the participants practiced Roman Catholicism (46.3). About a third of students reported that their mothers (39.9%) and fathers (30.3%) earned at least a college degree. A plurality of students' families' annual income (23.6%) was over \$150,000. A majority of students (88.8%) indicated that they lived on campus (see Table 1). Participants were students enrolled in introductory psychology courses at the University of Connecticut and participated in exchange for course credit. All participants were treated in accordance with APA ethical standards.

### *Measures*

*Revised New Ecological Paradigm Scale.* The revised New Ecological Paradigm (NEP; Dunlap et al., 2000) scale consists of 15 items measuring agreement with a variety of statements regarding the relationship between humans and the environment (e.g., "We are approaching the limit of the number of people that the earth can support."). Responses ranged from *strongly agree* to *strongly disagree* on a 5-point scale. The seven even items were reverse scored; agreement with odd numbers indicate pro-ecological attitude, whereas disagreement with even numbers indicate a pro-ecological attitude. This study also measured gender differences among Dunlap et al.'s (2000) five subscales: reality of limits of growth, antianthropocentrism, fragility of nature's balance, rejection of exemptionalism, and possibility of ecocrisis. The NEP has repeatedly demonstrated high internal consistency,  $\alpha = .82$  (Rideout et al., 2005, systematic sample),  $\alpha = .83$  (Dunlap et al., 2000; Rideout et al., 2005, email sample), and  $\alpha = .89$  (Mobley et

al., 2009). Cronbach's alpha for the NEP in this study was adequate,  $\alpha = .78$ , however, the alphas for the separate scales were weak. The rejection of exemptionalism, reality of limits of growth, and fragility of nature's balance alphas were low, at  $\alpha = .31$ ,  $\alpha = .09$ , and  $\alpha = .45$ , respectively. Antianthropocentrism and possibility of an ecocrisis were higher at  $\alpha = .53$  and  $\alpha = .69$ , respectively. The NEP scale is reproduced in Appendix A.

*Environmentally Responsible Behavior Composite Scale.* The Environmentally Responsible Behavior (ERB; Mobley et al., 2009) composite scale consists of 17 items measuring the frequency of 17 environmentally responsible behaviors over the past 12 months. Responses ranged from *always* to *never* along a 5-point scale. Cronbach's alpha for the 17 items on the ERB composite scale was .87 in Mobley et al.'s study. Cronbach's alpha for the ERB composite scale in this study was strong,  $\alpha = .86$ , indicating high internal consistency. In addition to reporting frequencies for the behaviors on the ERB, we asked our participants to report on five additional behaviors (e.g., using paved sidewalks on campus instead of walking through grassy areas). The ERB scale is reproduced in Appendix B.

*Environmental Behaviors and Perceptions Questionnaire.* The environmental behaviors and perceptions questionnaire consisted of 19 questions; 15 were created for the purpose of this study and 4 were included in previous research. These questions asked about how often participants engaged in environmentally conservative behaviors (recycling, conserving water, and conserving energy) on campus and at home, and how often they thought other students, their friends, and their family members engage in the same behaviors. Responses were made on a 5-point scale ranging from 0 (*never*) to 4 (*almost always*). Participants also answered four questions used in Nolan et al.'s (2008) study (e.g., "In deciding to conserve resources, how important is it to you that a lot of other people are trying to conserve?"). Responses ranged along

a 5-point scale from 0 (*not at all important*) to 4 (*extremely important*). This scale is reproduced in Appendix C.

*Demographics Questionnaire.* The last part of the survey consisted of a demographic questionnaire. We asked participants to report their gender, age, ethnicity, religion, political ideology, undergraduate major, residency status (e.g., live on campus or commute), highest level of schooling completed by their parents, their families' estimated annual household income, and the name of the town and state from which they graduated high school.

#### *Procedure*

Participants signed up for this study via an online participant pool and received a link to anonymously complete the survey online within 24 hours. The survey was administered using the survey software, Qualtrics (Qualtrics Research Suite, 2005). Participants were not forced to answer any particular question before moving on to the next question and were allowed to withdraw from participation at any time without penalty. Survey materials were kept on a password-protected computer in accordance to data protection standards. Qualtrics has SAS 70 Certification and meets rigorous privacy standards to protect data collected over the Internet. Qualtrics accounts were password protected and data were protected with real-time data replication. Participant names were given code numbers, so as not to identify survey responses with participants in any way.

After providing informed consent online, participants completed the survey in three major parts. The first and second parts consisted of environmental questionnaires (three separate scales presented in a random order; questions within each scale were randomized). The order of these two parts was counterbalanced. The third part consisted of demographic questions. After completion of the study, participants were thanked, rewarded with research credit for

introductory level psychology classes, and given contact information for any questions they may have had regarding the study.

The data were analyzed with SPSS Statistical Software (IBM Corp., 2012). Hypotheses were tested using *t*-tests and Pearson correlations.

## Results

Using one-tailed *t*-test analyses, results showed that women ( $M = 52.67$ ,  $SD = 6.73$ ) reported significantly higher NEP concern than did men ( $M = 49.75$ ,  $SD = 8.52$ ),  $t(291) = -3.26$ ,  $p < .05$ , supporting hypothesis 1.1 and previous research. Women also scored significantly higher on pro-ecological (odd) questions as a whole, but there were non-significant gender differences on anti-ecological (even) questions as a whole (see Table 2). Gender differences on the five different NEP subscales that Dunlap et al. (2000) identified were specifically examined as well. Although women scored higher on all five subscales, there were only significant gender differences on the antianthropocentrism subscale,  $t(308) = -3.33$ ,  $p < .05$ , and the possibility of ecocrisis,  $t(308) = -1.53$ ,  $p < .05$ , subscale (see Table 3 and Figure 1). The possibility of ecocrisis subscale was rated the highest for both genders.

There were significant gender differences on only three topics in the ERB (see Table 4). This study was specifically interested in whether women would be more likely to buy organic, reused, and locally grown products because these items were consistent with ecofeminist views. A two-tailed *t*-test was conducted to see whether there would be gender differences on ERB questions. Three items revealed significant gender differences; women cited buying organic fruits and vegetables that are grown without pesticides or chemicals more than men,  $t(311) = -2.10$ ,  $p < .05$ , reusing plastic bags and containers,  $t(309) = -3.97$ ,  $p < .01$ , and using less water,  $t(311) = -2.29$ ,  $p < .05$ . It was expected that men would be more likely to consider the monetary

and economic impacts pro-environmental behavior would have, as well as looking at business practices, on questions 16 and 17, but there were no gender differences.

Participants' responses to how important certain elements of conservation were to them were also analyzed with a two-tailed *t*-test (see Table 5). Surprisingly, women reported the importance of conservation saving money more so than did men,  $t(311) = -1.74, p < .05$ , although the mean for this question was lowest for both men and women among the four items, suggesting it was not common or important among either sex. Women also scored significantly higher in the degree to which they conserved resources to protect the environment,  $t(310) = -2.47, p < .01$ , and because they thought it benefitted society  $t(311) = -.80, p < .05$ .

There were differences in the amount of recycling and water and energy conserving behaviors at home and on campus. According to paired samples *t*-tests, both men and women reported conserving more water and energy at home compared to on campus. Females recycled about the same amount both at home and on campus, and men recycled more at home. Women recycled significantly more than men on campus  $t(310) = -3.85, p < .01$ , as well as conserved more water at home  $t(310) = -.69, p < .05$ .

Both men and women were more likely to engage in energy conserving behavior when they thought others, friends, and family engaged in energy conserving behavior, supporting hypothesis 2.1 (see Table 6). Students perceived that they recycled and conserved more than other students and friends both at home and on campus. They, however, perceived their recycling and conservation habits on campus to be lesser than their family's, but their own were perceived to be nearly the same as their family's at home. Family was the most influential correlate when it came to pro-environmental behaviors both at home and on campus, so my hypothesis that other students' behaviors would be most influential was not supported. Other students' and friends'

behaviors were, however, also quite significantly related to individual behaviors. Recycling scored the highest among the three pro-environmental behaviors in terms of frequency.

All these topics were correlated against each other using Pearson correlations to determine the effect attitude had on behavior. The NEP was positively correlated to the ERB, recycling on campus, conserving water on campus, conserving energy on campus, and conserving water and energy at home (see Table 7). The NEP was also positively correlated to the importance of conservation protecting the environment and benefitting society.

## Discussion

Our hypothesis that women would have more positive attitudes toward the environment was supported: women endorsed the NEP more than men did. Although there were significant gender differences among the odd, pro-ecological, questions, there was only one significant gender difference among the even numbers, in favor of women, suggesting that anti-ecological viewpoints are viewed similarly among men and women. However, a possible reconfiguring of the subscales needs to be done, as the weak alphas indicate that the items for each subscale may not be consistent with each other. This could also be due to the fact that alpha values tend to increase with scale length, and each subscale consisted of only three items. Women significantly outscored men on the antianthropocentrism and possibility of ecocrisis subscales, which were coincidentally the subscales with the highest alphas. This finding is consistent with the ecofeminist notion that women consider nature to have more of an intrinsic value than an instrumental one. The results are generalizable because they support previous research showing that females show more concern over the environment. Cronbach's alpha for the NEP was similar to Dunlap et al.'s (2000) alpha, suggesting scale consistency between the two studies.

Women reported more water conservation and plastic bag and container reuse on the ERB, which was consistent with gender differences found on recycling and water and energy conservation habits on and off campus. Although the majority of the ERB did not show any significant gender differences, some of the questions may have been more appropriate to ask older individuals. Mobley et al. (2009) did not measure gender differences, and more research needs to be done to ascertain whether there might be a significant gender difference amongst adults.

It was also found that men and women were more likely to recycle and conserve water and energy when they thought others, their friends, and their family were engaging in those behaviors, supporting hypothesis 2.1. However, my hypothesis that other students would be most potent in influencing behavior on campus, due to Nolan et al.'s (2008) findings that others' practices influenced participants more than those in their immediate surroundings (e.g. neighbors), was not supported. Although all three referents correlated significantly with individual behavior in both contexts, family was the biggest correlate of both at home and on campus pro-environmental behaviors. Significant gender differences were found in recycling on campus and water conserving behaviors at home. Both men and women reported recycling more than conserving energy and water, but women recycled more than men, both at home and on campus. There was a contextual difference in pro-environmental behaviors; both men and women reported that they were more likely to engage in the listed pro-ecological activities at home. It was hypothesized that given the normative influence of other students' behavior, that other students would be most influential on campus; however, family behaviors had the highest correlation with participants' pro-ecological practices both at home and on campus. These findings might be due to differing norms at home and at school. The perceptions participants had

of other students and friends' behaviors were similar, but parents were significantly higher. Although individuals reported they performed these behaviors more than other students and friends on campus, their means rose to meet those of their perceptions of their family when they were at home.

It was found that there was a positive relationship between pro-environmental attitudes and behavior. Pro-environmental attitudes were significantly correlated to the ERB, as well as to certain recycling and water and energy conservation behaviors. They were also significantly correlated towards the importance individuals thought conservation had in benefitting society and protecting the environment. This suggests that pro-environmental attitudes are grounded in benevolent attitudes towards the environment, consistent with the aforementioned ecofeminist belief that the environment has intrinsic value.

It is still important to study college students, as the habits they forge now will carry on later in life. Research has shown that NEP endorsement is negatively related to age, so that older individuals, as a whole, are more likely to subscribe to NEP values (Casey & Scott, 2006; Dunlap et al., 2000). There has been limited research in this regard, so it might then be valuable to conduct a longitudinal study to see if and how college students' pro-ecological attitudes change over time, and relate it to increased pro-ecological behavioral intentions and behavior.

#### *Limitations*

This study was limited in that participants were United States college students, mainly from New England, and therefore a homogenous group. The questions relied on self-report, so it is possible that some students may have inflated the amount they actually perform a behavior or care about an issue, due to social desirability bias. Since the study was online, some students may have rushed through in an effort to finish more quickly. Along the same vein, some students

may have been fatigued by the time they reached this study's questions, as another study's survey was given with conjunction with this one.

Another limitation is that this study only measured self-reported behavior and did not include behavioral intent. In addition to measuring behavior in a more controlled setting, future research should also measure behavioral intent. According to Ajzen and Fishbein's theory of planned behavior (1980), behavioral intent is a much greater predictor of behavior than are attitudes. This theory also factors in subjective norms – the perceived social pressure of engaging (or not) in a certain behavior – and perceived behavioral control. Since this study looked at different factors and did not ask about behavioral intent, it cannot be assumed that any pro-ecological behaviors were a direct result of greater NEP and pro-ecological endorsement. Students might have wanted to perform certain behaviors, but did not have the self-efficacy to do so, affecting their responses. For example, a student might have the intent or desire to buy organic food, but is unable to because they have a meal plan on campus. Hines, Hungerford, and Tomera (1987) developed a Model of Responsible Environmental Behavior based on the theory of planned behavior. Their meta-analysis concluded that individuals with favorable environmental attitudes had a higher tendency to engage in pro-environmental behavior, however, the relationship between these constructs was found to be weak.

Another limitation was that some items on the ERB might not have been applicable to college students. Participants were primarily first and second year students, the majority of who do not own houses or apartments, buy their own groceries, invest in stocks, or are concerned with business practices in making purchasing decisions. These questions might have been irrelevant to them, accounting for the low scores. It is also possible that social norms pertaining

to pro-environmental attitudes and behaviors at the University of Connecticut differ; there might be variance of ethic of environmental care amongst different colleges and different regions.

Lastly, it may have been unclear in the questions whether “home” referred to that of their parents, or their own if they live off campus. If any students lived off campus without the influence of family, including a question about roommates’ perceived pro-environmental behavior might have been apposite.

#### *Future Implications*

This study contributes to the growing field of research focusing on pro-ecological attitudes and behavior and the relationship between humans and the environment. It also examined social norms, by dividing influencers among other students, friends, and family.

In the future, it might be cogent to publicize other ways of helping the environment. Recycling is the most performed pro-environmental activity on campus likely due to the abundant number of recycling bins and signs on campus. There is not nearly as much advocacy for water and energy conservation, on the other hand. Since other students’ actions significantly affect individual behaviors, it might be that students are primarily engaging in behavior that is salient – that which they see others doing most. A greater number of recycling notices could give the impression that society deems it more important. Moreover, it is easy to an individual throw a water bottle in a recycling bin, but it is not nearly as simple to ascertain how often someone else conserves water or energy, unless they inhabit the same living space. Resources and facilities are available looking for self-efficacy, such as the EcoHusky website (UConn Office of Environmental Policy, 2012), but individuals will not know about them or think about finding them, unless they are informed.

Schultz et al.'s (2007) study can be replicated on campus, by informing students how much water and energy are spent at different times in different residence halls. The University of Connecticut's Office of Environmental Policy advocates a month long competition called "EcoMadness" to encourage water and energy conservation among students. Participating residence halls are pitted against each other to see how much water and energy each hall can conserve. In the end, halls are ranked by percent reduction and per capita usage (UConn Office of Environmental Policy, 2012). Future research at this campus can take the statistics from the competition and use them to replicate previous findings by Schultz et al. (2007) by examining how descriptive norms (the per capita usage) and injunctive norms (whether the individual is doing well or poorly by comparison) impact water and energy conservation on campus. This could also be implemented with residents of an apartment building or neighborhood.

It would be wise for future research to expand research to a global context, since sustainability and ecological livelihood is a global issue. Dunlap et al. (2000) discussed how it might be more appropriate to treat the NEP as a multidimensional model, as "differing populations will no doubt vary in the degree to which the NEP beliefs are organized into a highly consistent belief system" (p. 436). A possibility for the gender differences in pro-environmental attitudes in this study could be attributed to endorsement of certain gender roles and norms in the United States. As discussed in the introduction, social role theory states that women are socialized to take up caregiving roles, and men, providing roles. Due to cultural differences, there might be socialization differences in other regions and countries, so that gender roles aren't quite so disparate. Bloodhart and Swim (2010) found that countries that endorse hegemonic values have a "tendency to dominate women and the environment" (p. 191). Conversely, female

empowerment and rejection of hegemonic values were found to be indications of environmental protection and vitality (Bloodhart & Swim, 2010).

There has been some research showing that gender does not show a consistent relationship with NEP endorsement when factoring in country. Vikan, Camino, Biaggio, and Nordvick (2007) studied samples from Norway and Brazil, and found that Brazilians as a whole scored higher on the NEP than did Norwegians. Although women tended to score higher than men, there was only a significant gender difference in the Norwegian sample. Hofstede's (see Hofstede, Neuijen, Ohayy, & Sanders, 1990 for a complete review of this literature) cultural dimensions describe that countries may differ on where they fall on the Individualism – Collectivism spectrum. These differences might affect ecocentric attitudes and behaviors between men and women. It was noted that there was a difference in cultural interpretations in the Latino's and Anglo's "basic relationship to the environment" (see Vikan et al., 2007 for a review of this literature). Human interdependence with nature is more salient in Latin culture, which could account for the bridged gender gap in the Brazilian sample. Brazilians and Norwegians show, respectively, collectivist and individualistic characteristics. Similarly, DeChano (2008) found NEP differences across cultures, although they didn't measure gender differences.

The degree to which relationships are emphasized in a culture might be a confounding variable when examining gender differences. Individuals in individualistic societies focus on how the individual can benefit, whereas those in collectivistic cultures prioritize the group over the self. The latter focuses on relationships and cooperation with others in order to achieve a common goal - sometimes to the expense of the self. Countries also differ along the Masculinity – Femininity spectrum, so that individuals who live in more masculine countries tap into

traditional role expectations (see Bloodhart & Swim, 2010 for a review of this literature), and those in feminine ones emphasize quality of life. This spectrum affects environmentalism more on an individual level, in terms of subscribing to particular gender norms, such as “men’s differential self-interest over the interests of caring for others” (Bloodhart & Swim, 2010, p. 189).

The United States falls in the middle of this spectrum, since certain states are more likely than others to favor hegemonic values regarding “utilization of natural resources” (Bloodhart & Swim, 2010, p. 192). In the future, it might be meaningful to measure regional- and state-level differences in attitudes, and correlating them with state environmental rankings (e.g. see Wingfield & Marcus, 2007). Political views might play a hand in this regional discrepancy, as research has found a liberal inclination to be a strong indicator of high support for the NEP (Dunlap et al., 2000; Hampel et al., 1996; Mobley et al., 2009; Smith, 2001), and certain regions are more liberal or conservative than others. Therefore, it would be beneficial to consider that some of the variation due to gender differences might be a result from cultural differences in gender and social norms. Taking a more holistic approach to ecofeminism and social norms would encourage the examination of other influences that might play a part in pro-environmental attitudes and behaviors.

Future research should also focus further on the effect the media has on disparities in pro-environmental attitudes and behaviors between genders. Previous research has found that media exposure had a significant direct effect on participants’ outdoor activities, attitudes toward sustainability, and behaviors pertaining to sustainability (Sahin et al., 2012). Although there was no statistically significant direct effect of media on participants’ environmental values, the results indicated an indirect effect of media on values, which was mediated by participants’

participation in outdoor activities. If media can influence how men and women relate to the environment, either through advocating certain kinds of behaviors and activities, and reinforcing social norms, then it would be beneficial as a society to test this and try to mitigate these effects.

As mentioned in the Introduction, the majority of hiking, fishing, and camping activities are male-dominated, whereas roles taking up an environmental cause have been delegated to girls (Hampel et al., 1996; Bloodhart & Swim, 2010). Men in feminist and ecocentric roles are underrepresented in the media, and when women are portrayed in those in roles in pop culture, the entire group is misrepresented. Television tropes can form and perpetuate stereotypes, with feminists demeaned to “feminazis” and environmentalists to irrational “bleeding-hearts.” When feminism, and along the same vein, ecofeminism, is shown in the media, it is portrayed as extreme and often becomes a trope. A trope is a “common pattern in a story or a recognizable attribute in a character that conveys information to the audience”; when overused, it can become a cliché (feministfrequency, 2011). The “straw feminist” for example, is a distorted and warped version of feminism that reflects poorly on actual feminism (feministfrequency, 2011). For example, the series *Veronica Mars* featured straw feminists as villains in one season. The character Poison Ivy in *Batman* is also an excellent example of not only a stereotypical feminist, but also a dangerous and deranged tree-hugger. She is first shown willing to kill in order to preserve a near extinct plant. Later on, her agenda develops to fighting against perceived male oppression in addition to eco-terrorism. Not only has her pro-ecological stance been paired with a feminist worldview, but it has also been depicted as a *bad* thing. She is an antagonist and cannot be controlled.

When females aren't being portrayed negatively though feminism in an environmental context, they are instead designated to fill extra, traditional gender roles. “The Empath” trope

plays along with the gender-biased notion that women are “more in tune” with their emotions than men are (TV Tropes LLC, 2013a). One needs only look as far as Disney princesses and their animal friends to see the affinity women supposedly have with nature. In media, empathy is also a superpower usually passed on to the girl in a team of superheroes. These “Empaths” usually become a “Gaia’s Avenger” in the “Gaia’s Vengeance” scenario, where “Mother Nature” turns against humans, due to their ability to connect with others and their ability to “feel the planet’s pain.” This scenario is a metaphor for the destruction that environmental damage will do (TV Tropes LLC, 2013b). There is likely a feedback loop between media and socialization, norms, and activities, as both constructs seem to influence each other. Future research should continue to examine this link and recognize societal patterns and inform individuals, so society is more aware of this disparity and can work to mitigate the divisive effects of media and socialization.

Future research should further determine an individual’s feminist orientation and the degree to which relationships are important to them, to see whether this has an effect on how much they endorse pro-environmental views. Some questions that individuals can be asked are what shows they watch, qualities they associate with feminism, whether they consider themselves feminists, and what they think a feminist is, and cross-reference the results with feminist traits portrayed in media. A pertinent focus for future research would then be to discover how to encourage those who do not act pro-ecologically to be more pro-ecological, especially if they do not endorse feminist notions. Future studies should aim to try to examine the difference between social role theory and ecofeminism from norms in influencing differences in pro-environmental attitudes and behaviors. For example, buying organic and engaging in a “green” lifestyle may not be an indication so much of ecocentric behavior, as it is of adherence to social

norms. In subsequent research, it might be germane to measure how important it is for an individual to be seen as “green” versus them actually doing so to benefit the environment, and the specifics of why.

### *Conclusion*

This study replicated and reinforced previous findings as well as contributed to current literature on socialization, ecofeminism, and social norms, and their effects on pro-environmental attitudes and behaviors. It was found that there was a positive relationship between pro-environmental attitudes and pro-environmental behaviors, and that females endorsed pro-environmental attitudes more than men did. Individuals were also influenced by social norms; family, friends, and other students positively affected their behavior, with familial influence being most potent. Although there were limitations from self-report and the applicability of the questions asked, this study has been important for setting the grounds for future research. It is our belief that there needs to be more numerous and in-depth studies in the future to see if and how the gender gap is bridged, and whether pro-environmental intent and behavior increases. Acknowledging that there are gender differences and examining why will help society move forward so that a favorable view of protecting the environment for the sake of the environment is adopted by all.

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Table 1. Descriptive characteristics of participants.

	Overall	Males	Females
Total N	313	124	189
Mean age (SD)	18.80 (1.00)	19.05 (1.07)	18.68 (0.92)
Race/Ethnicity (%)			
White/Caucasian	69.0	71.8	67.2
Black/African American	7.7	5.6	9.0
Hispanic	4.5	4.8	4.2
Asian/Pacific Islander	13.7	12.9	14.3
Other	5.1	4.8	5.3
Political Views (%)			
Conservative	18.2	18.5	18.0
Moderate	41.2	45.2	38.6
Liberal	40.6	36.3	43.4
Religion (%)			
Protestant/Christian	12.5	10.5	13.8
Roman Catholic	46.3	50.8	43.4
Jewish	3.8	4.8	3.2
Muslim	1.9	0.8	2.6
None	17.6	20.2	15.9
Other	17.9	12.9	21.2
Mother's Education (%)			
Less than high school degree	3.8	5.6	2.7
Graduated high school/GED	10.5	14.5	7.9
Some college/technical school	24.3	21.8	25.9
College graduate	39.9	41.1	39.2
Some post-graduate school	4.2	4.0	4.2
Completed graduate school	17.3	12.9	20.1
Father's Education (%)			
Less than high school degree	4.2	8.0	1.6
Graduated high school/GED	16.8	19.4	15.1
Some college/technical school	19.7	16.1	22.0
College graduate	30.3	29.8	30.6
Some post-graduate school	3.2	2.4	3.8
Completed graduate school	25.8	24.5	26.9
Income (%)			
Less than \$25,000 per year	5.8	6.0	5.3
More than \$25,000 but less than \$50,000 per year	8.0	4.8	10.1
More than \$50,000 but less than \$75,000 per year	13.4	15.3	12.2
More than \$75,000 but less than \$100,000 per year	19.8	15.3	22.8
More than \$100,000 but less than \$125,000 per year	16.6	14.5	18.0
More than \$125,000 but less than \$150,000 per year	12.8	16.9	10.1
More than \$150,000 per year	23.6	26.6	21.7
Residency (%)			
On-campus	89.7	87.8	90.9
Off-campus	10.3	12.2	9.1

Table 2. NEP results.

NEP Questions	Overall M (SD)	Males M (SD)	Females M (SD)
Odd-numbered items			
We are approaching the limit of the number of people that the earth can support	3.51 (1.03)	3.50 (1.12)	3.51 (0.96)*
When humans interfere with nature it often produces disastrous consequences	3.58 (0.93)	3.45 (1.06)	3.66 (0.81)**
Humans are severely abusing the environment	3.94 (0.89)	3.83 (0.98)	4.01 (0.83)*
Plants and animals have as much right as humans to exist	3.99 (1.16)	3.73 (1.27)	4.16 (1.05)**
Despite our special abilities, humans are still subject to the laws of nature	4.07 (0.88)	4.00 (1.00)	4.12 (0.78)*
The earth is like a spaceship with very limited room and resources	3.54 (1.08)	3.41 (1.11)	3.63 (1.05)
The balance of nature is very delicate and easily upset	3.59 (0.99)	3.48 (1.07)	3.66 (0.92)**
If things continue on their present course, we will soon experience a major ecological catastrophe	3.74 (0.91)	3.64 (1.03)	3.80 (0.82)**
Even-numbered items			
Humans have the right to modify the natural environment to suit their needs	3.03 (1.10)	2.96 (1.13)	3.07 (1.09)
Human ingenuity will ensure that we do not make the earth unlivable	2.89 (0.91)	2.83 (0.99)	2.94 (0.85)*
The earth has plenty of natural resources if we just learn how to develop them	2.46 (1.05)	2.43 (1.06)	2.48 (1.05)
The balance of nature is strong enough to cope with the impacts of modern industrial nations	3.31 (1.04)	3.23 (1.07)	3.36 (1.01)
The so-called "ecological crisis" facing humankind has been greatly exaggerated	3.43 (1.05)	3.38 (1.10)	3.47 (1.02)
Humans were meant to rule over the rest of nature	3.25 (1.23)	3.01 (1.29)	3.40 (1.16)
Humans will eventually learn enough about how nature works to be able to control it	3.13 (1.08)	3.05 (1.13)	3.19 (1.06)

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , one-tailed  $t$ -tests for the comparison of the genders. Even-numbered questions were reverse scored for pro-ecological measures.

Table 3. NEP Subscales.

Subscale	Overall M (SD)	Males M (SD)	Females M (SD)
Reality of limits of growth	9.51 (2.13)	9.331 (2.29)	9.628 (2.01)
Antianthropocentrism	10.25 (2.51)	9.672 (2.76)	10.628 (2.26)*
Fragility of nature's balance	10.46 (2.03)	10.138 (2.16)	10.681 (1.92)
Rejection of exemptionalism	10.11 (1.86)	9.910 (2.00)	10.243 (1.76)
Possibility of ecocrisis	11.12 (2.25)	10.877 (2.58)	11.277 (2.00)*

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , one-tailed  $t$ -tests for the comparison of the genders.

Table 4. ERB results.

How often have you participated in the following activities in the past 12 months?	Overall M (SD)	Males M (SD)	Females M (SD)
Cut back on driving	2.67 (1.18)	2.65 (1.18)	2.69 (1.18)
Sorted glass, cans, plastic, or papers for recycling	3.60 (1.17)	3.54 (1.10)	3.65 (1.22)
Cut back on heat or air conditioning systems	2.94 (1.13)	2.83 (1.12)	2.03 (1.13)
Bought products made from recycled materials	2.97 (0.94)	2.86 (0.98)	3.04 (0.91)
Bought organic fruits and vegetables, which are grown without pesticides or chemicals	2.82 (1.18)	2.65 (1.16)	2.93 (1.19)*
Refused to eat meat for moral or environmental reasons	1.71 (1.10)	1.64 (1.015)	1.76 (1.15)
Composted food, grass clippings, or other materials for fertilizer	2.11 (1.32)	2.20 (1.31)	2.04 (1.33)
Reused plastic bags or containers	3.65 (1.12)	3.34 (1.09)	3.85 (1.10)**
Bought a product because it had less packaging than others	2.27 (1.13)	2.26 (1.11)	2.28 (1.14)
Used public transportation more than you usually do	2.63 (1.23)	2.55 (1.21)	2.68 (1.25)
Purchased locally made products	2.93 (1.03)	2.83 (1.06)	2.99 (1.00)
Used environmentally safe products (e.g. detergents, paper)	3.01 (0.97)	2.99 (1.02)	3.02 (0.95)
Used solar or wind energy	1.79 (0.99)	1.81 (1.00)	1.78 (0.98)
Tried to use less water in your household	3.07 (1.00)	2.91 (0.95)	3.17 (1.03)*
Reduced your household's energy use by turning off lights, electrical appliances, etc.	3.49 (1.07)	3.35 (1.04)	3.58 (1.08)
Complained to a business about its products/policies for environmental reasons	1.53 (0.94)	1.63 (0.96)	1.47 (0.92)
Bought or sold stocks based on the environmental record of companies	1.54 (0.93)	1.59 (0.97)	1.51 (0.91)
Thrown trash out of your window while driving	1.79 (1.01)	1.92 (1.03)	1.71 (0.99)
Bought a product because it used naturally-derived ingredients	2.51 (1.17)	2.37 (1.13)	2.59 (1.18)
Used paved sidewalks on campus instead of walking through grassy areas	3.40 (1.03)	3.38 (0.98)	3.42 (1.07)
Encouraged your friends to engage in environmentally responsible behavior	2.58 (1.15)	2.49 (1.09)	2.64 (1.18)
Encouraged your family members to engage in environmentally responsible behavior	2.72 (1.19)	2.58 (1.17)	2.81 (1.20)

Note. \*  $p < .05$ , \*\*  $p < .01$ , two-tailed  $t$ -tests for the comparison of the genders.

Table 5. Nolan et al.'s (2008) four measures of importance in conserving resources.

In deciding to conserve resources, how important is it to you that:	Overall M (SD)	Males M (SD)	Females M (SD)
A lot of other people are trying to conserve?	3.53 (1.00)	3.48 (1.01)	3.57 (1.00)
It benefits society?	3.95 (0.82)	3.90 (0.89)	3.98 (0.78)*
It protects the environment?	4.04 (0.91)	3.90 (0.96)	4.13 (0.68)**
Conservation saves money?	3.96 (0.84)	3.86 (0.91)	4.03 (0.79)*

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , two-tailed  $t$ -tests for the comparison of the genders.

Table 6. Participant pro-ecological behavior at home and on campus.

How often do you...	Overall M (SD)	Males M (SD)	Females M (SD)
Recycle on campus	3.86 (1.04)	3.59 (1.09)	4.04 (0.96)**
Conserve water on campus	3.03 (1.05)	2.90 (1.07)	3.11 (1.04)
Conserve energy on campus	3.02 (1.04)	3.01 (1.09)	3.03 (1.01)
Recycle at home	4.05 (1.05)	3.97 (1.08)	4.10 (1.03)
Conserve water at home	3.43 (0.98)	3.38 (0.90)	3.46 (1.02)*
Conserve energy at home	3.61 (0.97)	3.56 (1.01)	3.65 (0.94)

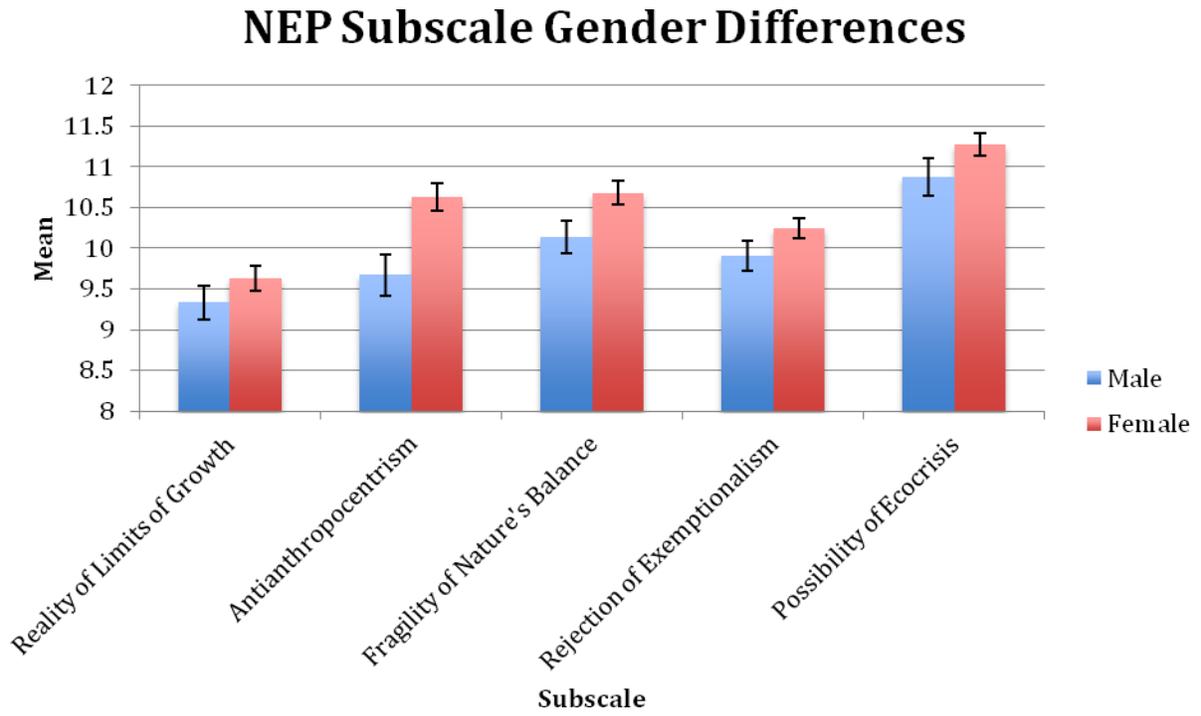
*Note.* \*  $p < .05$ , \*\*  $p < .01$ , two-tailed  $t$ -tests for the comparison of the genders.

Table 7. Attitude-Behavior Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1 Recycle, campus	1																						
2 Water, campus	.40**	1																					
3 Energy, campus	.32**	.65**	1																				
4 Recycle, home	.44**	.25**	.22**	1																			
5 Water, home	.20**	.49**	.44**	.32**	1																		
6 Energy, home	.28**	.41**	.49**	.46**	.66**	1																	
7 Recycle, others	.45**	.21**	.18**	.31**	.21**	.15**	1																
8 Water, others	.14*	.39**	.32**	.14*	.31**	.18**	.44**	1															
9 Energy, others	.16**	.41**	.41**	.13*	.27**	.20**	.42**	.65**	1														
10 Recycle, friends	.42**	.26**	.17**	.34**	.19**	.17**	.42**	.20**	.20**	1													
11 Water, friends	.23**	.51**	.38**	.15*	.37**	.26**	.27**	.45**	.45**	.43**	1												
12 Energy, friends	.23**	.48**	.37**	.14*	.33**	.30**	.27**	.34**	.37**	.49**	.69**	1											
13 Recycle, family	.42**	.20**	.18**	.75**	.26**	.37**	.27**	.08	.07	.37**	.12*	.08	1										
14 Water, family	.20**	.36**	.36**	.3**	.64**	.5**	.17**	.16**	.16**	.13*	.25**	.21**	.38**	1									
15 Energy, family	.18**	.29**	.27**	.29**	.44**	.52**	.14*	.10	.10	.14*	.20**	.24**	.36**	.64**	1								
16 Others conserve	.16**	.29**	.23**	.08	.26**	.13*	.08	.22**	.07	.15**	.23**	.23**	.13*	.17**	.20**	1							
17 Benefits society	.27**	.24**	.22**	.22**	.22**	.16**	.13*	.12*	.04	.21**	.16**	.21**	.27**	.19**	.26**	.51**	1						
18 Protects environment	.39**	.38**	.36**	.22**	.24**	.23**	.15**	.10	.11	.27**	.21**	.27**	.29**	.18**	.22**	.52**	.61**	1					
19 Saves money	.14*	.09	.06	.04	.06	.03	.00	-.04	-.06	.13*	-.00	.10	.08	.14*	.22**	.26**	.41**	.35**	1				
20 NEP	.27**	.21**	.15**	.10	.13*	.16**	.12*	.01	.06	.05	.11	.01	.15**	.16**	.15*	.09	.14*	.37**	.09	1			
21 ERB	.26**	.49**	.43**	.34**	.49**	.42**	.23**	.27**	.28**	.22**	.36**	.34**	.22**	.30**	.30**	.26**	.17**	.27**	.01	.14*	1		
22 Gender	.21**	.10	.01	.06	.04	.04	.19**	-.05	-.01	.12*	.05	.11	.03	-.00	-.01	.05	.05	.14*	.10	.19**	.09	1	

Note . \* p < .05, \*\* p < .01.

Figure 1. NEP Subscale Gender Differences.



## Appendix A

*Revised New Ecological Paradigm Scale*

For the following, 1 = strongly agree, 2 = mildly agree, 3 = unsure, 4 = mildly disagree, 5 = strongly disagree

1. We are approaching the limit of the number of people that the earth can support.
2. Humans have the right to modify the natural environment to suit their needs.
3. When humans interfere with nature it often produces disastrous consequences.
4. Human ingenuity will ensure that we do not make the earth unlivable.
5. Humans are severely abusing the environment.
6. The earth has plenty of natural resources if we just learn how to develop them.
7. Plants and animals have as much right as humans to exist.
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.
9. Despite our special abilities, humans are still subject to the laws of nature.
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.
11. The earth is like a spaceship with very limited room and resources.
12. Humans were meant to rule over the rest of nature.
13. The balance of nature is very delicate and easily upset.
14. Humans will eventually learn enough about how nature works to be able to control it.
15. If things continue on their present course, we will soon experience a major ecological catastrophe.

## Appendix B

*Environmentally Responsible Behavior Composite Scale*

For the following, 1 = always, 2 = often, 3 = sometimes, 4 = rarely, 5 = never

How often have you participated in the following activities in the past 12 months?

1. Cut back on driving
2. Sorted glass, cans, plastic, or papers for recycling
3. Cut back on heat or air conditioning systems
4. Bought products made from recycled materials
5. Bought organic fruits and vegetables, which are grown without pesticides or chemicals
6. Refused to eat meat for moral or environmental reasons
7. Composted food, grass clippings, or other materials for fertilizer
8. Reused plastic bags or containers
9. Bought a product because it had less packaging than others
10. Used public transportation more than you usually do
11. Purchased locally made products
12. Used environmentally safe products (e.g. detergents, paper)
13. Used solar or wind energy
14. Tried to use less water in your household
15. Reduced your household's energy use by turning off lights, electrical appliances, etc.
16. Complained to a business about its products/policies for environmental reasons
17. Bought or sold stocks based on the environmental record of companies

Items added for the current study:

1. Thrown trash out of your window while driving
2. Bought a product because it used naturally-derived ingredients
3. Used paved sidewalks on campus instead of walking through grassy areas
4. Encouraged your friends to engage in environmentally responsible behavior
5. Encouraged your family members to engage in environmentally responsible behavior

## Appendix C

*Environmental Behaviors and Perceptions Questionnaire*

For the following, 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = almost always

How often do you ...

1. recycle on campus
2. conserve water on campus
3. conserve energy on campus
4. recycle at home
5. conserve water at home
6. conserve energy at home

How often do you think other students at UConn ...

7. recycle
8. conserve water
9. conserve energy

How often do your friends...

10. recycle
11. conserve water
12. conserve energy

How often do your family members...

13. recycle
14. conserve water
15. conserve energy

For the following, 1 = not at all important, 5 = extremely important

16. In deciding to conserve resources, how important is it to you that conservation saves money?
17. In deciding to conserve resources, how important is it to you that it protects the environment?
18. In deciding to conserve resources, how important is it to you that it benefits society?
19. In deciding to conserve resources, how important is it to you that a lot of other people are trying to conserve?