Intersectionalities and climate change concern in Europe: The privileged 'native male' effect

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Abstract

I examine climate change concern in 28 European countries and heterogeneity in these perceptions. Awareness and concern of climate change are crucial in combatting anthropogenic climate change. I explore climate change concern by intersection of key variables (gender, age, migrant background, education, and income). To what extent are there gaps or inequalities in climate change concern with respect to these socio-demographic and socio-economic characteristics of European citizens? And to what extent are there overarching intersectionalities? Using the I-MAIHDA approach, I assess that native low-educated and low-income men are the least concerned with climate change. They show the least worry and personal responsibility about climate change. On the other extreme I find that migrant, highly educated women are the most concerned with climate change. This is in line with the 'identity-protection cognition' and 'environmental risk denial' hypotheses and asks for new strategies to raise climate change awareness amongst the general public.

Keywords

Age; climate change concern; education; gender; income; intersectionalities; MAIHDA; migrant background

1.1 Introduction

In 2020, the European Green Deal was launched: The most ambitious package of policies worldwide, aiming to reach carbon neutrality in Europe. This constitutes a global benchmark because this unprecedented policy package would lead one of the world regions that has contributed the most to carbon dioxide emissions (Hickel, 2020) to generate a real and significant change that would achieve climate change mitigation. In addition, the European Green Deal constitutes the most ambitious contribution to the environmental pillar of the Sustainable Development Goals Agenda. More specifically, it addresses SDG 13 which aims at combatting climate change and its impacts, including improving awareness-raising and climate change mitigation and adaptation. Citizens' climate change concern and the support to these policies is essential to achieving the goals of the SDG13. In this paper, we examine climate change concern in 28 European Union countries and heterogeneity in these perceptions. Awareness and concern of climate change are crucial in combatting anthropogenic climate change. Although in the last decades public opinion has converged with scientific evidence of climate change (Poushter & Huang, 2019), there are population groups that remain sceptic. Seeking the roots of climate change concern, social scientists have widely explored key variables like gender, age, education, and socio-economic factors. To what extent are there gaps or inequalities in climate change concern with respect to these socio-demographic and socio-economic characteristics of European citizens? And to what extent are there overarching intersectionalities? In this paper, we will study intersectionalities and climate change concern with respect to gender, age, migrant background, education, and income.

2.1 The importance of intersectionalities

Highlighting the oppression of African-American women, Kimberlé Crenshaw coined the term 'intersectionalities' in a publication of 1989. She describes it as a lens through which you can see where power collides and intersects, overarching separate groups of people. Hence, there may not simply be a gender problem, a race problem, or a class problem, but various problems coinciding and they show multidimensionality rather than a single categorical axis importance. She describes how Black Women are multi-burdened and this view gets obscured by only looking at a subset of problems rather than a more complex representation of a multi-dimensional group. Crenshaw distinguishes between more

privileged groups in society compared to those that experience more oppression or discrimination.

In a similar way, we can look at social variations in climate change concern. The most privileged group (native, white men) may be the less worried ones and groups that are more often discriminated against (e.g. migrant women) care more about anthropogenic climate change due to the oppression that they experience. Due to protective cognition of their identity, privileged white men may be more likely to deny climate change. Denying anthropogenic climate change would not only protect their status and self-esteem, but they would also perceive less risks in general, and technological risks, environmental problems, and public health treats in particular (McCright & Dunlap, 2011), leading them to be less worried about climate change.

2.2 Previous research

In the literature on climate change concern, a gender effect is well-established, with women being more concerned about climate change than men (Hornsey et al., 2016). Stern, Dietz & Kalof (1993) suggests that the theoretical explanation of the gender gap is the position of women in society and their differential socialization process compared to men, extended to the role of care of the environment. Also, gendered socialization might explain men's underestimation of risks (McCright & Dunlap, 2011).

The impact of age has more mixed evidence, with some studies finding a negative impact and others a positive one or a concave effect (Franzen & Vogl, 2013; Poortinga et al., 2019; van der Linden, 2017). Different opposing hypotheses have been proposed to explain this, such as age differences in coping mechanisms with "bad news" (see e.g. Eckersley, 1999; Threadgold, 2012), or the fact that the young are raised in periods where climate change is more of a concern in the media than for older cohorts (e.g. Hornsey et al., 2016; McCright et al., 2016).

Migrants, compared to natives, are more often found to be worried with climate change as they are in some cases living, or come from places, where they experience the consequences of climate change first-hand, amongst them even including climate refugees (Bougnoux et al., 2014).

A vast literature has found that higher educated individuals are more knowledgeable, informed, and aware of anthropogenic climate change. They are more exposed to scientific

evidence of climate change, a rather abstract concept (Dryzek, 1997; Poushter & Huang, 2019).

Finally, studies have found mixed evidence of variations in climate change perceptions by income groups. On the one hand, there is the 'ecology of the poor' hypothesis (Martínez Alier, 2011), which state that lower social strata have more worries in general and thus they will also worry more about climate change. This is in line with Stoknes' (2014) explanation on upper-class individuals' denial as a psychological mechanism to bridge dissonance with their high-carbon lifestyle. On the other hand, there is the 'postmaterialist' hypothesis (Inglehart, 1995) which implies that people only start to worry about less materialistic things once their material needs are fulfilled. This hypothesis predicts a similar outcome as the 'finite pool of worry' hypothesis (van der Linden, 2017), which states that people can only have a limited amount of worries and climate change would not be amongst those when there are already so many other issues to worry about, as occurs amongst the lower social classes or low-income group.

With respect to combinations of the fore-mentioned socio-economic characteristics (the 'intersectionalities'), less literature is available to our knowledge. However, one group is highlighted in, mainly USA, studies: the group of 'white males'; the most privileged group in society. They are privileged on a variety of aspects, but also their perceptions of climate change differ from other groups of society that are exposed to more oppression. The 'white male' effect has been found to explain an important part of polarization in climate change perceptions, due to their privileged position they concord with anything that does not attack the status-quo (McCright & Dunlap, 2011). They aim for protecting their status and self-esteem (the 'identity-protective cognition' hypothesis), as well as seem to experience less risks in a variety of issues, among which the danger of climate change (the 'environmental risk denial' hypothesis).

2.3 Hypothesis

Although due to lack of underlying psychological information we cannot explain the mechanisms of polarization between 'white males' and others, we rely on the above-mentioned hypotheses of 'identity-protection cognition' and 'environmental risk denial'. As we are studying 28 European countries, we do not have data on race or ethnicity, but we know whether respondents were born in the country of study. Based on the 'the 'environmental risk denial' hypothesis and the 'identity-protective cognition' hypothesis, we

similarly expect to find native men to be the least concerned with anthropogenic climate change compared to others. As for risk denial, native men are expected to be less risk averse than others with respect to a range of issues, amongst which are environmental problems. Flynn (1994: p. 1107) argued that this privileged group may see "[…] less risk in the world because they create, manage, control, and benefit so much of it". Moreover, we expect that native males have a hierarchical worldview that is in line with the cultural norms and views of the group they belong to, they resist revision of other beliefs, and are most inclined to defend the status-quo, as this is beneficial for them. Hence, we may expect to find that native males in general (but perhaps low educated and low income older native males in particular) will be the ones that are the least concerned with climate change of all to-be-constructed intersections (i.e. combinations of gender, age, migrant background, education, and income). The older native males are, the more they might have 'to lose' and lower educated native males may be attracted to combatting climate change promotions and awareness campaigns. On the contrary, young highly educated, migrant females will be showing the most worry about climate change as they are more aware of the negative impact of climate change (which might directly affect them in the case of climate refugees) and in general show more caring attitudes (in the case of women). We will investigate climate change concern by two measures: one on climate change worry and one on climate change personal responsibility (see below). Our hypothesis is that older, native, lower educated males will be the least concerned with climate change, whereas young, migrant, and highly educated females will be the most concerned. As there are competing expectations from 'the ecology of the poor' versus the 'postmaterialist' hypotheses, we do not include income groups in our hypotheses, but will 'let the data speak'.

3.1 Data

To examine climate change perceptions according to gender, age, migrant background, education, and income, we use the European Social Survey (ESS) (2023). The full dataset of 28 European countries included 46,162 respondents. After excluding cases with missing responses to the questions on climate change concern, age, migrant background, and education (i.e. 'not applicable', 'refusal', 'don't know', and 'no answer'), the final analytical sample consisted of 42,316 observations in the case of climate change worry and 41,717 in the case of the personal responsibility measure. As income has around 20% missing cases, we

included here a separate ‘missing’ category. The analytical sample composition is described in Table 1.

Table 1. Descriptives variables ESS 2023

Sample statistics		N	%
Total		42,316	
Gender	female	22,608	53
	male	19,708	47
Age	15-29	6,271	15
	30-44	9,262	22
	45-64	14,615	35
	>65	12,168	29
Migrant background	native	38,392	91
	migrant	3,924	9
Education	Low	9,358	22
	Medium	21,375	51
	High	11,583	27
Income	Low	5,408	13
	Lower-Middle	11,139	26
	Upper-Middle	11,551	27
	High	5,796	14
	Missing	8,422	20
CCC	Not at all worried	2,066	5
	Not very worried	6,151	15
	Somewhat worried	18,677	44
	Very worried	12,063	29
	Extremely worried	3,359	8

3.2 Operationalization

Our first dependent variable on climate change concern is climate change worry and is estimated by the answers on the following question: “How worried are you about climate change?”, ranging from 1 (not at all worried) to 5 (extremely worried). The distribution approximates normality (skewness = -0.29, kurtosis = 2.91), allowing it to be treated as continuous in the analysis.

The second dependent variable is personal responsibility and is asked with the following question: “To what extent do you feel a personal responsibility to try to reduce climate change?”, ranging from 0 (not at all) to 10 (a great deal). The variable is slightly left skewed

(skewness = -0.072, kurtosis = 4.09), but approaching normality and as such we treat the variable as a continuous one in our further analyses.

The independent variables include gender, age, migrant background, education, and income. Gender is a binary variable for male and female, and had no missing values. Age is a continuous variable ranging from 15 to 90, and only had a small amount of missing values (approximately 0,8%) which are therefore deleted. Migrant background is measured by a dichotomous variable: 1 “Born in the country of study” (native)., 2 “Not born in the country of study” (i.e. migrant). Education was recoded into three categories: low (ISCED 1-2), medium (ISCED 3-5), high (ISCED 6-7), and missing (‘refusal’, ‘don't know’, ‘no answer’, and ‘other’). Both variables has some missing values that are deleted (0.05% and 0.58%, respectively). Income is measured in 10 deciles provided by the ESS. However, approximately 20% of the income data is missing. We recoded the decile variable into quartiles, and added a fifth category ‘missing’.

3.3 Method

To test our hypotheses, we perform a I-MAIHDA analysis (Evans et al., 2024). MAIHDA stands for multilevel analysis of individual heterogeneity and discriminatory accuracy and entails multilevel analysis in which intersections of various variables (‘intersectionalities’) are grouped into ‘social strata’ that form the second level of the analysis. As such it is a theoretically-driven descriptive approach that strives to understand inequalities that are produced by multifaceted, overlapping, and interacting social processes (Evans et al., 2024).

In order to do so, we first show the sample sizes per stratum (240 strata in total) that we have constructed by combining the scores on each of the variables of gender, age, migrant background, education, and income (see Table 2).

Table 2. Sample size of intersectional social strata, defined by respondents’ gender, age, migrant background, education, and income, ESS 2023 (n=240)

	number of strata	% of strata
100 or more	93	38.8
50 or more	137	57.1
30 or more	172	71.7
20 or more	200	83.3
10 or more	221	92.1
less than 10	19	7.9

Continuously, we first look at a null model, where the variance due to belonging to one of the 240 strata (the intersectionalities of all combinations of the independent variables) can be distinguished from individual variance in climate change concerns. The model is defined by the following formula:

Level 1: $y_{ij} = \beta_{0j} + e_{ij}$
Level 2: $\beta_{0j} = \beta_0 + u_i$
Or the combined version of the two levels, by substituting the level 2 equation into the level 1 equation:

$$y_{ij} = \beta_0 + u_j + e_{ij}$$

where $u_j \sim N(0,\sigma^2_u)$ and $e_{ij} \sim N(0,\sigma^2_e)$.
More specifically, β_{0j} is the mean of stratum j, constructed by the overall mean β_0 and a stratum random effect u_i. Both u_j *and* e_{ij} are assumed to be normally distributed with mean 0 and variance σ^2_u and σ^2_e, respectively.
In the subsequent analysis, which is referred to as the additive main effects model, we estimate the following model:

$$y_{ij} = \beta_0 + \beta_1 x_{1j} + \ldots + \beta_p x_{pj} + u_i + e_{ij}$$

where $u_j \sim N(0,\sigma^2_u)$ and $e_{ij} \sim N(0,\sigma^2_e)$.
More specifically, $x_{1j,\ldots,}x_{pj}$ are the p categorical dummy variables of the five intersectionality variables (gender, age, migrant background, education, and income) and $\beta_{1,\ldots,}$ β_p are the corresponding regression coefficients. Hence, in this model, we include all the independent variables that define the strata as fixed level 2 explanatory variables. That is, we include one gender dummy, 3 age dummies, one migrant background dummy, 2 education dummies, and 3 income dummies, which makes for a total of 11 beta regression coefficients, including the intercept. Note that, by including these 5 level-2 characteristics, the random effect u_i now measures the variance that remains between the strata after controlling for the additive main effects.

4.1 Results

4.1.1 Null model

From the null model, we observe an intraclass correlation coefficient (or variance partition coefficient, VPC) of 3.4% for climate change worry and 5.2% for climate change personal responsibility. There is thus a small General Contextual Effect of the intersectional strata that requires explanation. In other words, the VPC shows the amount of clustering of individuals' climate change concern scores within the strata, or the correlation in climate change worry or personal responsibility between two individuals randomly taken from one and the same stratum. The small size of the VPC is a commonly found result in I-MAIHDA models (Evans et al., 2024). Yet, we will later on also show the actual range of the predicted values, as ample person-to-person variation in climate change concerns can hide meaningful inequities between strata (see below).

An advantage of using I-MAIHDA models is that one can assess a precision weighted grand mean of climate change concern, next to the sample mean and the grand mean. This precision weighted grand mean is the weighted average of the stratum means, 'shrunken' towards the grand mean when sample sizes are small. In this way, the obtained mean is adjusted for lower reliability of means from small strata by using information from the larger strata. See Table 3 for the estimation of these various means.

Table 3. Sample mean, grand mean, and precision weighted grand mean of climate change concern, ESS 2023

Climate change concern	Mean	Median	SD	Min	Max	N
sample mean: individual values	3.2	3	1	1	5	42316
grand mean: stratum means	3.2	3.2	0.2	2.5	4	240
precision weighted grand mean: predicted stratum means	3.2	3.2	0.1	2.9	3.6	240
Climate change personal responsibility						
sample mean: individual values	6.0	6	2.6	0	10	41717
grand mean: stratum means	6.2	6.1	0.8	2.7	8.5	240
precision weighted grand mean: predicted stratum means	6.1	6.1	0.5	4.9	7.3	240

4.1.2 Additive main effects model

From the extended model with the additive main effects, we now observe a VPC of 0.14% or 0.43% respectively for worries or personal responsibility, which is a significant reduction in the variance at level 2 that remains and is attributable to interaction effects. More specifically, the Proportional Change in Variance is 96.1% and 92.1% respectively, and implies the

proportion of the between-stratum variance that is explained by controlling for additive main effects. In other words, 3.9% (or 7.9% in the case of the personal responsibility variable) of the between-stratum variance remains to be explained by interaction effects.

Table 4. Parameter estimates for I-MAIHDA linear model of climate change concern, ESS 2023

	M0a	M1b	M0b	M1b
Female		ref		ref
Male		-0.101***		-0.453***
Age: 15-29		ref		ref
Age: 30-44		-0.006		-0.0642
Age: 45-64		0.025**		0.0446
Age: >65		0.031***		-0.119*
Native		ref		ref
Migrant		0.023***		0.468***
Low education		ref		ref
Medium education		0.062***		0.178***
High education		0.145***		0.854***
Low income		ref		ref
Lower-Middle income		0.008		0.145*
Upper-Middle income		0.023*		0.325***
High income		0.030***		0.565***
Missing income		-0.023**		-0.194**
Intercept	3.212***	3.090***	6.108***	5.669***
N	42316	42316	41717	41717
Random effects variances				
Stratum-level	0.03	0.00	0.35	0.03
Individual-level	0.88	0.88	6.40	6.41
Variance Partition Coefficient (VPC)	3.4%	0.14%	5.2%	0.43%
Proportional Change in Variance (PCV)		96.1%		92.1%

4.1.3 Further inspection of predicted values

The results of both the null model and the additive main effects model are presented in Table 4. The intercept of these models are the precision-weighted grand means of climate change concern, in Model 1, this mean is adjusted for the five explanatory included variables. We also observe that the male stratum has on average .10 lower score on the climate change worry scale than the female stratum and .45 lower score on the personal responsibility scale. Especially older ages are more worried about climate change, although they feel less of a personal responsibility to reduce climate change. People belonging to the migrant stratum are 0.023 points higher on the climate change worry scale and .47 points higher on the personal responsibility scale. Individuals of the higher education stratum are more concerned with climate change than those of the low or middle education stratum. Finally, belonging to a stratum with higher income goes together with a higher score on climate change concern (with those that have missing values on income being less concerned with climate change according to the two measures presented here).

To zoom in on strata differences in climate change concern, we look at the predicted values for various combinations of our five characteristics under study.

Which are the strata with the highest, and which are the strata with the lowest predicted values? In line with our expectations native, low educated men with missing incomes are strata that have the lowest predicted means of climate change concern. In contrast, female higher educated migrants with high incomes belong to the strata that are most concerned about climate change (see Table 5).

Another way to portray variation between the strata is by showing all the predicted means of climate change concern by stratum (see Supplementary Material, Figure S1). We then observe the large variation between the 2.8 score on the low end and the 3.6 score on the highest end of climate change worry scale prediction. The same pattern we observe for climate change personal responsibly with a range between 4.9 and 7.6 score.

Table 5. Five highest and five lowest ranked strata for climate change predicted mean, ESS 2023

strata	gender	age	migrant background	education	income	n	rank	predicted mean
Climate change concern								
22115	male	30-44	native	Low	Missing	62	1	2.8
21115	male	15-29	native	Low	Missing	350	2	2.8
23115	male	45-64	native	Low	Missing	220	3	2.9
22111	male	30-44	native	Low	Low	68	4	2.9
22112	male	30-44	native	Low	Lower-Middle	110	5	2.9
14232	female	>65	migrant	High	Lower-Middle	36	236	3.6
13233	female	45-64	migrant	High	Upper-Middle	66	237	3.6
14233	female	>65	migrant	High	Upper-Middle	24	238	3.6
13234	female	45-64	migrant	High	High	70	239	3.6
14234	female	>65	migrant	High	High	11	240	3.6
Climate personal responsibility								
24115	male	>65	native	Low	Missing	310	1	4.9
22115	male	30-44	native	Low	Missing	60	2	4.9
23115	male	45-64	native	Low	Missing	210	3	4.9
22125	male	30-44	native	Medium	Missing	370	4	4.9
24125	male	>65	native	Medium	Missing	360	5	5
13233	female	45-64	migrant	High	Upper-Middle	66	236	7.3
12234	female	30-44	migrant	High	High	73	237	7.4
14234	female	>65	migrant	High	High	11	238	7.5
11234	female	15-29	migrant	High	High	10	239	7.5
13234	female	45-64	migrant	High	High	70	240	7.6

5.1 Discussion and conclusion

We investigated polarization in climate change concern and more specifically intersectionalities in this. Using the European Social Survey (ESS) round 11 (2023), we performed an I-MAIHDA analyses to get at these intersectionalities. We find that a large part of variation in climate change concern takes place at the individual level, not at the intersectional level. Yet, of this variation in intersectionalities, a major part is explained by the additive main effects of gender, age, migrant background, education, and income. Even though just explaining a small part of climate change concern, the intersectionalities differences that arose, were interesting and in line with our expectations. In line with the privileged 'white male' effect that in the intersectionality literature has so often been indicated, we found a 'native men' effect. Native low-educated men with missing or low incomes are the least worried about climate change and give themselves the lowest scores on the item that climate change reduction is a personal responsibility. Instead, highly educated migrant women with high incomes are the most concerned. This is in line with our hypotheses. However, whether this polarization is due to 'identity-protective cognition' or 'environmental risk denial' or a combination of the two is something beyond this paper and we leave for future research.

Yet, the found polarization indicates an important danger in climate change policies that policymakers might want to pursue. This danger is the continuing denial of anthropogenic climate change by a large and important group of voters that do not support climate change combating policies whatsoever. We therefore may call for different strategies to inform the general public about climate change danger; for instance, by targeting communication of the climate change message to various 'intersections' in 'their language' as to be on 'the same page' when it comes to find support in groups who underestimate environmental risks and do not want to change the status-quo.

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