




## Article

# Testing Common Knowledge: Are Northern Europeans and Millennials More Concerned about the Environment?

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**Abstract:** This study explores whether there are differences in several environmental dimensions, when the European Region and Generation cohort are considered. In doing so, this study compares millennials in North and South Europe with members of Generation X in three environmental dimensions: attitudes, personal norms, and behavior. Using data from the European Social Survey ( $n = 6.216$ ), the researchers tested the hypothesis that Northern Europeans and millennials have more pro-environmental standing than southerners and Generation Xers. The findings challenge the common belief that millennials are more committed to being environmentally conscious, showing that many millennials do not feel responsible for their climate footprint, nor do they behave in a way that shows more concern than previous generations to improve their environmental performance. Furthermore, contrary to expectations, Northern European participants are not the most committed, in all environmental dimensions, compared to Southern Europeans.

**Keywords:** Europe; generation; pro-environmental attitudes; pro-environmental behavior; personal norms



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## 1. Introduction

Many current major environmental problems (global warming, pollution, waste disposal, climate change, etc.) have become relevant issues for governments, social scientists, businesses, and other parties interested in environmentalism [1,2]. Research on environmental problems is a relatively new area of study and findings are not yet conclusive [3,4]. Therefore, much remains to be done on this topic. Several studies have focused on determining which groups are most sensitive to environmental issues, examining factors including age [5,6], gender [7–9], political orientation [10,11], and educational level [12,13], among others. However, two relevant aspects that are likely associated with environmental issues and have been less studied are geographic region and generation cohort. These factors have been proven to influence people's values and preferences in several life domains (for instance, they have been shown to affect buying, consumption, and civic participation). Therefore, it is expected that they also underlie differences in people's environmental attitudes and behavior.

### 1.1. Environmental Dimensions

This paper considers three different dimensions of environmentalism: attitudes, personal norms, and behavior.

#### 1.1.1. Environmental Attitudes

Attitudes can be defined as evaluative tendencies that can both be inferred from and have an influence on beliefs, affect, and behavior [14]. Scholars have characterized

environmental attitudes as a psychological tendency expressed through an evaluation of the natural environment with some degree of favor or disfavor towards it [15]. More specifically, according to Kaiser, Wölfing, and Fuhrer (1999) [16], attitude towards the environment commonly refers to environmental concern. A “concern” is a personal feeling of worry about something that is usually shared by multiple people. Examining the levels of environmental concern that citizens express is useful for testing citizens’ attitudes.

Considering that climate change is arguably the greatest environmental threat the world currently faces, we will consider citizens’ concerns about climate change. Climate concern refers to personal feelings of worry about the seriousness of climate change, which includes judgments about the risks posed by climate change [17].

According to Fairbrother (2017) [18], public belief that climate change poses a serious threat is a necessary condition to allow governments to respond to the threat adequately. Understanding the importance of climate concern, Lewis, Palm, and Feng (2019) [11] conducted research to identify which factors were determinative of climate change concern among individuals. They concluded that more cross-national studies should be undertaken in order to understand which factors determine climate change concern.

### 1.1.2. Pro-Environmental Personal Norms

The attitudinal concern previously mentioned may translate into action if individuals feel obligated (through personal norms) to act [19–21]. Personal norms are generally defined as a person’s expectations of how they should act in different situations [22]. They include feelings of moral obligation or responsibility to perform or refrain from specific actions [23]. Based on the norm activation theory [24], the fundamental proposition is that the activation of personally held moral norms influences pro-social behavior. An individual’s sense of moral obligation to act is intensified where the norms and values relevant to a specific action increase in importance to them [25]. There is widespread evidence that a sense of personal obligation is essential to translate concerns into action [19,21].

The norm activation model [26] suggests that individuals are more likely to exhibit altruistic behavior (in this study, pro-environmental behavior) when they feel a sense of moral obligation to adopt such behavior. Scholars have applied the norm activation theory extensively to explain a variety of pro-environmental behaviors [27], and some studies have shown that people who feel a sense of moral obligation to protect the environment are also more likely to attempt to reduce personal car use [28], increase use of public transportation [29], purchase organic food products [30], or choose eco-friendly travel options [31].

### 1.1.3. Pro-Environmental Behavior

According to Steg and Vlek (2009) [1], “pro-environmental behavior refers to behavior that harms the environment as little as possible, or even benefits the environment” (p. 309). Although many studies have been conducted without carefully defining what environmental behavior is, we distinguish between behaviors that influence environmental qualities directly and behaviors that do so indirectly [3,32].

Behaviors that have direct environmental consequences and are performed in the private sphere (i.e., households) are often related to energy demand [3]. Here, one can consider citizens’ behavioral willingness to engage in energy saving behavior. This construct covers an individual’s willingness to take energy efficiency measures (i.e., investments that lower energy use without sacrificing normal and desired activities or energy services) and energy curtailment measures (i.e., reducing normal and desired activities or energy services) [33].

According to Poortinga et al. (2004) [32], behaviors that indirectly influence environmental qualities further influence the (political) context in which environmentally relevant choices are made, such as environmental activism and policy support. The literature has devoted less attention to policy support than other topics, but it may also have large environmental impacts. Policy support can be defined as behaviors that are conducted

in the public sphere and reflect a somewhat tacit endorsement or willingness to accept environmental measures and regulations needed to address problems such as climate change [32].

### 1.2. Factors Influencing Environmental Dimensions: European Region and Generation Cohort

As previously mentioned, scholars have attributed the variation between perceptions of environmental issues to several factors, such as sociodemographic characteristics [34], religious background [35,36], and political orientation [37] among others. In the following sections, we briefly review two factors that are expected to create differences in perceptions of environmental dimensions: region and generation.

#### 1.2.1. European Region

Beginning with a contextual factor, scholars have usually considered Northern and Southern Europe comparatively; several studies have found trends that support the distinction between these regions [38–40]. Furthermore, the recent discussion within the European Union on how to address the COVID-19 crisis has once again thrown this traditional north–south divide into sharp relief [41,42], which had already been made apparent after the 2008 global financial crisis [43]. In this study, we aim to perform an analysis that goes further than simple geographical considerations. We also consider the United Nations Statistics Division’s Geoscheme (2019) [44], which sets out a number of geographic regions and has been used in several recent studies [45]. The Geoscheme allows researchers to obtain greater homogeneity in population sizes and demographic circumstances; furthermore, it ensures the accuracy of demographic statistics in order to make comparisons between regions.

In regard to environmental issues, there are also several studies which examine and analyze the opinions on environmental affairs held by Europeans from different regions. Pidgeon (2012) [46] shows that, in Britain, levels of concern about climate change have gradually decreased since 2005; the opinion that is often termed climate skepticism (that is, the doubt about the reality, causes, or seriousness of climate change) reached an all-time high in 2010 [47]. In contrast, other studies, such as the one by Engels, Hüther, Schäfer, and Held (2013) [48], show that concern about climate change has remained high in countries such as Germany, which has very low levels of climate skepticism.

However, according to the Eurobarometer (2019) [49], most Europeans have positive attitudes towards the environment. Many Europeans continue to express high levels of concern about the environment and view it as an issue that affects them personally. However, there are differences between countries; for example, perceptions that climate change is the most important problem vary. Citizens in Sweden (85%), Denmark (84%), and Finland (73%) believe it is the most important environmental issue, while citizens in Spain (62%), Portugal (58%), and Italy (56%) exhibit lower levels of concern.

There are also differences between the perceptions that Europeans have regarding their role in protecting the environment. Respondents in Sweden (84%), Finland (82%), and Luxembourg (81%) are the most likely to believe that they can take individual action to tackle environmental issues by protecting the environment. The citizens of Poland (40%), Romania (29%), and Bulgaria (32%) are the least likely to believe individual action can be effective.

Regarding indirect behaviors that influence environmental qualities in general, there is support for stricter legislation to tackle environmental problems [50]. Agreement for such legislation is highest in Ireland (94%) and Sweden (94%). The lowest levels of agreement are seen in the UK (78%), Italy (79%), and Romania (80%). Survey findings indicate that respondents want more to be done to protect the environment, and they feel that responsibility should be shared. This includes personal responsibility; 75% of the participants interviewed for the survey feel that citizens themselves are not doing enough.

Nevertheless, according to Eurobarometer (2017) [50], although Europeans are aware of the need to protect the environment, their green attitudes do not always translate into environmentally friendly behavior and concrete actions. This suggests that “while people

acknowledge that climate change is a problem, they appear inadequately motivated to sustain large-scale behavior change" ([51], p. 15). This evidences a gap between attitudes and actual behavior [16]. Moreover, the European Commission, through the Eurobarometer report (2018) [52], points out that there are substantial differences in the extent to which people feel informed about environmental issues from country to country, which are likely also reflected in attitudes, norms, and behavior. According to the 2018 report, "the best informed citizens are likely to live in the northern and western part of the EU while those who tend to feel they lack information are likely to come from southern Europe and the new Member States" (p. 75).

Suárez Vergne (2018) [53] found that there are differences at the European level in environmental practices. Specifically, approaches vary between the block of Liberal, Continental and Nordic States and the block of Mediterranean and Eastern States. The European Values Study Wave 5 (2018) [54] confirms these different regional trends. It found that Northwestern countries such as Sweden, Germany, and the Netherlands are more motivated to take action to protect the environment, compared to Southern and Eastern countries such as Italy and Poland. These findings are also confirmed by the Environmental Performance Index (EPI) report [55], which shows that Northern countries such as Finland, Iceland, Sweden, and Denmark rank at the top of the eco-chart (a ranking based on the EPI that identifies which countries are the most eco-friendly).

### 1.2.2. Generation Cohort

Another variable that has received attention from scholars is the effect that generation cohort can have on environmentalism. Generational differences have long been a topic of social scientific research [56]. Several studies have focused on the effect that these differences can have in the workplace [57,58], in consumption behavior [59–61], travel behavior [62], and in political participation [63,64]. However, other than the work done by Kim, Chang, Lee, and Huh (2011) [65] and Beckendorff, Moscardo, and Murphy (2012) [66], very few studies have examined generational differences in regard to the environment, especially over the past five years.

When analyzing behavior, Ordun (2015) [67] places the same importance on generation as other demographic factors, such as income, education, and gender. One possible explanation for the variations that may exist between different generations is that young people who are socialized during different periods develop different visions and interpretations of the world.

Every generation's characteristics are affected by the changes in the world. Each generation is exposed to different (a) social and economic opportunities and barriers; (b) types of technology; (c) social perceptions and community norms; and (d) life experiences and events [68].

Generation cohort has provoked several discussions. The distinctions between life cycle, generational, and period effects have drawn considerable attention [69,70]. Even though empirical research on this subject matter spans several decades, the debate is ongoing. Literature shows that, in an analysis of generations, there are several distinct cohorts [71,72]. Having acknowledged that there are different types of generational effects, we focus on a classification approach that provides that there are six defined living generations in the modern world: The Greatest Generation (born between 1901 and 1924), the Builders or the Silent Generation (born between 1924 and 1945), baby boomers (born between 1946–1964), Generation X (born between 1965–1980), Generation Y or millennials (born between 1981 and 2000), and Generation Z (born in 2000 and onwards) [73,74].

We consider that, potentially, there are differences between millennials and Generation Xers. Millennials are the first Internet generation [75], and many millennials feel that their use of modern technology distinguishes them from other generations [67]. As digital natives, they have been shaped by the Internet and other new technologies from the beginning of their lives, and they use social network communications on a large scale [76]. Another critical factor that has shaped this generation is that although most millennials

are better educated than their parents (According to Ferrer (2018) [77], the proportion of young adults with higher education was higher than ever: 40% of young people between 25 and 34 years old have completed university studies. In 1999, when members of Gen X were the same age, the percentage was 24%), their aspirations have been frustrated by increasingly precarious employment opportunities and the economic crisis of 2008. This context has deeply affected millennials and has shaped their generational style, just as the Great Depression, the Civil Rights Movement, and the Vietnam War shaped other generations [76].

Although popular stereotypes portray members of the millennial generation as lazy, irresponsible, impatient, apathetic, selfish, narcissistic, and politically disengaged [67], Milkman (2017) [76] asserts that this cohort possesses more progressive attitudes and beliefs than older generations on a wide range of issues, including those relating to the rights of sexual minorities to capitalism itself. In Spain, according to a report prepared by the consulting firm, Deloitte (2017) [78], millennials are much more critical and demanding than their parents. They demand a more personalized life and defend values such as transparency, sustainability, participation, collaboration, and social commitment.

Studies on generational groups and environmental attitudes show mixed results. Specifically, regarding millennials, Kim et al. (2011) [65] argues that this generation is more environmentally conscious than previous generations and shows that most of them (77%) claim to care about the environment. According to Benckendorff et al. (2012) [66], the millennial generation is particularly concerned with environmental and social justice issues and is therefore especially interested in sustainability practices in a range of areas. Contrarily, a study on sustainability by Hanks, Odom, Roedl, and Blevins (2008) [79] found that, in general, this age group is not very worried about environmental concerns such as global warming: 51% purported to be “somewhat” worried while 25.5% reported they were “not very” worried. Apart from these insights, research regarding millennials is only beginning to emerge [80,81].

### 1.3. Study Aims and Hypothesis

Taking the aforementioned research into account, the aim of this study is to analyze which factors underlie differences in attitudes, personal norms, and pro-environmental behavior. Although we acknowledge that researchers have found that gender [7,8], political orientation [82–85], and educational level [12,13] are important to understanding differences in environmental issues, we consider these factors as covariables in this study. Our goal is to control these covariables effect to better understand how generation and region may also have an effect on attitudes, norms, and behavior. Thus, the main objective of this study is to determine whether two factors, region and generation, can also help to explain differences in attitudes, personal norms, and pro-environmental behavior.

Our expectations are that:

- Northern Europeans will exhibit stronger environmental attitudes, personal norms, and pro-environmental behavior than Southerners.
- Millennials will demonstrate higher environmental attitudes, personal norms, and pro-environmental behavior than Generation X.
- With regard to the interactions between region and generation, Northern millennials will exhibit the strongest environmental attitudes, personal norms, and pro-environmental behavior, while Generation X Southerners will exhibit the lowest scores in those environmental variables.

## 2. Materials and Methods

### 2.1. Sample

We used data from the 8th round of the European Social Survey (ESS, 2018) [86], which includes a special module about climate change. In total, we examined a sample of 6216 people, of which 3013 are millennials (born between 1981 and 2000; 48.8% women,

mean age = 26.32;  $SD = 5.49$ ) and 3203 are Generation Xers (born between 1965 and 1980; 50.8% women, mean age = 42.57;  $SD = 6.60$ ).

## 2.2. Measures

### 2.2.1. Independent Variables

**Region:** Following the United Nations Geoscheme (2019) [44], we selected participants from those regions, which were included in the ESS (2018) [86]. We selected 3075 participants from Finland, Sweden, Iceland, and Norway as a representation of Northern Europe (since information from Denmark is not available in this round of study) and 3141 participants from Portugal, Spain, and Italy as a representation of Southern Europe (since information from Greece is not available in this 8th round of data). For analysis, we labelled the Northern and Southern regions as 1 and 2, respectively.

**Generation:** In this study, participants between 18 and 37 years old were considered millennials. Participants between 38 and 53 years old were categorized as Generation Xers. For the purposes of analysis, millennial and Generation X participants were labelled as 1 and 2, respectively.

### 2.2.2. Dependent Variables

**Environmental attitudes:** This was measured using the following question: “How worried are you about climate change?”—where 1 was “not at all worried” and 5 was “extremely worried.”

**Pro-environmental personal norms:** This was measured using the following question: “To what extent do you feel a personal responsibility to try to reduce climate change?”—where 0 was “not at all” and 10 was “a great deal.”

**Direct pro-environmental behavior:** This included both measures of energy demand, namely, energy curtailment and energy efficiency.

**Energy curtailment:** This was measured using a Likert scale from 1 (never) to 6 (always) for the following question: “There are some things that can be done to reduce energy use, such as switching off appliances that are not being used, walking for short journeys, or only using the heating or air conditioning when really needed. In your daily life, how often do you do things to reduce your energy use?”

**Energy efficiency:** This was measured using a Likert scale from 1 (not at all likely) to 10 (extremely likely) for the following question: “If you were to buy a large electrical appliance for your home, how likely is it that you would buy one of the most energy efficient ones?”

**Indirect pro-environmental behavior:** This was measured using three items relating to policy support. Participants had to answer the question “To what extent are you in favor or against the following policies in [country] to reduce climate change?” Responses were recoded into a Likert scale where 1 indicated “strongly against” and 5 “strongly in favor”. The sub-items were:

- Taxes: Increasing taxes on fossil fuels, such as oil, gas, and coal.
- Subsidies: Using public money to subsidize renewable energy, such as wind and solar power.
- Legal ban: A law banning the sale of the least energy-efficient household appliances.

### 2.2.3. Control Variables

**Gender:** Participants were required to indicate either (1) Male or (2) Female gender.

**Educational level:** Beginning with ESS round 5, the ESS has contained a simplified analytical cross-national educational attainment variable (EISCED) [87] with the following labels: (1) less than lower secondary; (2) lower secondary; (3) lower tier upper secondary; (4) upper tier upper secondary; (5) advanced vocational, sub-degree; (6) lower tertiary education, BA level; and (7) higher tertiary education,  $\geq$ MA level.

**Political orientation:** Participants were required to answer their position on the left-right political scale in response to the following question: “In politics people sometimes

talk of ‘left’ and ‘right’. Using this card, where would you place yourself on this scale, where 0 means the left and 10 means the right?”

### 3. Results

#### 3.1. Preliminary Analyses

We performed a logistic regression analysis to ensure that the conceptual classification of the countries within the North and South European regions form valid and reliable groups. Although less frequently used, scholars have also described logistic regressions as a discriminative model that allows a researcher to make binary classifications [88]. In this case, the use of a logistic regression makes it possible to determine the probability that, using the estimated coefficients that correspond to each explanatory variable in the model, one can use trends in answers to correctly predict whether a respondent is a Northerner or a Southerner.

The results show that when the independent variables (environmental attitudes, personal norms, and pro-environmental behavior) are introduced in the model, 75% of the respondents are correctly classified into North and South categories. The logistic regression thus confirms the North–South theoretical classification. The model has a good fit ( $\chi^2(7) = 1639.83$ ;  $p = 0.001$ ) and explains between 25 to 33% of the variance.

#### 3.2. MANCOVA Analysis

The main purpose of running a one-way MANCOVA is to establish whether differences between regions and generational groups are statistically significant, based on the dependent variables (i.e., environmental attitudes, personal norms, and direct and indirect pro-environmental behavior), controlling for covariates such as gender, educational level, and political orientation. Before commenting on the main effects of and interaction between the independent variables, we first discuss the covariable effects.

Our study shows that, compared to men, women scored significantly higher in environmental dimensions. Women show stronger environmental attitudes ( $F = 55.72$ ,  $p = 0.001$ ,  $\eta^2 = 0.011$ ) and personal norms ( $F = 64.03$ ,  $p = 0.001$ ,  $\eta^2 = 0.012$ ). Women also have significantly higher scores in the two direct pro-environmental behaviors: energy curtailment ( $F = 24.08$ ,  $p = 0.005$ ,  $\eta^2 = 0.005$ ) and energy efficiency ( $F = 22.09$ ,  $p = 0.001$ ,  $\eta^2 = 0.004$ ). Furthermore, women also have significantly higher scores in two of the pro-environmental indirect behaviors: taxes ( $F = 23.79$ ,  $p = 0.001$ ,  $\eta^2 = 0.005$ ) and legal bans ( $F = 28.67$ ,  $p = 0.001$ ,  $\eta^2 = 0.006$ ). Only in the pro-environmental indirect behavior subsidies were no differences found between men and women ( $F = 2.72$ ,  $p = 0.099$ ,  $\eta^2 = 0.001$ ).

With regard to education, the results show that the higher the level of an individual’s education, the stronger their environmental attitudes and behaviors will be. Thus, individuals who possess a higher degree also scored highly in environmental attitudes ( $F = 11.01$ ,  $p = 0.001$ ,  $\eta^2 = 0.002$ ); personal norms ( $F = 47.56$ ,  $p = 0.001$ ,  $\eta^2 = 0.009$ ); the two direct pro-environmental behaviors, energy curtailment ( $F = 6.89$ ,  $p = 0.009$ ,  $\eta^2 = 0.001$ ) and energy efficiency ( $F = 34.55$ ,  $p = 0.001$ ,  $\eta^2 = 0.007$ ); and the three pro-environmental indirect behaviors, taxes ( $F = 59.24$ ,  $p = 0.001$ ,  $\eta^2 = 0.011$ ), subsidies ( $F = 34.55$ ,  $p = 0.001$ ,  $\eta^2 = 0.007$ ), and legal bans ( $F = 11.97$ ,  $p = 0.001$ ,  $\eta^2 = 0.002$ ).

With regard to political orientation, the further left an individual is on the ideological spectrum, the higher his or her environment scores in almost all the variables under study was. Thereby, leftists scored significantly higher than rightists in environmental attitudes ( $F = 126.24$ ,  $p = 0.001$ ,  $\eta^2 = 0.024$ ); personal norms ( $F = 35.26$ ,  $p = 0.001$ ,  $\eta^2 = 0.007$ ); the direct pro-environmental behavior, energy curtailment ( $F = 15.94$ ,  $p = 0.001$ ,  $\eta^2 = 0.003$ ); and in the three pro-environmental indirect behaviors: taxes ( $F = 98.05$ ,  $p = 0.001$ ,  $\eta^2 = 0.019$ ), subsidies ( $F = 120.66$ ,  $p = 0.001$ ,  $\eta^2 = 0.023$ ), and legal bans ( $F = 52.33$ ,  $p = 0.001$ ,  $\eta^2 = 0.010$ ). However, no differences were found between leftists and rightists in the pro-environmental direct behavior, energy efficiency ( $F = 0.94$ ,  $p = 0.33$ ,  $\eta^2 = 0.001$ ).

These results confirm previous findings related to environmentalism and gender, educational level, and political orientation. Women, highly educated individuals, and leftists

tend to have more environmentalist traits than others [89–91]. Given that the covariables are significant, in order to calculate the main effects and interactions between regional and generational factors, we adjusted the control variables in the MANCOVA (Table 1) for the following values: gender = 1.49, highest level of education = 4.58, and placement on left-right scale = 5.02.

Table 1. MANCOVA.

Condition	Variables	Level	M	SD	F	Sig	$\eta^2$	
Region	Environmental attitudes	North	3.08	0.85	236.75	0.001 ***	0.044	
		South	3.47	0.86				
	Personal norms	North	6.59	2.23	42.44	0.001 ***	0.008	
		South	6.18	2.44				
	Energy Curtailment	North	4.02	1.43	60.63	0.001 ***	0.012	
		South	4.34	1.19				
	Energy Efficiency	North	7.13	2.46	384.57	0.001 ***	0.070	
		South	8.36	1.94				
	Taxes	North	3.39	1.18	509.54	0.001 ***	0.090	
		South	2.62	1.28				
	Subsidies	North	4.17	0.89	18.22	0.001 ***	0.004	
		South	4.06	1.09				
	Legal Bans	North	3.44	1.10	145.20	0.001 ***	0.028	
		South	3.83	1.06				
Generation	Environmental attitudes	Millennials	3.24	0.89	0.02	0.900	0.000	
		Generation X	3.26	0.87				
	Personal norms	Millennials	6.28	2.36	13.80	0.002 **	0.003	
		Generation X	6.53	2.30				
	Energy Curtailment	Millennials	4.03	1.54	37.85	0.001 ***	0.007	
		Generation X	4.27	1.12				
	Energy Efficiency	Millennials	7.26	2.48	115.62	0.001 ***	0.022	
		Generation X	8.05	2.11				
	Taxes	Millennials	3.09	1.24	1.46	0.227	0.000	
		Generation X	3.01	1.32				
	Subsidies	Millennials	4.13	0.95	0.42	0.518	0.000	
		Generation X	4.11	1.02				
	Legal Bans	Millennials	3.54	1.08	13.31	0.001 ***	0.003	
		Generation X	3.68	1.12				
Region x Generation	Environmental attitudes	North	Millennials	3.09	0.87	00.767	0.381	0.000
			Generation X	3.06	0.83			
		South	Millennials	3.46	0.86			
			Generation X	3.48	0.85			
	Personal norms	North	Millennials	6.41	2.30	20.69	0.100	0.001
			Generation X	6.78	2.14			
		South	Millennials	6.10	2.44			
			Generation X	6.24	2.44			
	Energy Curtailment	North	Millennials	3.94	1.73	40.11	0.043 *	0.001
			Generation X	4.10	1.05			
		South	Millennials	4.17	1.22			
			Generation X	4.48	1.15			
	Energy Efficiency	North	Millennials	6.66	2.58	140.25	0.001 ***	0.003
			Generation X	7.60	2.24			
		South	Millennials	8.11	2.05			
			Generation X	8.56	1.81			
	Taxes	North	Millennials	3.37	1.17	30.79	0.061	0.000
			Generation X	3.41	1.20			
		South	Millennials	2.68	1.23			
			Generation X	2.57	1.31			
	Subsidies	North	Millennials	4.14	0.90	80.50	0.004 **	0.002
			Generation X	4.20	0.88			
		South	Millennials	4.12	1.01			
			Generation X	4.02	1.15			
	Legal Bans	North	Millennials	3.36	1.07	20.79	0.095	0.000
			Generation X	3.52	1.13			
		South	Millennials	3.80	1.04			
			Generation X	3.86	1.07			

\*\*\* Significant at 0.001; \*\* Significant at 0.01 \* Significant at 0.05.



In regard to region, the results show significant differences between Northern and Southern European countries in all the studied variables. Contrary to expectations, Southern participants scored significantly higher in environmental attitudes ( $F = 236.75, p = 0.001, \eta^2 = 0.044$ ); the two direct pro-environmental behaviors, energy curtailment ( $F = 60.63, p = 0.001, \eta^2 = 0.012$ ) and energy efficiency ( $F = 384.57, p = 0.001, \eta^2 = 0.070$ ); and one of the pro-environmental indirect behaviors, legal bans ( $F = 145.20, p = 0.001, \eta^2 = 0.028$ ). Northern participants scored higher than Southern participants in personal norms ( $F = 42.44, p = 0.001, \eta^2 = 0.008$ ) and in two of the indirect pro-environmental behaviors: subsidies ( $F = 18.22, p = 0.001, \eta^2 = 0.004$ ) and taxes ( $F = 509.54, p = 0.001, \eta^2 = 0.090$ ). In regard to generation, the results show significant differences between millennials and Generation Xers in personal norms ( $F = 13.80, p = 0.002, \eta^2 = 0.003$ ); the two direct pro-environmental behaviors, energy curtailment ( $F = 37.85, p = 0.001, \eta^2 = 0.007$ ) and energy efficiency ( $F = 115.62, p = 0.001, \eta^2 = 0.022$ ); and one of the pro-environmental indirect behaviors, legal bans ( $F = 13.31, p = 0.001, \eta^2 = 0.003$ ) where millennials scored lower than Generation Xers, contrary to expectations. However, there were no significant differences between the generations with regard to environmental attitudes ( $F = 0.02, p = 0.90, \eta^2 = 0.000$ ), taxes ( $F = 1.46, p = 0.227, \eta^2 = 0.000$ ), and subsidies ( $F = 0.42, p = 0.52, \eta^2 = 0.000$ ).

The interaction between region and generation is significant for the two direct pro-environmental behaviors, energy curtailment ( $F = 4.11, p = 0.04, \eta^2 = 0.001$ ; Figure 1) and energy efficiency ( $F = 14.25, p = 0.001, \eta^2 = 0.003$ ; Figure 2). Contrary to expectations, Southern Generation Xers scored the highest and Northern Millennials scored the lowest.

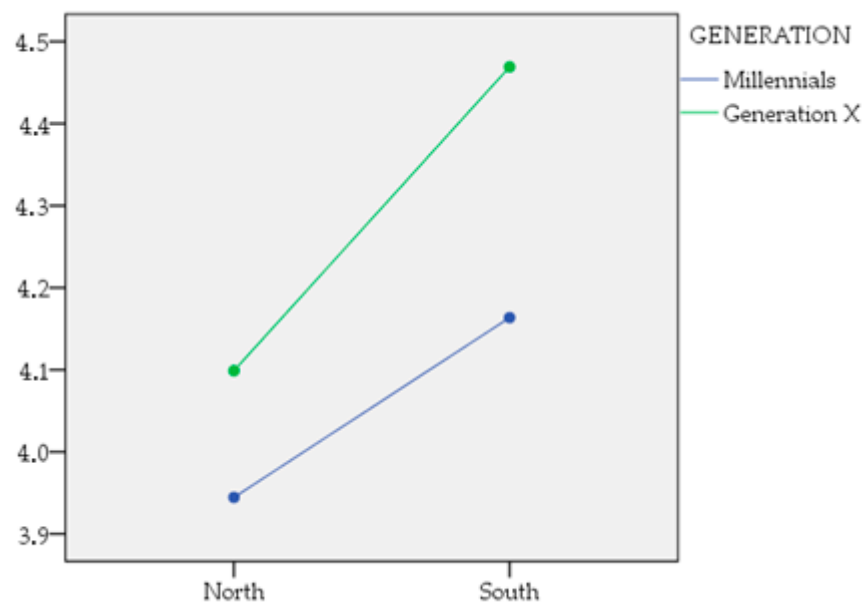


Figure 1. Interaction between Region and Generation in Energy Curtailment.

The data show the interaction is also significant with regard to one of the indirect pro-environmental behaviors: subsidies ( $F = 8.50, p = 0.004, \eta^2 = 0.002$ ; Figure 3). Here, our hypothesis is partially confirmed. Generation X Southerners scored the lowest, while Northerners showed higher results (although without significant differences between millennials and Generation Xers).

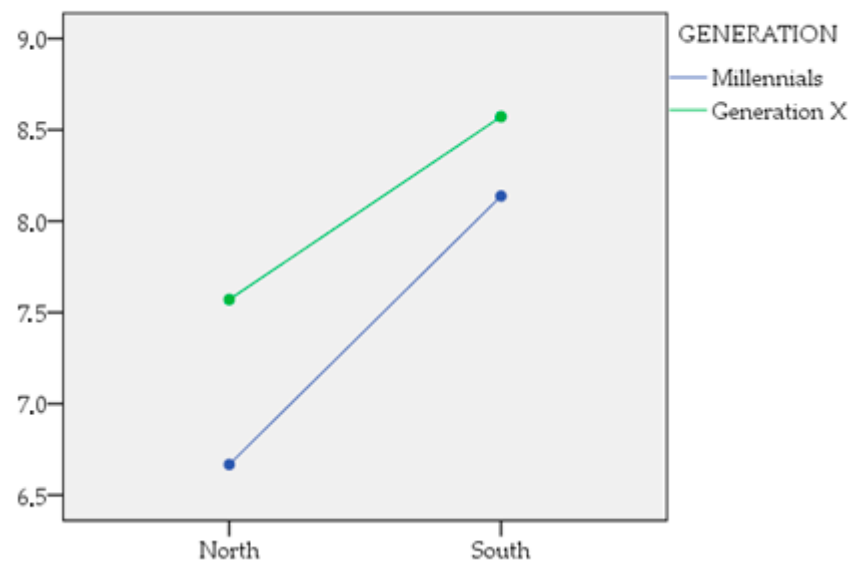


Figure 2. Interaction between Region and Generation in Energy Efficiency.

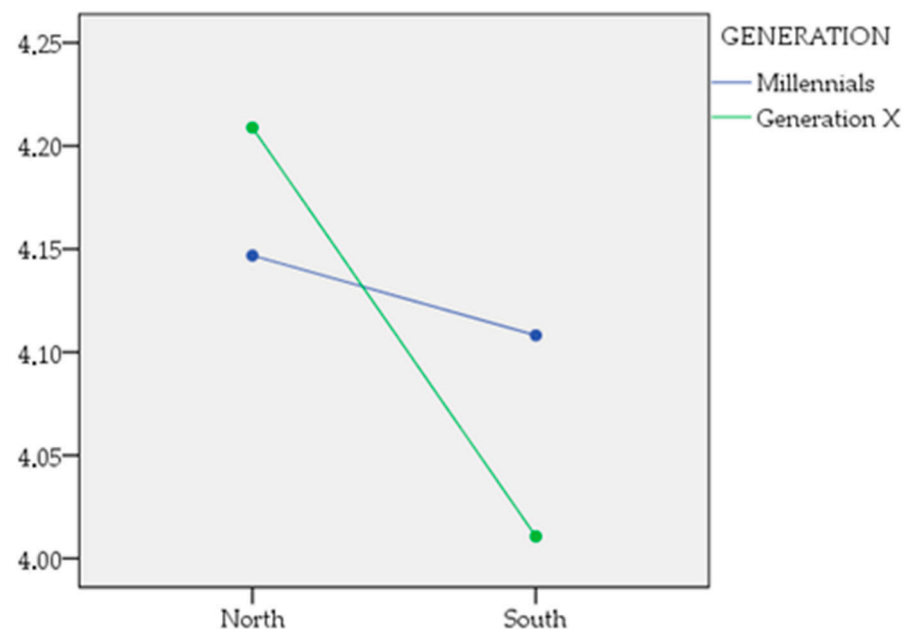


Figure 3. Interaction between Region and Generation in Subsidies.

#### 4. Discussion

This study aimed to develop an improved understanding of how environmentalism varies among individuals from different regions and generations, given the importance of those factors in influencing people's values and preferences in several life domains. First, and before analyzing our results globally, it is important to recognize certain limitations of this study. One must view these results with some caution because we found high levels of environmentalism generally, which may be a result of social desirability bias [92]. Another limitation is the low effect sizes associated with the statistically significant MANCOVA results. Although one should place importance on differences in trends and not on statistical significance, the small effect size could indicate that the results cannot be extrapolated into the real world [93]. However, these findings serve as an initial approximation, marking a line of research for further exploration. It is necessary to validate these results in future transnational comparisons and in more controlled situations (e.g., laboratory or experiment design studies) in order to confirm whether this trend is more than a statistical artifact.

Climate change has received a considerable amount of attention in recent years, meaning that it has become difficult for interested citizens and policymakers to separate facts from fiction [94]. In this study, we wanted to test whether a number of assumptions about the environmental dimensions of certain groups are accurate. Taking advantage of the fact that the last round of the European Social Survey (which was collected in 2016 and published in 2018) included a module titled “attitudes to climate change,” we analyzed common knowledge among European citizens about the issue. Specifically, we wanted to confirm the common belief that Northern Europeans and millennials are more attuned to environmentalism.

In Europe, there is a recurring argument that fuels the belief that Northern European citizens are more environmentalist. According to Klaus and Kousis (2001) [95], urban middle classes tend to be more concerned about environmental issues. Since this group is more developed in Northern European countries than in Southern European countries, this is a structural indicator of a North–South division. Eurobarometer reports (2017, 2018) [50,52] confirm this trend, especially in regard to some environmental action indicators, which have shown more commitment to environmentalism in the North. The media has spread the idea that Northern Europeans are more committed to the environment [96]. Furthermore, Northern Europeans frequently rank among the most ecofriendly cities [55], further bolstering the idea that Northern citizens are more environmentally friendly than Southerners.

The results in the ESS challenge this assumption. Contrary to expectations, Northern Europeans are not the most committed in every environmental dimension. In general terms, Southern citizens have more pro-environmental attitudes and take more direct pro-environmental actions, such as energy efficiency (i.e., making investments that lower energy use) and energy curtailment measures (i.e., reducing use of energy services). They are also more willing to accept laws banning the sale of the least energy-efficient appliances. Still, Northern participants reported a strong sense of personal responsibility, which reflected in higher results relating to personal norms. Furthermore, unlike Southern citizens, Northern citizens prefer subsidies and taxes instead of more punitive measures such as legal bans.

These results are very favorable, considering policy measures. According to the rank proposed by the Yale Center for Environmental Law and Policy [97], based on the EPI, Northern European countries have the strongest policies to meet internationally established environmental targets. Citizens have often strongly opposed these policies where citizens do not understand the reason for their implementation [18]. The results found in this study are very promising. The study shows that the Southern European public are prepared to accept environmentalist political measures since they are aware of the environment and are committed to take action to improve the situation.

Regarding the effect of one’s generation group on various environmental dimensions, there is a general belief that millennials are more environmentally friendly than previous generations. The Pew Research poll indicated that millennials are more likely to believe that global warming exists (2012) [98]. Furthermore, a study published by the MIT AgeLab [99] shows that a majority of millennials believe they are more concerned than older generations about protecting the environment. However, in recent years, voices that are skeptical of this premise have begun to appear. The MIT AgeLab recognizes that “perspective is one thing, though; behavior is another,” and that merely believing in the importance of protecting the environment does not necessarily translate into pro-environmental activity [99].

Our study shows that millennials are significantly less likely to be environmentalists than members of the previous generation. Contrary to expectations, no differences were found between millennials and Generation Xers in environmental attitudes or two of the indirect pro-environmental behaviors (taxes and subsidies). Furthermore, millennials scored significantly lower in the direct pro-environmental attitudes (energy curtailment and energy efficiency) and personal norms categories, and are less willing to accept legal bans for the least energy-efficient appliances.

This result coincides with recent studies that show that although millennials are alive to a series of values, including transparency, sustainability, participation, collaboration, and

social commitment, they have also been raised in an individualistic culture that places more focus on the self and less focus on the group [100]. Young people have been consistently taught to put their own needs first and to focus on feeling good about themselves [101]. This view can be seen in ESS data that shows a steep decline in concern for the environment among millennials when compared to previous generations.

Regarding the interactions between region and generation group, the results did not confirm our hypotheses. Contrary to expectations, Northern Millennials did not score significantly higher in environmentalist dimensions. In the case of the two direct pro-environmental behaviors, Generation Xers from Southern Europe scored higher. Only in the case of subsidies did the results partially confirm our interaction hypothesis; we found that Northern participants scored higher, but no differences were found among Millennials and Generation X in this regard.

This research is only a small step towards demonstrating how much work remains to be done in terms of producing literature that examines the millennial generation. It is assumed that this generation would have a greater concern for the environment than their predecessors [66], but our research results challenge this common perception. The implications of these results should be considered in the formulation of future policies. Because of their unique characteristics, millennials pose new challenges for environmental protection and the success of policies that promote renewable energy technologies and sustainable consumption.

Finally, it would be interesting to explore an alternative explanation for these results, which would require more in-depth research to test. Although Southerners and Generation Xers seem to afford great importance to environmentalism and even demand additional measures to reduce their environmental impact, the actual behavior of these groups lags far behind. In other words, an intention–behavior gap exists. The signal from empirical investigations of the link between respondents' stated intentions and their ultimate behavior is not new. Numerous authors have explained the intention-action gap using Ajzen and Fishbein's Theory of Reasoned Action (TRA: 1980) [102] or its more developed version, the Theory of Planned Behavior (TPB: Ajzen, 1991) [103]. As there are a number of other factors that play a role in behavioral processes, it thus remains unclear what is responsible for this gap between positive environmental intentions and limited environmental behavior. It would be interesting to determine whether other psychological processes are behind these results, such as a metaperception [104] that leads Southerners and Generation Xers to inflate their survey responses to overcome an interiorized stereotype that Southern Europeans and older generations are less environmentally committed than Northerners and millennials.

Another possible explanation could be that respondents undertook social comparisons towards the standards in their own countries when they provided their answers [105]. Considering the objective data, Northern Europeans take more pro-environmental action than Southerners, so acting environmentally is a more established behavior in Northern countries. For Northerners, this standard might make them feel that they have greater behavioral responsibilities and affect their survey responses as a consequence. On the other hand, since taking environmental action is still a somewhat new concept in Southern European countries, the subjective perception of Southerners' intentions could explain their high scores in some variables. Comparing themselves with the standards among the rest of the population may have caused respondents to think that they are environmentalists compared to their compatriots, which resulted in the high scores obtained in the ESS.

Future research, complementing surveys with objective data, must be carried out to confirm these findings. Participants must also be given feedback regarding their current environmental behavior to determine if they possess a distorted perception of their actual behavior.

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