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Gender Intersections and Environmental Concern*

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ABSTRACT

The work presented here provides an exploration into the complexities of gender when considered in conjunction with other socio-demographic variables. Our goal is to look at how gender moderates several socio-demographic characteristics (age, race, class, education, political orientation, residence, marital status, number of children, religious beliefs, and scientific knowledge) as these characteristics predict several measures of environmental concern. Previous researchers suggest that inconsistencies in findings regarding gender as a predictor of environmental concern are largely due to differences in question wording and the various types of environmental concern that can be measured. We do not disagree that the framing of environmental problems is extremely important; however, explanations involving question wording are overly simplified. Our exploration of moderating effects provides greater insight into the complexities of the relationship between gender and environmental concern. We find that lived experiences lie at the intersection of multiple socio-demographic identities. Thus, exploring differences between different types of women's and different types of men's environmental concern helps to further elucidate our understanding of the demographic correlates of environmental orientations.

Gender Intersections and Environmental Concern

The increase in human-made environmental problems has necessitated a growing effort to understand environmental concern¹ as a driving force behind individual, family, and community decisions about environmental policies and practices (Schahn and Holzer 1990). Why are some people willing to pay to protect the environment when others are not? Why do some people believe that economic growth harms the environment when others do not? Why are some people confident that science will solve our environmental problems when others are not? Understanding the degree to which different groups of people are concerned about the environment helps to provide answers to these questions. Although concern for the environment does not automatically translate into pro-environmental behavior, scholars assume that people are more likely to engage in environmentally-friendly behavior if they are concerned about environmental problems (Dietz, Fitzgerald, and Shwom 2005).

The foundational literature on gender and environmental concern (e.g., Davidson and Freudenburg 1996; Stern, Dietz, and Kalof 1993) demonstrates that women appear to be slightly and consistently more concerned about the environment than men. However, the strength of the difference varies across the literature with some researchers finding consistent differences between men's and women's environmental concern (Finucane, Slovic, Mertz, Flynn, and Satterfield 2000), other researchers reporting little or no differences between the environmental concern of men and women (Slimak and Dietz 2006), and still other researchers reporting mixed results (Hamilton 2008).

Many environmental concern scholars attribute some of these gender differences to differences in the wording of survey questions (Dunlap and Jones 2002; Klineberg, McKeever, and Rothenbach 1998). We agree that the framing of environmental issues affects results;

however, we also think that looking into the intersection between gender and other socio-demographic variables can help explain contradictory findings regarding gender differences in levels of environmental concern. For example, younger people tend to express greater concern for the environment than older people (Jones and Dunlap 1992; Van Liere and Dunlap 1980), but do older women have greater environmental concerns than younger men? The work presented here provides an exploration into the complexities of gender when considered in conjunction with other socio-demographic variables. The purpose of our research is to explore whether or not the relationship between socio-demographic characteristics and environmental concern is moderated by gender, and whether these moderating effects (if any) are consistent across different measures and samples. Specifically, we look at the effects of gender on a variety of measures of environmental concern from two data sources as it moderates ten common socio-demographic predictors. The exploration of moderating effects provides more insight into the complexities of the relationship between gender and environmental concern.

BACKGROUND

In 1980 Van Liere and Dunlap summarized a decade of research regarding the socio-demographic correlates of environmental concern and identified several key variables that predict these concerns: sex and gender, age, social class and education, political orientation, and residential type. Jones and Dunlap (1992) added to the knowledge base with a longitudinal analysis of these variables, and Jones and Carter (1994), Mohai and Bryant (1998), and Jones (1998, 2002) advanced our understanding of the relationship between race and environmental concern.

In our research we concern ourselves primarily with gender. Studies reviewed by Van Liere and Dunlap (1980) on the impact of gender on environmental concern were inconclusive, with the direction of the relationship varying among studies and weak associations reported. From this, Van Liere and Dunlap (1980) identified two competing hypotheses: (1) that men have a *greater* concern for the environment than women due to their higher levels of political action, education, and community involvement, and (2) that men have a *lower* level of environmental concern than women because of competing interests; that is, men are concerned with economic issues, and this comes at the expense of environmental concern (Van Liere and Dunlap 1980). No further attempts were made at that time to fully test these causal mechanisms.

A decade later, Jones and Dunlap (1992) reported no strong relationship between gender and environmental concern when reviewing the literature from the eighties; however, they did indicate that, when differences were found, women were more environmentally concerned than men. In the nineties, Davidson and Freudenburg (1996) revisited the relationship between gender and perceptions of environmental risk in a study whose goals parallel Van Liere and Dunlap's (1980) analysis. They summarized existing literature about the current state of knowledge (at that time) regarding gender and environmental concern. From that work, Davidson and Freudenburg (1996) established that research conducted in the late eighties and early nineties consistently indicated that women tended to express greater levels of concern for the environment than men.

In Davidson and Freudenburg's (1996) review they identified five attempts to explain gender differences in environmental concern. First, greater technical knowledge about the environment leads to less concern about environmental risks. The assumption behind this statement is that men have more scientific knowledge than women, thus women are more concerned about environmental risks than men, but this rationale has received little empirical

support (see Lyons and Breakwell 1994; Brody and Fleishman 1993; Schahn and Holzer 1990). Second, women are more concerned about the environment when the risks involve issues of health or safety. This hypothesis, known as the *safety concern hypothesis*, has consistently received empirical support (see Brody 1984; Solomon, Tomaskovic-Devey, and Risman 1989). Third, women are less trusting of institutional structures and therefore more concerned about environmental risk. Davidson and Freudenburg (1996) found evidence (in six of eight studies) that men are more trusting of institutions than women and found support (in seven of nine studies) for the negative association between institutional faith and environmental concern (see Slovic, Flynn, and Gregory 1994; Bord and O'Connor 1992; Dunlap, Rosa, Baxter, and Mitchell 1993; Hoban, Woodrum, and Czaja 1992). Fourth, men have more economic concerns than women, and this leads to less concern for the environment. This hypothesis is referred to as the *economic salience hypothesis*. Davidson and Freudenburg (1996) found inconclusive support for this hypothesis (see e.g., Stout-Wiegand and Trent 1983; Brody 1984). Fifth, men with young children are less concerned about the environment while women with young children are more worried about environmental risk. This hypothesis is a reflection and magnification of both the economic salience hypothesis and the safety concern hypothesis; when men have children they have increased economic responsibilities, and when women have children they have increased safety concerns. The results of studies testing men's parental roles have produced varied results. However, studies examining women's parental roles have shown mothers to exhibit a greater concern for environmental risk than both fathers and women without children (Davidson and Freudenburg 1996; see also Blocker and Eckberg 1989; Bord and O'Connor 1992).

The ideas synthesized by Davidson and Freudenburg (1996) are now sixteen years old and the literature they reviewed is older. Since the early seventies, women have had increased

involvement in the economic sector (Hurst 2013) and family roles and relationships have evolved to become less gendered or at least gendered in different ways (Kimmel 2011). For example, 49 percent of children had mothers in the labor force in 1980 compared to 59 percent in 1990 and 70 percent in 2000 (Hernandez 2005). In addition, as the general public, politicians, and media focus more on environmental problems, knowledge about the environment has become more salient for all (Rosenbaum 2008). Despite these changes, research in the area of gender and environmental concern has stalled. In 2011, Hamilton, while controlling for gender, found that women have greater concern about the threat of global warming than men; he then referenced readers to Davidson and Freudenburg (1996) for more information about this relationship. Drawing on an ecogender perspective that suggests that women's experiences cannot be divorced from other statuses, we believe that explanations for why women tend to have greater environmental concern than men are inadequate because they do not take into account the intersection of gender with other statuses that women also hold.

Sexism, class oppression, and racism are inextricably bound together (Collins 1990), thus researchers cannot truly measure gender effects if gender is used as an isolated predictor (for a discussion of feminist theory and quantitative research methods see Harding 1987, 1991, 1998; Harnois 2013; Sprague 2005; Sprague and Kobrynowicz 2004). Black feminist epistemology requires a shift from binary thinking to an acknowledgement of complex realities and intersections of inequalities, since there are intersections of inequality, specifically between race, gender, and class (Collins 1990). This indicates that the environmental concern of black women, white women, black men, white men, and other groups likely differ according to these intersections; thus statistical models exploring environmental concern cannot simply use gender as a control. Our conjecture about the need to create new gender models is supported by the

political ecology framework of many feminist environmental scholars who view gender as a critical variable that is interconnected to issues of class and race (Banerjee and Bell 2007) and who claim that any perspectives failing to consider the *interconnections* of gender are “simply inadequate” (Warren 2000).

In fact, the one area where environmental concern scholars have addressed gender as it intersects with other socio-demographic variables is race. Finucane, Slovic, Mertz, Flynn, and Satterfield (2000) find that white men always rate potential environmental hazards as lower risk than non-white men, white women, and non-white women, while non-white women often rate hazards as higher risk than white women, non-white men, and white men. Similarly, Kalof, Dietz, and Guagnano (2002) find that white men are less likely to endorse a pro-environment paradigm than non-white men, white women, and non-white women, most likely because of their historically privileged status in society. Marshall (2004) looked at the *white male effect* in a notoriously polluted region along the Mississippi River and found analogous results. White men expressed less concern about environmental hazards than non-white men, white women, and non-white women, and black women expressed the greatest concern for environmental hazards.

Thus, explanations of gender differences in environmental concern must be informed by the traditions of feminism, ecofeminism, and ecogender studies that call for an integrated approach in which the exploration of gender functions as a critical lens to help shed light on all forms of inequalities and problematic social structures (Banerjee and Bell 2007; Collins 1990, 1998; Harnois 2013; King 1990; Warren 2000). With this research, we delve into the moderating effects of gender and other socio-demographic variables on levels of environmental concern because we believe that our lived experiences lie at the intersection of multiple socio-demographic identities. Although there is a large body of theoretical literature exploring gender

in relationship to the environment, there is little to explain the interconnections of gender and other factors as they relate to environmental concern. Furthermore, the current ideas about gender within the environmental concern literature treat women and men as homogeneous groups and do not account for differences that exist among women and among men.

Socio-Demographic Correlates of Environmental Concern

Gender intersects with other statuses that women and men hold, and many of these statuses are correlated with environmental concern. The *age hypothesis* proposes that younger people have a greater concern for the environment than older people (Van Liere and Dunlap 1980). Overall, Van Liere and Dunlap (1980) found that the majority of studies in the seventies and earlier indicated support for the *age hypothesis*, although some findings indicate only a slight relationship between age and environmental concern and a few others report no relationship. Jones and Dunlap (1992) found age to be the most consistent and strongest negative predictor of environmental concern reported in the General Social Survey from 1973-1990. Hamilton (2011) found that older respondents were less likely to view global warming as a threat than younger respondents. How age intersects with gender has not been tested.

Race has also been associated with environmental concern (see Jones 1998; 2002; Jones and Carter 1994; Mohai and Bryant 1998). Most contemporary environmental sociologists reject the myth that environmental concern has primacy among whites, and that blacks are uninterested in environmental protection (Mohai and Bryant 1998; Jones 2002). Jones and Rainey (2006) found that blacks are more likely than whites to believe they are exposed to poor environmental conditions and suffer poor health as a consequence of environmental pollution. Additionally, blacks are more likely than whites to believe that government agencies do not provide satisfactory protection from such injustices (Jones and Rainey 2006; also see Bullard 1990;

Wilkinson and Freudenburg 2008). In addition, Jones (2002) found no support for the *economic contingency hypothesis*, which states that economically vulnerable groups such as minorities, people living in poverty, and the working class express less concern for the environment during periods of economic decline.

The *social class hypothesis* (Van Liere and Dunlap 1980) predicts that environmental concern increases as levels of education, income, and occupational status increase. Theoretical explanations for the *social class hypothesis* primarily rest on Maslow's (1970) hierarchy of needs and theories of relative deprivation. Maslow argues that basic needs such as food, shelter, and safety must be met before luxury needs such as love and self-actualization can be satisfied. Environmental quality has typically been classified as a luxury need; although many within environmental sociology argue that our dependent relationship with the physical environment is directly related to the basic needs as Maslow characterized them. Similarly, theories of *relative deprivation* suggest that the lower class are less concerned with environmental quality because they have not had exposure to surroundings that embody high levels of environmental concern. In other words, pollution is normalized and lower class communities are unaware of alternatives (Van Liere and Dunlap 1980). However, scholars have not been able to establish a clear and direct relationship between class and levels of environmental concern, as results across studies are inconsistent.

The relationship between education and environmental concern is well established. Overall, the majority of studies show support for a positive correlation between education and environmental concern (see Jones and Dunlap 1992; Van Liere and Dunlap 1980). Interestingly, this relationship contradicts other findings. How can we reconcile the findings that groups that are more vulnerable to environmental hazards (e.g., black women) express greater concern for

the environment than members of less vulnerable groups, yet groups that are less vulnerable to the risks associated with environmental hazards (e.g., the upper class and whites) are more likely to have higher levels of education, which is positively correlated with greater levels of environmental concern?

To address this, environmental concern scholars are now looking at scientific knowledge as a predictor of environmental concern. Scientific knowledge represents a respondent's knowledge of science as opposed to more global measures of education (Hamilton 2008; 2011; Hamilton and Keim 2009). Scientific knowledge is assessed by asking respondents to answer basic science questions or asking respondents about their belief in evolution or their understanding of the processes of global warming. Some studies find that those with a greater understanding of science are more likely to identify with a pro-environment paradigm than those who have less scientific knowledge (Hamilton 2008).

However, Hamilton (2008, 671) notes that, "Science literacy varies with background characteristics such as respondent's age, gender, income and education." Income and education are positively associated with scientific knowledge, and scientific knowledge tends to be higher among men than women. Guagnano and Markee (1995) find that women are more likely than men to report environmental problems as difficult to understand and confusing. But if men have higher levels of scientific knowledge then why are they consistently expressing lower levels of environmental concern than women? Given the complex relationships between socio-demographic characteristics, scientific knowledge, and levels of environmental concern, Hamilton (2011) and his colleagues (Hamilton and Keim 2009) call for researchers to look for interactions between variables, especially interactions between science literacy and other predictors. If income predicts scientific knowledge and scientific knowledge predicts concern for

the environment, and if men and women have different levels of scientific knowledge and income, then there is likely the presence of moderating effects.

Political orientation is also associated with environmental concern. Studies of political party affiliation show that Democrats exhibit more environmental concern than Republicans; however, most studies report small coefficients, indicating a weak association (see Jones and Dunlap 1992; Van Liere and Dunlap 1980). Yet, there is strong evidence that liberals are more environmentally concerned than conservatives (Jones and Dunlap 1992; Van Liere and Dunlap 1980). Dunlap and McCright (2008) recently found that the gap between Democrats and Republicans is widening, with Democrats tending towards higher levels of support for environmental protection.

Hamilton (2011) and Hamilton and Keim (2009) found an interaction between political party and scientific knowledge with regard to concern for global warming. It was found that, among Democrats, concern for global warming increases with increased scientific knowledge, but among Republicans, concern for global warming decreases with increased scientific knowledge (Hamilton, 2009; Hamilton and Keim 2009). Given women's greater tendency to affiliate with the Democratic Party and to hold slightly more liberal ideologies (Edlund and Pande 2002), we anticipate that there is evidence for moderating effects between gender and political orientation with regard to environmental concern.

It is also assumed that living in an urban environment is equated with higher levels of pollution and other poor environmental conditions (see Van Liere and Dunlap 1980); thus, it is theorized that these deteriorated conditions lead to greater levels of concern about environmental quality. Conversely, those living in rural environments have a more traditional, utilitarian relationship with their environment. A rural lifestyle, as represented by agrarian occupations and

a corresponding utilitarian culture, is speculated to result in lower levels of concern for environmental protection (Van Liere and Dunlap 1980). Furthermore, it is also suggested that small towns seeking economic growth might favor economic expansion at the potential expense of environmental concern (Van Liere and Dunlap 1980; Bohon and Humphrey 2000).

However, the support for a positive relationship between urban residence and environmental concern is not consistent across studies (Van Liere and Dunlap 1980). The direction and strength of the relationship varies according to the type of environmental concern tested. Additionally, when local environmental conditions are assessed there is a strong relationship between place of residence and environmental concern (Van Liere and Dunlap 1980). Jones and Dunlap (1992) found that both those raised in urban locations and those currently residing in urban settings are more concerned for environmental quality than their rural counterparts. Additionally, growing up in urban locations (operationalized as living in an urban residence at age sixteen) is a slightly stronger predictor of environmental concern than place of current residence. But the urban/rural differences are narrowing over time, as rural residents are reporting more environmental concern (Jones, Fly, Talley, and Cordell 2003).

In our study, we also examine how gender interacts with marital status, number of children, and religious identification as it predicts environmental concern. Marital status, number of children, and religious identification--unlike the socio-demographic characteristics discussed thus far--have received little empirical attention and are not commonly used in models predicting levels of environmental concern. However, the *maternal role* has been used to explain gender differences in environmental concern; that is, it has been asserted that women with children express greater levels of environmental concern than women without children and/or men with

children (Davidson and Freudenburg 1996) although other researchers (Blocker and Eckberg 1997) find no evidence to support this.

Given the impact of religion on socio-political values and American culture (Kimmel 2011) we believe it is necessary to include the interaction of gender and religion in this study. Hamilton (2008) found a relationship between religious affiliation and scientific literacy; he found that those with a strong religious identification are less likely to report that they believe in evolution than those who do not identify as religious. We think it is feasible to expect religion to operate in relation to concern for the environment in one of two ways. On the one hand, almost all religions promote stewardship, responsibility, and a focus on things other than the self (Sherkat and Ellison 2007). Given this narrative, it is reasonable to expect that religious identification is associated with environmental concern. On the other hand, religion might decrease concern for the environment in a similar manner to the way it negatively effects belief in evolution (Hamilton 2008). Fundamental Christians are more likely to be associated with the Republican Party and conservative movements (Barreto and Bozonelos 2009), both of which have been found to be associated with less environmental concern (Dunlap and McCright 2008; Hamilton 2011; Jones and Dunlap 1992). Additionally, church attendance is negatively correlated with concern for animal welfare (Deemer and Lobao 2011). Perhaps the two potential effects of religion on environmental concern cancel each other out: Boyd (1999) found religion to be an inconclusive and weak predictor of environmental concern. We do not know the extent to which either position might be gendered. We do know that some religious doctrines and institutions have actively promoted male domination, yet women are more likely to be “religious” (Kimmel 2011).

Our research examines the moderating effects of gender on age, race, class, education, political orientation, residence, marital status, number of children, religious beliefs, and scientific knowledge as they predict environmental concern. We also examine whether these moderating effects (if any) are consistent across different measures and samples. The exploration of moderating effects will provide more insight into the complexities of the relationship between gender and environmental concern and may help to explain some of the inconsistencies in findings across previous studies.

DATA AND METHODS

The data for this study are taken from the General Social Survey (GSS) Environment II: 2000 and the American National Election Study (ANES) 2008 Pre-election Survey. We utilized 31 indicators² across the two datasets to examine 14 measures of environmental concern. In order to create multiple indicator measures, we conducted exploratory factor analysis to determine which environmental concern indicators are measuring the same underlying construct. We obtained six initial factors with eigenvalues greater than one for 28 measures of environmental concern from the GSS. We extracted the factors using principal factoring with iterated communalities and rotated them using a promax oblique rotation, following the advice of Hamilton (2006). We kept three factors that had at least three variables with high factor loadings (>.5) and inter-item reliability (*alpha*) of .7 or higher. Factor loadings are shown in Appendix A. Thus, we created three composite variables that combined 15 of the 28 measures of environmental concern leaving us with 13 single item indicators from the GSS. The three scaled variables represent (1) respondents' *willingness to pay* to protect the environment, (2) the extent

to which respondents' believe that *environmental problems are dangerous*, and (3) respondents willingness to be pro-environment given the *opportunity cost* or trade-offs involved.

Of the remaining single item indicator variables, we used eight from the GSS and three from the ANES. Items were not used if there were less than 100 respondents in any given cell or category. The eight dependent variables from the GSS are *reliance on science*, *modern life harms the environment*, *economic growth protects the environment*, *growth harms the environment*, *concerned about population growth*, *progress is dependent on the health of environment*, *likelihood of damage from a nuclear accident*, and *I help the environment*. The three dependent variables from the ANES are *feelings toward environmentalists*, *lower power plant emissions*, and *support for gas tax*. All indicators used in this research are coded or reverse coded so that greater values indicate greater environmental concern. A complete list of the questions used to measure each dependent variable is found in Appendix B.

Both the GSS and the ANES include measures of gender³, age, race, class, education, political party preference, place of residence, marital status, and religious identification. Number of children and knowledge about science⁴ is included in the GSS but not the ANES. The variable of interest for this study is gender. Gender was coded as a dummy variable in both datasets where 1 indicates men and 0 indicates women respondents.

Models examining *willingness to pay*, *environmental problems are dangerous*, and *opportunity cost* were tested using linear regression (adjusted to meet Gauss-Markov assumptions). Because of problems with heteroskedasticity in the *feelings toward environmentalists* models, error terms were adjusted as sandwich estimators using robust regression. All other dependent variables were modeled using either ordered logit (if the

dependent variable was ordinal) or logistic regression (if the dependent variable was dichotomous).

In order to test for moderating effects, interaction terms were created between gender and each of the other socio-demographic measures. For the six independent variables measured at the interval level we created multiplicative interaction terms by centering each interval variable and then multiplying the centered variable by gender. For the 11 remaining categorical predictors we created new categories to represent the interactions. For example, we created a dummy indicator of being a man and white, of being a man and non-white, of being a woman and white, and of being a woman and non-white measured against a reference category. We then tested 134 interaction models: one for each measure of environmental concern with each interaction term. The sample sizes for each model ranged from 918 to 1735.

RESULTS AND DISCUSSION

Table 1 displays the bivariate relationships between gender and the 14 measures of environmental concern⁵. Bivariate analysis provides an initial method for looking at the connections between socio-demographic characteristics and measures of environmental concern. The bivariate findings show that several socio-demographic characteristics are associated with multiple measures of environmental concern but not necessarily in a consistent manner. Specifically, in the GSS dataset being a man is a positive predictor of willingness to pay ($b = .134, p < .01$) indicating that men are more willing to pay for environmental protection than women. Yet being a man is a negative predictor of reliance on science ($OR = .68, p < .01$), growth harms the environment ($OR = .78, p < .05$), progress is dependent on the health of environment ($OR = .76, p < .05$), and likelihood of damage from a nuclear accident ($OR = .56, p < .001$)

indicating that men have more faith in science to solve our environmental problems, are less concerned about economic growth harming the environment, are less concerned about the effects of environmental damage on the economy, and are less concerned about the possibility of nuclear damage than women.

Furthermore, in the ANES dataset being a man is negatively correlated with feelings toward environmentalists ($b = -5.165, p < .001$) indicating that men feel less favorable towards environmentalists than women. With the exception of willingness to pay, the significant correlations between gender and various measures of environmental concern generally support the prevailing theory that women express greater concern for the environment than men (Davidson and Freudenburg 1996). However, gender is not significant in 8 of the 14 models: environmental problems are dangerous, opportunity cost, modern life harms the environment, economic growth protects the environment, concerned about population growth, I help the environment, lower power plant emissions and support for gas tax. Thus, the bivariate findings provide mixed evidence concerning the significance and direction of gender as a predictor of environmental concern.

We also tested bivariate relationships between all other socio-demographic characteristics and the dependent variables. Each characteristic has a significant relation with at least two of the 14 measures of environmental concern. Since these characteristics are not significant in all of the models, nor are the directions of the relationships consistent across the models, our findings underscore the assertion that question wording is important (Dunlap and Jones 2002; Klineberg, McKeever, and Rothenbach 1998). We then tested multivariate (non-moderated) models regressing the 14 dependent variables on gender and the other socio-demographic variables. In these multivariate analyses, gender is a significant predictor in only three models: reliance on

science, likelihood of damage from a nuclear accident, and feelings toward environmentalists. In the interest of page space, we do not show these models here, but they are available from the authors by request.

Interaction Models

We pose the question of whether or not there are interaction effects between gender and socio-demographic factors with regard to environmental concern. Ultimately, we found 41 models with significant interaction effects between gender and various socio-demographic measures, suggesting that gender effects are suppressed in bivariate and multivariate models that do not test interactions. Table 2 summarizes the results from the interaction models. The results show that gender in conjunction with other socio-demographic characteristics has the potential to produce different effects than when gender is considered alone.

Additionally, we pose the question of whether any potential interactions would be consistent across a variety of datasets using different measures of environmental concern. The results presented here suggest that the type of concern being measured, or at least the wording of questions, matters.

Before proceeding, it is worth noting that the significance of interaction terms modeled by categorical predictors is not always a clear indicator of interactions. For example, if white women and white men are different from non-white men (who do not differ from non-white women), is that an interaction? We consider such effects as these to be truly moderating effects only if gender or the socio-economic variable being moderated by gender is non-significant in a reduced model but becomes significant when categorized with gender.

Gender x Age

Gender significantly interacts with age only in the model that growth harms the environment ($b = -.023, p < .01$). This can be seen most clearly in Figure 1 which shows that as men age they become *less* likely to think that economic growth is harmful to the environment, yet as women age they become *more* likely to believe that economic growth is harmful to the environment. Thus, a gendered take on the age hypothesis (younger people have a greater concern for the environment than older people; Jones and Dunlap 1992) is only accurate to describe what is happening for men with regard to concern that growth harms the environment. There is a cross-over effect in the early- to mid-thirties, prior to that age men express greater concern than women that economic growth might be harmful to the environment.

Gender x Race

Gender significantly interacts with race on 13 out of 14 measures of environmental concern. Race is not moderated by gender in predicting willingness to pay. White men ($b = -.290, p < .01$), white women ($b = -.187, p < .05$), and non-white women ($b = -.276, p < .01$) are *less* likely to be fearful of the dangers of environmental problems than non-white men (reference group⁶). White men ($b = .280, p < .001$) and white women ($b = .355, p < .001$) are *more* willing to make sacrifices to protect the environment than non-white men (reference). White women have 1.66 times *greater* odds than white men (reference) of *disagreeing* with the idea that science will solve our environmental problems ($p < .001$). Non-white women have .58 times *lower* odds than non-white men (reference) of *agreeing* that our modern lifestyle harms the environment ($p < .05$). White men (OR = 1.67, $p < .05$) and white women (OR = 1.95, $p < .01$) are *more* likely than non-white women (reference) to *disagree* with the idea that economic growth is necessary for environmental protection. White men (OR = .38, $p < .001$), white women (OR = .55, $p < .05$), and

non-white women (OR = .55, $p < .05$) have *lower* odds than non-white men (reference) of *agreeing* that economic growth is always harmful to the environment.

In addition, white men (OR = 1.72, $p < .05$) and white women (OR = 1.63, $p < .05$) have *greater* odds than non-white women (reference) of *agreeing* that our current population growth rate is not sustainable. White men have .62 times *lower* odds than non-white women (reference) of *agreeing* that economic progress is dependent on the improvement of environmental conditions ($p < .05$). Non-white men (OR = 2.38, $p < .01$), white women (OR = 1.74, $p < .001$), and non-white women (OR = 2.77, $p < .001$) have *greater* odds than white men (reference) of believing that damage from a nuclear accident will cause long-term damage across many countries. White men (OR = .65, $p < .05$) and white women (OR = .61, $p < .05$) are *less* likely than non-white women (reference group) to help the environment regardless of the time or money involved. Non-white men ($b = 13.274$, $p < .001$), white women ($b = 9.502$, $p < .001$), and non-white women ($b = 14.116$, $p < .001$) are *more* likely than white men (reference) to view environmentalists favorably. White men (OR = 1.57, $p < .05$) and white women (OR = 1.63, $p < .05$) have *greater* odds than non-white women (reference) of favoring government restrictions on power plant emissions. White men (OR = .54, $p < .01$) and non-white women (OR = .61, $p < .05$) have *lower* odds than non-white men (reference) of favoring an increase in gas taxes to encourage people to drive less or buy cars that use less gasoline.

Most of our models testing interaction effects between gender and race on various measures of environmental concern were significant. These models support the *white male effect*, that white men express the least concern for the environment (Finucane, Slovic, Mertz, Flynn, and Satterfield 2000; Kalof, Dietz, and Guagnano 2002; Marshall 2004). However, interestingly we found both non-white men and white women to be among the more concerned groups as

compared to white men and non-white women. This is in direct contrast to the findings by Finucane, Slovic, Mertz, Flynn, and Satterfield (2000) and Marshall (2004) who found that black women express the greatest amount of environmental concern when compared to other groups.

Gender x Social Class

Gender significantly interacts with social class in 5 of 14 measures of environmental concern: willingness to pay, opportunity cost, progress is dependent on the health of environment, feelings toward environmentalists, and support for gas tax. Men who are not lower class ($b = .253, p < .01$) and women who are not lower class ($b = .259, p < .001$) are *more* willing to pay for environmental protection than women who are lower class (reference). Women who are not lower class ($b = .126, p < .05$) are *more* willing to make personal sacrifices to help the environment than lower class men (reference). Women who are lower class have 1.47 times *greater* odds than men who are not lower class (reference) of *agreeing* that the health of the environment is dependent on the improvement of environmental conditions ($p < .05$). Men who are lower and working class (the lower and working classes were combined in the ANES dataset); $b = 3.048, p < .05$), women who are lower and working class ($b = 6.595, p < .001$), and women who are not lower and working class ($b = 7.906, p < .001$) are *more* likely than men who are not lower and working class (reference) to feel favorable toward environmentalists. Men who are lower and working class ($OR = .65, p < .05$) and women who are lower and working class ($OR = .66, p < .05$) have *lower* odds than men who are not lower and working class (reference) to support an increase in gas taxes. In general, the significant interactions we found indicate that women who are not lower class express greater concern for the environment than lower class men and women, and men who are not lower class.

Gender x Education

Gender significantly interacts with years of education on 3 out of 14 measures of environmental concern: environmental problems are dangerous ($b = -.036, p < .05$), reliance on science ($OR = .90, p < .05$), and economic growth protects the environment ($OR = .87, p < .01$). Figure 2 (environmental problems are dangerous) displays a visual representation of the different slopes for men and women. Specifically, as women gain more years of education, their fear of the dangers of environmental destruction *increases* but as men become more educated their fear of environmental problems *decrease*. As illustrated in Figure 2, there is a cross-over effect between eleven and thirteen years of education, which is about the level of a high school diploma. Prior to completing high school, men express greater fear of the dangers of environmental problems than women. We speculate that this is due to gender differences in education, especially in the areas of science, technology, engineering, and math (STEM). For example, girls are less likely to take advanced (AP) STEM courses in high school than boys (AAUW 2010).

As both men and women gain more years of education they are *more* likely to *disagree* with the idea that science will solve our environmental problems (reliance on science model); however the change occurs at slower rate for men than women. Interestingly, as women become more educated they are *more* likely to *disagree* with the idea that economic growth is necessary for environmental protection (economic growth protects the environment model); there is almost no education effect for men with regards to this predictor. Thus, in general, as women become more educated their concern for the environment *increases* yet as men become more educated their level of concern for the environment either *decreases* or *increases* but at a slower rate than that of women, depending on the outcome being measured. The assertion that there is a positive association between education and environmental concern (Van Liere and Dunlap 1980) might

only be accurate to describe women. The relationship between education and environmental concern for men is more complex.

Gender x Political Party

Gender significantly interacts with political party and a Republican feeling thermometer⁷ on 9 out of 14 measures: willingness to pay, environmental problems are dangerous, opportunity cost, modern life harms the environment, growth harms the environment, concerned about population growth, progress is dependent on the health of environment, likelihood of damage from a nuclear accident, and the environmentalist feeling thermometer. The reliance on science model indicates gender differences regardless of political party identification (with men being more confident that modern science will solve our environmental problems than women).

Non-Republican men ($b = .290, p < .01$) and non-Republican women ($b = .253, p < .01$) are *more* willing to pay for environmental protection than Republican women (reference). Non-Republican men ($b = .254, p < .01$) and non-Republican women ($b = .259, p < .001$) are *more* fearful of the dangers of environmental problems than Republican men (reference). Republican men ($b = -.194, p < .01$), non-Republican men ($b = -.097, p < .05$), and Republican women ($b = -.186, p < .01$) are *less* willing to make personal sacrifices to protect the environment than non-Republican women (reference). Non-Republican men (OR = 1.71, $p < .01$) and non-Republican women (OR = 1.63, $p < .05$) are *more* likely than Republican women (reference) to *agree* that our modern lifestyle harms the environment. Non-Republican women have 1.50 times *greater* odds than Republican men (reference) of *agreeing* that economic growth is always harmful to the environment ($p < .05$). Non-Republican men (OR = 1.69, $p < .05$) and non-Republican women (OR = 1.63, $p < .05$) are *more* likely than Republican women (reference group) to *agree* that our current concerned about population growth rate is not sustainable. Non-Republican men (OR =

1.49, $p < .05$) and non-Republican women (OR = 1.88, $p < .01$) are *more* likely than Republican men (reference) to *agree* that economic progress is dependent on the improvement of environmental conditions. Republican men (OR = .46, $p < .001$), non-Republican men (OR = .58, $p < .01$), and Republican women (OR = .64, $p < .05$) are *less* likely than non-Republican women (reference) to be concerned about the possibility of damage from a wide-scale nuclear accident.

In the ANES dataset, the interaction term created between gender and the centered Republican feeling thermometer is significant in the environmentalist feeling thermometer model ($b = -.105$, $p < .01$). Figure 3 displays a visual representation of the different slopes for men and women, indicating that both men and women who are *more* favorable toward the Republican Party are *less* favorable toward environmentalists. However, favorability for environmentalists declines at a slower rate for women than men.

Overall, we find consistent support for interaction effects between gender and political party identification. Non-Republican women tend to express the greatest concern for the environment. Our findings also suggest that Republican men and women do not differ significantly on their levels of environmental concern (although non-Republican men and women sometimes do). These results lend some support to the findings of Dunlap and McCright (2008) who suggest that political orientation is the most essential socio-demographic predictor of environmental concern. However, although non-Republican men and non-Republican women expressed greater concern for the environment than their Republican counterparts, there are differences between women and men who are not Republicans.

Gender x Place of Residence

Gender significantly interacts with place of residence on only one measure of environmental concern: lower power plant emissions. Urban men (OR = 1.70, $p < .05$) and women

who do not reside in an urban setting (OR = 1.99, $p < .05$) are *more* likely than men who do not reside in an urban setting (reference) to favor government restrictions on power plant emissions. Three models (reliance on science, likelihood of damage from a nuclear accident, and feelings toward environmentalists) indicate differences between men and women regardless of place of residence; in all three models women express greater concern for the environment than men.

Gender x Marital Status

Gender significantly interacts with marital status on two outcomes: willingness to pay and lower power plant emissions. Ever-married women are *less* likely ($b = -.203$, $p < .05$) to be willing to pay for environmental protection than never-married men (reference group). Never-married women (OR = 0.57, $p < .05$) are *less* likely than never-married men (reference) to favor government restrictions on power plant emissions. Three models (reliance on science, likelihood of damage from a nuclear accident, and feelings toward environmentalists) find differences between men and women regardless of marital status, with women expressing greater levels of environmental concern than men in all three models.

Gender x Number of Children

Gender does not interact with the respondent's number of children in predicting environmental concern. This calls into question a previous suggestion that men with young children are less concerned about the environment while women with young children are more worried about environmental risk (than both men with children and women without children; Davidson and Freudenburg 1996). We did not find any differences in various measures of environmental concern between men with children and women with children. Nor did we find any differences in multiple measures of environmental concern between women with children

and women without children, providing a lack of support for the relevance of children as the mechanism for explaining gender differences in environmental concern.

Gender x Religious Affiliation

Two interaction models (reliance on science and likelihood of damage from a nuclear accident) signify differences between men and women regardless of religious affiliation, with women expressing more concern for the environment than men on both dependent variables. However, gender significantly interacts with religious affiliation on 4 out of 14 measures of environmental concern: opportunity cost, concerned about population growth, feelings toward environmentalists, and support for gas tax. Women who do not report a religious affiliation are *more* willing ($b = .219, p < .05$) than men who report a religious affiliation (reference group) to make sacrifices for environmental protection. Men who report a religious affiliation ($OR = .58, p < .05$) and women who report a religious affiliation ($OR = .53, p < .05$) are *less* likely than men who do not report a religious affiliation (reference) to *agree* that our current population growth rate is unsustainable. Men who report a religious affiliation ($b = -4.193, p < .001$) and men who do not report a religious affiliation ($b = -6.680, p < .001$) are *less* likely than women who report a religious affiliation (reference) to feel favorably toward environmentalists. However, women who do not report a religious affiliation ($b = 4.866, p < .05$) are *more* likely than women who report a religious affiliation to feel favorably toward environmentalists. Men who do not report a religious affiliation ($OR = 1.77, p < .05$) and women who do not report a religious affiliation ($OR = 2.39, p < .01$) are *more* likely than women who do report a religious affiliation (reference) to favor an increase in support for gas taxes. Overall, men and women who report a religious affiliation express less environmental concern than men and women who do not report a

religious affiliation. However, some differences do emerge between men and women who report a religious affiliation and between men and women who do not report a religious affiliation.

Gender x Belief in Evolution

Gender significantly interacts with belief in evolution on three outcomes: reliance on science, concerned about population growth, and I help the environment. One measure of environmental concern indicates differences between men and women regardless of belief in evolution (women are more likely to be concerned about the possibilities of a wide-scale nuclear accident than men). However, men who do not believe in evolution (OR = 1.48, $p < .05$), women who believe in evolution (OR = 1.82, $p < .01$) and women who do not believe in evolution (OR = 2.00, $p < .001$) are *more* likely to *disagree* that modern science is the solution to our environmental problems than men who believe in evolution (reference). Men who believe in evolution (OR = 1.98, $p < .001$) and women who believe in evolution (OR = 1.88, $p < .001$) are *more* likely than women who do not believe in evolution (reference) to *agree* that our current population growth rate is problematic. Finally, women who do not believe in evolution have .61 times *lower* odds than women who believe in evolution (reference) to self-report doing what is right for the environment ($p < .01$). Overall, based on these significant interaction effects, belief in evolution might have a large impact on the level of environmental concern of women, such that women who believe in evolution are the group with the greatest level of environmental concern and women who do not believe in evolution are the group with the least amount of environmental concern.

CONCLUSIONS

Women tend to express a greater concern for the environment than men; this was established in the mid-nineties with the work of Davidson and Freudenburg (1996). Yet, there are several nuances regarding the differing levels of environmental concern between men and women that have not been explored. Certainly, the intersection of gender and other socio-demographic variables has been largely ignored, because men and women have been stratified into homogeneous groups so that the differences among men and among women have been underestimated. The work presented here provides an exploration into the distinctions of environmental concern by providing a more nuanced exploration of how environmental concern is shaped by gender.

Overall, our study confirms the primary finding of Davidson and Freudenburg (1996) that women tend to express a greater level of environmental concern than men. However, we also find that there are differences among women and among men. We found significant interactions between gender and various socio-demographic characteristics on a variety of measures of environmental concern. This supports our theoretical assertion that intersectionality cannot be ignored (Collins 1990). Gender in conjunction with other socio-demographic characteristics has the potential to produce different effects than when gender is considered alone. Such that, for example, it initially seems as if gender is not a significant predictor of concern about population growth; yet there is a gendered effect when white men and women are separated from black men and women. Researchers frequently report varied findings regarding differences between men's and women's environmental concern and attribute these varied findings to question wording (Dunlap and Jones 2002; Hamilton 2008; Klineberg, McKeever, and Rothenbach 1998). We are suggesting that in addition to this explanation, unexplored interaction effects can mask the

differences between men's and women's environmental concern, to the extent that what appears in a simpler model as lack of differences in concern is actually more nuanced.

Our most consistent findings regarding intersectionality are the relationships between gender and political party identification (nine significant interaction effects), gender and race (13 significant interaction effects), and gender and number of children (no significant interaction effects). Several other interesting trends emerge as well. For example, women who are not lower class, non-Republican women, and women who believe in evolution express greater levels of environmental concern than their respective counterparts. Furthermore, non-white men and white women express more concern for the environment than white men and non-white women. Similarly, there are differences among women and among men by religious affiliation (or not). As expected, education is positively correlated with environmental concern, but only for women; the relationship between education and environmental concern for men is more complex.

Our findings point to a need for even more research to fully explore how gender shapes environmental concern. In our research, we examined two-way interactions; higher-order interactions will likely show even greater nuances. For example, white women are more likely to express a willingness to pay to protect the environment than non-white women but class likely also matters.

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Table 1. Bivariate Analysis: Measures of Environmental Concern Regressed on Gender

Dependent variables	OLS		Ordered Logistic Regression		Logistic Regression	
	Regression Coefficient	Standard Error	Regression Coefficient	Standard Error	Regression Coefficient	Standard Error
<i>GSS Dataset:</i>						
Willingness to pay	.134	** .051				
Environmental problems are dangerous	-.054	.045				
Opportunity cost	.016	.039				
Reliance on science			(.68) -.380	** .112		
Modern life harms the environment			(.94) -.057	.110		
Economic growth protects the environment			(1.02) .016	.112		
Growth harms the environment			(.78) -.251	* .113		
Concerned about population growth			(1.12) .110	.115		
Progress is dependent on the health of environment			(.76) -.269	* .115		
Likelihood of damage from a nuclear accident					(.56) -.583	*** .125
I help the environment			(.95) -.053	.111		
<i>ANES Dataset:</i>						
Feelings toward environmentalists	-5.165	*** .942				
Lower power plant emissions			(1.12) .113	.126		
Support for gas tax			(1.15) .136	.131		

NOTES: In all cases, the independent variable is gender (odds ratios are in parentheses);

* p<.05; ** p<.01; *** p<.001.

Table 2. Summary of Interaction Models

	Age	Race	Social Class	Education	Political Party	Gender x Place of Residence	Marital Status	No. of Children	Religious Affiliation	Belief in Evolution
<i>GSS Outcomes:</i>										
Willingness to Pay			•		•		•			
Environmental Problems are Dangerous		•		•	•					
Opportunity Cost		•	•		•				•	
Reliance on Science		•		•						•
Modern Life Harms the Environment		•			•					
Economic Growth Protects the Environment		•		•						
Growth Harms Environment	•	•			•					
Concerned about Population Growth		•			•				•	•
Progress is Dependent on the Health of Environment		•	•		•					
Likelihood of Damage from a Nuclear Accident		•			•					
I Help the Environment		•								•
<i>ANES Outcomes:</i>										
Feelings re environmentalists		•	•		•				•	
Lower power plant emissions		•				•	•			
Support for gas tax		•	•						•	

• = significant interaction effect

Measure of environmental concern in **bold** indicates that gender is also a significant predictor of that measure in the bivariate model

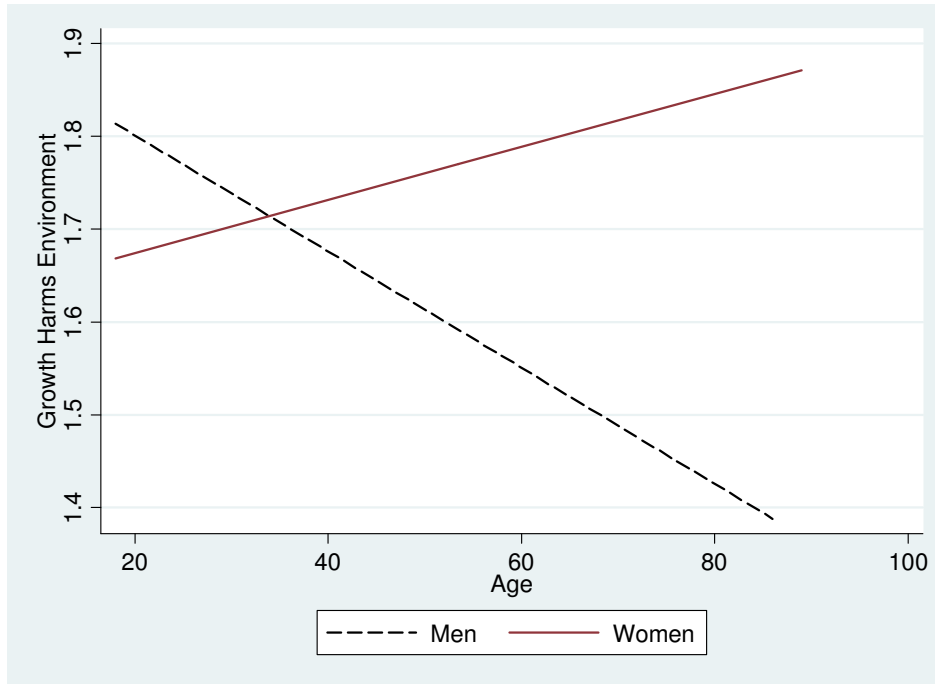


Figure 1. Gender and age predicting responses to the concern that growth harms the environment

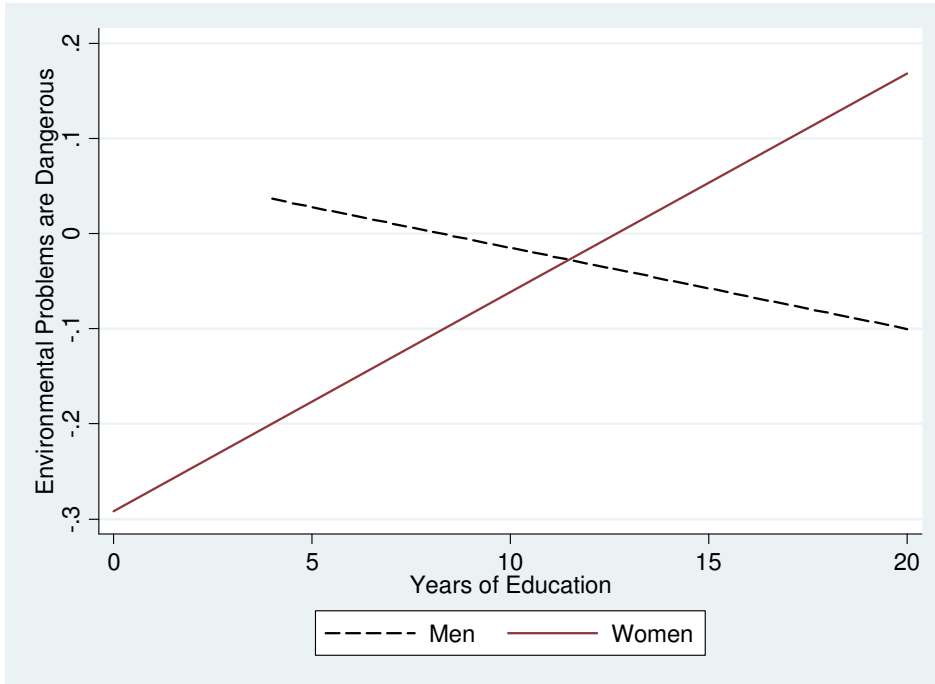


Figure 2. Gender and years of education predicting responses to the concern that environmental problems are dangerous

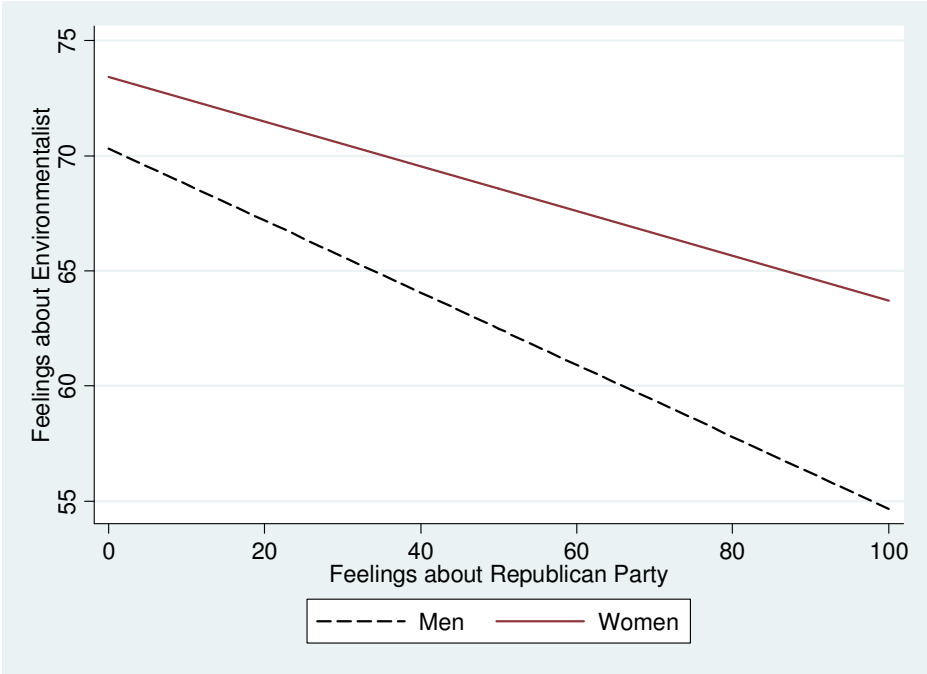


Figure 3. Gender and placement on the Republican feeling thermometer predicting feelings toward environmentalists

Appendix A. Rotated Factor Loading and Alpha Reliability Results for Principle Component Analysis

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Uniqueness
Reliance on science	.172	-.116	.085	-.093	.174	.252	.845
Environment versus jobs	.527	.035	-.238	.003	.130	.304	.448
Modern life harms environment	-.069	.052	-.149	.046	.597	.062	.634
Worry too much about human progress harming environment	.491	-.037	-.108	-.054	.044	.367	.469
Economic growth protects environment	.195	.033	-.043	-.004	-.028	.386	.790
Growth harms environment	.056	-.106	.028	-.071	.621	.015	.664
Willingness to pay higher prices to protect environment	-.039	.018	.783	.010	-.031	.040	.350
Willingness to pay higher taxes to protect environment	.002	-.039	.836	.003	-.046	-.071	.341
Willingness to accept cuts in standard of living to protect environment	-.105	-.014	.652	.029	-.005	-.020	.488
Too difficult for me to help environment	.518	.004	.112	-.157	.256	-.057	.627
Taken part in environmental protest	-.057	-.048	-.118	.303	.153	-.082	.886
Concerned about population growth	-.105	.065	.023	.000	.374	.000	.799
More important things than helping environment	.750	.013	.024	.106	-.156	-.109	.502
No point in me helping environment unless others do too	.700	.045	.049	-.019	.145	-.099	.532
Environmental problems are exaggerated	.584	-.129	-.037	.050	-.184	.184	.456
America is helping environment too much, too little, right amount	.435	-.053	-.038	-.018	-.245	.159	.623
Economic progress dependent on health of environment	.007	.076	.208	.015	.260	.191	.782
Likelihood of damage from nuclear accident	.175	.222	-.014	.150	.358	-.032	.718
I help environment	-.069	.023	.191	.151	-.002	.228	.840
Car pollution is dangerous	-.013	.743	.008	.005	-.066	.043	.487
Industry pollution is dangerous	.025	.891	-.100	-.030	-.037	-.040	.328
Pesticides and chemicals in farming are dangerous	.069	.658	.071	-.011	-.009	.029	.565
Water pollution is dangerous	-.034	.620	.062	.012	-.048	.013	.586
Global warming is dangerous	-.104	.554	.064	-.041	.115	.006	.529
I recycle	-.064	.007	.074	.265	-.069	.105	.877
Membership in environmental organization	.090	-.037	.048	.474	.058	-.002	.795
Signed petition to help environment	-.094	.012	-.041	.574	.005	-.028	.618
Given money to environmental organization	.027	-.033	.066	.690	-.020	-.001	.519
Alpha Coefficient*	.791	.801	.833	.392	.583	.446	

*Alpha coefficients represent the alpha reliability score for combining measures loading high (highlighted in gray) for each particular factor

Appendix B. Question Wording for Dependent Variables in GSS and ANES datasets

Dependent Variable	Question Wording
<i>GSS Dataset</i>	
Willingness to pay (composite of 3 variables)	How willing would you be to pay much higher prices in order to protect the environment? How willing would you be to pay much higher taxes in order to protect the environment? How willing would you be to accept cuts in your standard of living in order to protect the environment? Very willing, fairly willing, neither willing nor unwilling, not very willing, not at all willing.
Environmental problems are dangerous (composite of 5 variables)	In general, do you think that air pollution caused by cars is... Do you think that air pollution caused by industry is... Do you think that pesticides and chemicals used in farming are... Do you think that pollution of America's rivers, lakes, and streams is... Do you think that a rise in the world's temperature caused by the 'greenhouse effect', is... extremely dangerous for the environment, very dangerous, somewhat dangerous, not very dangerous, not dangerous at all for the environment.
Opportunity cost (composite of 7 variables)	How much do you agree or disagree with each of these statements? We worry too much about the future of the environment, and not enough about prices and jobs today. People worry too much about human progress harming the environment. It is just too difficult for someone like me to do much about the environment. There are more important things to do in life than protect the environment. There is no point in doing what I can for the environment unless others do the same. Many of the claims about environmental threats are exaggerated. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree. Some countries are doing more to protect the world environment than other countries are. In general do you think that America is doing: More than enough, about the right amount, too little?
Reliance on science	How much do you agree or disagree with each of these statements? Modern science will solve our environmental problems with little change to our way of life. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.
Modern life harms the environment	Please check one box for each of these statements to show how much you agree or disagree with it. Almost everything we do in modern life harms the environment. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.
Economic growth protects the environment	How much do you agree or disagree with each of the following statements. In order to protect the environment, America needs economic growth. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.
Growth harms the environment	How much do you agree or disagree with each of the following statements. Economic growth always harms the environment. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.
Concerned about population growth	Please circle one number for each of these statements to show how much you agree or disagree with it. The earth cannot continue to support population growth at its present rate. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.
Progress is dependent on the health of environment	How much do you agree or disagree with each of these statements? Economic progress in America will slow down unless we look after the environment better. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.
Likelihood of damage from a nuclear accident	Within the next five years, how likely is it that an accident at a nuclear power station will cause long-term environmental damage across many countries? Very likely, likely, unlikely, very unlikely.
I help the environment	How much do you agree or disagree with each of these statements? I do what is right for the environment, even when it costs more money or takes up more time. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

Appendix B (Continued). Question Wording for Dependent Variables in GSS and ANES datasets

Dependent Variable	Question Wording
<i>ANES Dataset</i>	
Feelings toward environmentalists	I'd like to get your feelings toward some of our political leaders and other people who are in the news these days. I'll read the name of a person and I'd like you to rate that person using something we call the feeling thermometer. Ratings between 50 degrees and 100 degrees mean that you feel favorable and warm toward the person. Ratings between 0 degrees and 50 degrees mean that you don't feel favorable toward the person and that you don't care too much for that person. You would rate the person at the 50 degree mark if you don't feel particularly warm or cold toward the person. If we come to a person whose name you don't recognize, you don't need to rate that person. Just tell me and we'll move on to the next one. How would you rate: environmentalists?
Lower power plant emissions	Power plants put gases into the air that could cause global warming. Do you favor, oppose, or neither favor nor oppose the federal government lowering the amount of these gases that power plants are allowed to put into the air?
Support for gas	Do you favor, oppose, or neither favor nor oppose increasing taxes on gasoline so people either drive less or buy cars that use less gas?

ENDNOTES

¹ The use of the term *environmental concern* in this paper reflects the definition presented by Dunlap and Jones (2002): "...the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solution" (p.485).

² There were, in total, 31 indicators, but variables with more than 15 percent of the responses missing were not considered for inclusion in the study.

³ We recognize that surveys collect data on respondents' sex not gender; however, we use the term gender in this paper in place of sex because of our intention to more fully explicate gender as a complex predictor of environmental concern.

⁴ Scientific knowledge was measured in the GSS dataset as respondents' belief in evolution. Respondents were asked to rate the statement "humans came from animals" as definitely true, probably true, probably not true, and definitely not true. It is problematic to measure scientific literacy with a variable asking respondents about their belief in evolution; however, respondents' belief in evolution does reflect a respondents' orientation toward scientific knowledge.

⁵ Descriptive statistics for dependent and independent variables, as well as bivariate and multivariate results (not presented here) are available from the authors by request.

⁶ The selection of a reference group is rather arbitrary, so we tested each model several ways, using different reference groups. We are reporting significant group differences, which means that the reported reference group is not the same in all cases.

⁷ For the ANES dataset the Republican thermometer variable asked respondents to rate on a scale of 0 (not favorable) to 100 (very favorable) their feelings toward the Republican Party. This variable is used over a categorical measure of political orientation because it allows for graphing interactions, which are usually easier to understand.