Understanding Climate Attitudes in the Context of Environmental Justice

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Abstract: Despite growing public awareness, action to mitigate and adapt to climate impacts remains urgent. Environmental hazards and climate change effects are disproportionately placed on marginalized communities, exacerbating existing inequalities and creating a triple threat for those facing environmental pollution, social vulnerability, and limited adaptive capacity. Using the regulatory scope framework, construal level theory, and data from the United States Centers for Disease Control and Prevention's Environmental Justice Index and American National Election Survey, we examine how living in areas with high environmental burden and social vulnerability influences beliefs about climate change and support for greenhouse gas regulation. This research uses quantifiable measures of environmental injustice at the census tract level and self-reported survey responses about climate attitudes through a robust and representative sample of over 7,000 US residents. Our findings indicate Democrats are less supportive of climate policies when they face environmental injustices. Republicans' views on climate change remain unchanged based on their social and environmental vulnerability. These results highlight the complexities of environmental and social factors in shaping climate perceptions and underscore the need for multifaceted, place-based, and bipartisan policy approaches to comprehensively address climate and environmental justice.

Keywords: environmental justice, climate change beliefs, political ideology, climate policy, regulatory scope

1. Introduction

The increasing frequency of extreme weather events and the rise in global temperatures make climate change perhaps the most pronounced issue of our time(1,2). Scientific consensus attributes these changes to human activities like burning fossil fuels, pollution, and deforestation(1). This urgent and 'wicked' problem poses far-reaching consequences for ecosystems, economies, and human well-being(3,4). Luckily, knowledge about climate change is only increasing; 7 in 10 Americans agree that climate change is currently happening and personally important(5). While this increase in knowledge is positive, there is also a need to push for immediate action to combat climate change and adapt to its impacts.

How individuals psychologically process and prioritize threats that vary in their perceived immediacy and relevance to their personal lives constitutes a central aspect of this challenge. Construal Level Theory (CLT) posits that individuals develop distinct mental representations (i.e., construals) of objects and events based on their psychological distance from these entities. Objects or events that are psychologically distant, whether in terms of time, space, or social connection, are typically represented through abstract, high-level construals that emphasize central, essential characteristics while neglecting specific details(6,7) . Conversely, psychologically proximal objects or events are represented by concrete, low-level construals that emphasize specific, detailed, and contextualized features (6,7). As Ledgerwood and colleagues (6) explain, the same pair of sandals might be represented abstractly as "footwear" when thinking about shoes needed for a distant trip, but concretely as "blue rubber flip-flops with a scuff on the toe" when considering wearing them right now. Climate change often manifests as a psychologically distant threat with abstract construals removed from the self, here, and now along multiple dimensions (8–10). Its most severe consequences may feel temporally distant, projected to occur decades or centuries into the future. Spatially, major impacts might seem concentrated in distant regions or other

50 countries, far from one's immediate surroundings. Socially, the individuals most severely
51 affected may belong to different communities or future generations, feeling distant from one's
52 immediate social circle.

53 However, the impacts of environmental hazards and climate change are not
54 universally distant; environmental hazards and impacts of climate change are unevenly
55 distributed across the population, particularly by race and class(11,12). Environmental
56 injustice, or unequal exposure to these hazards, exacerbates existing inequalities and
57 disproportionately affects marginalized communities, including Indigenous peoples, people
58 of color, and low-income populations. Those experiencing environmental injustice often face
59 a "triple threat" from environmental pollution exposure, social vulnerability, and climate
60 change hazards (11). Vulnerable populations experiencing pollution may face worse
61 outcomes from climate hazards due to pre-existing social disadvantages, heightened
62 susceptibility *caused* by pollution exposure, or a lack of resources and infrastructure to
63 effectively mitigate the impacts of climate-related disasters. For example, many rural
64 populations in the United States (US) that depend on private wells for drinking water, which
65 are more susceptible to chemical contamination, are also more likely to face climate-sensitive
66 health outcomes due to vulnerability to coastal surges or riverine flooding(13,14). In addition,
67 pollution not only makes ecosystems less resilient to climate change, but it also makes people
68 less resilient by making them sicker, limiting their capacity to adapt(15). There is, for
69 example, strong evidence to suggest that exposure to certain air pollutants leads to
70 physiological changes that make people more sensitive to extreme temperatures(16). For
71 those directly experiencing environmental injustice, the threat is not merely abstract or
72 distant; it is immediate and tangible.

73 While construal level theory explores how psychologically close or distant an object
74 or issue is from a person, it does not elucidate how other cognitive tools modulate the scope

of an issue. Building on CLT, the regulatory scope framework examines how individuals and groups adjust their cognitive and behavioral regulation to pursue desired objectives that vary in psychological proximity (6, 7). Effective human functioning requires the capacity to both immerse oneself in the demands of the immediate "here and now" (requiring a contractive regulatory scope) and to transcend current experiences in order to plan for the future, engage with distant others, or consider hypothetical scenarios (requiring an expansive regulatory scope)(7). In other words, regulatory scope is about what people focus on. In the context of climate change and environmental burdens, examples of such focus could include an incoming storm set to hit one's neighborhood within 48 hours (contractive scopes) versus the impacts of the US no longer participating in the Paris Agreement (expansive scope).

Living in areas with high environmental burden and social vulnerability, characteristics associated with facing significant, proximal demands, might intuitively be expected to increase concern about environmental issues. Indeed, some research has found that experiencing the impacts of climate change can shift people's perceptions of the issue, making it a more salient and, therefore, important topic(17,18). For example, researchers surveyed Maryland residents and found that socially vulnerable individuals perceived climate change as a risk to their health(19). Other research found a similar trend with New York City residents(20). Some work has also found that people of color generally have higher risk perceptions of climate change and perceive it as a less polarizing topic(21,22). However, findings on the relationship between vulnerability to climate change and perceptions have been mixed.

For example, exposure to environmental hazards like pollution, which makes people more vulnerable to negative climate change impacts, may have little to no relationship to risk perceptions or perceived importance of climate change(23,24). Because familiarity with a risk may decrease risk perceptions if it does not have overt adverse consequences(17,25), people may not believe climate change is personally meaningful, especially if living in a toxic

environment is part of everyday life(24). Research on spatial optimism bias provides another possible explanation; while people generally think climate change is impacting communities around them, they are less likely to think it is impacting them personally—even when they live in areas where climate-related hazards like floods and droughts have happened(26,27). Financial or economic dependence on extractive industries may impact interest in supporting climate policies, even if individuals live closer to environmental hazards(28,29).

Action on climate change requires people to view it as an important and pressing issue, something that impacts them, and is risky to them personally (23,30). Broadening public participation in climate discourse and decision-making is an important long-term collective goal, and it must include those on the front lines of these issues and those most likely at risk from the related hazards (11,23). Importantly, policies to address climate crises require bipartisan support.

Ideologies and values represent abstract evaluative principles that function as high-level mental tools, particularly relevant when assessing distant issues (7). Climate change has been well-documented as a politically polarizing topic, especially in recent decades(31,32). Climate change is thought of as a liberal issue, which may prompt some conservative Americans to disengage in conversations or be antagonistic toward the topic. However, approximately 25% of conservatives believe climate change is happening and are alarmed or concerned about its impacts(33). While political ideology plays a role in perceptions of climate change and climate-related policy alternatives, other variables moderate this relationship. Recent work found that support for climate policies becomes more polarized when accounting for education and income(34,35). Republicans who are alarmed or concerned about climate change are more likely to be moderates or people of color than other

Republicans(33). As we strive for more collective action on climate, people's multiple identities, worldviews, and place-based experiences of climate change need to be considered.

And, to combat these environmental injustices, we must understand them, map them, and develop place-based decision-making processes and strategies(36). Fortunately, the US Centers for Disease Control and Prevention (CDC) developed an Environmental Justice Index (EJI) tool, providing data on the cumulative impacts of exposure to environmental injustices. The dataset elucidates how each US census tract compares to one another on several environmental and social determinants of health(37). This can spotlight communities experiencing higher burdens of environmental and social injustice. Since the data are aggregated at the census tract level, they do not include individual-level attitudinal measures and do not reveal whether individuals living in environmentally and socially vulnerable communities are aware of the disproportionate environmental burdens they face, and/or if they are more willing to support environmental policies. Understanding whether personal experiences with environmental hazards impact individuals' pro-environmental attitudes and willingness to act on climate change is crucial for tailoring effective policies and interventions that advance equity and make vulnerable communities more climate-resilient(38).

More work is needed to address the range of issues that comprise social vulnerability and experiences of environmental injustice, and how interwoven identities shape climate change's perceived importance and climate policy preferences. Beyond examining environmental justice within a regularly scope framework, this work also builds on risk perception literature about place-based hazard exposure and perceptions of risk, and theories about how identity plays a role in people's perceptions of environmental issues. And, because critical environmental justice scholars argue that all levels of government are too embedded in

maintaining the inequities to be the ones to solve them, this work is motivated by critical environmental justice scholars and their call for both policy and place-based solutions(39).

1.1 Research Questions

1. How does living in areas facing proximal environmental injustices relate to *a)* believing climate change is important and *b)* favoring GHG regulations?
2. Does political ideology moderate these relationships?

2. Methods

2.1 Survey data.

This research analyzed public support for climate change policies using the American National Election Studies (ANES), which collects data on voting, political participation, and public opinion in the US from every presidential election since 1948. The ANES Time Series Studies follow a two-wave panel design with a pre- and post-election survey with the same respondents. These data have been used widely in social science research(40,41). The pre-election survey was conducted between August 18 and November 2, 2020, while the post-election survey was conducted between November 8 and January 4, 2021. The ANES 2020 Study used a mixed-mode design administered by interviewers via telephone and videoconference and self-administered using an online questionnaire(42). The overall survey response rate in 2020 was 36.7%, and the post-election re-interview rate was 90.0%(43). The post-election sample from which we drew our dependent variables (detailed below) included 7,453 respondents. All participants gave informed consent to take part in the surveys. Data were released in July 2021 and accessed via the University of Michigan's Inter-university Consortium for Political and Social Research (ICPSR) in October 2023. The University of Oregon's Internal Review Board deemed this study exempt from review.

2.2 Survey measures

This study's two dependent variables are support for greenhouse gas emission regulation and perception of climate change importance. The first variable was scored using a 7-point scale using two items: "Do you favor, oppose, or neither favor nor oppose increased government regulation on businesses that produce a great deal of greenhouse emissions linked to climate change?" and "Do you [favor/oppose] that a great deal, a moderate amount, or a little?" (from "Oppose a great deal" to "Favor a great deal")(43). The overall mean for this variable was 5.11 (SE = 0.04). The second variable was scored using a 5-point scale using the item: "How important is the issue of climate change to you personally?" (from "Not at all important" to "Extremely important"). The overall mean for this variable was 3.29 (SE = 0.03). The two dependent variables were positively correlated, r = 0.62 [0.60, 0.65]. We used a 3-item composite measure from the ANES 2020 Study pre-survey to assess respondents' political ideology, which was scored using a 7-point scale (from Strong Democrat to Strong Republican). Responses to the following three questions were used to generate the political ideology variable: "Generally speaking, do you usually think of yourself as a [Democrat/Republican/Independent], or what?", "Would you call yourself a strong [Democrat/Republican] or a not very strong [Democrat/Republican]?", and "Do you think of yourself as closer to the Republican Party or to the Democratic Party?". The overall mean for this variable was 3.92 (SE = 0.04).

2.3 Survey sample.

Demographic variables from the ANES 2020 Study included age, sex, income, education, and race. The mean age was 47.35 (SE = 0.36). The sample was 51.56% male and 48.44% female (SE = 0.88% for both). Income averaged 13.34 (SE = 0.12), between $70 and $ 74,999 and $75 and $ 79,999. Education had a mean value of 3.92 (SE = 0.04), which is

between the levels "some college but no degree" and "associate degree, in college – occupational/vocational." The racial identification breakdown was as follows: White, non-Hispanic: 65.95% (0.84%); Black, non-Hispanic: 11.15% (0.59%); Hispanic: 13.25% (0.73%); Asian or Native Hawaiian/other Pacific Islander, non-Hispanic: 3.77% (0.35%); Native American/Alaska Native or other race, non-Hispanic: 1.99% (0.23%); Multiple races, non-Hispanic: 3.90% (0.38%).

2.4 Environmental injustice data.

We used the US CDC's Environmental Justice Index (EJI) tool to obtain measures for the independent variables at the census tract-level: environmental burden, social vulnerability, and environmental injustice. The EJI is a publicly available dataset containing information on indicators related to environmental justice for the 48 US contiguous states. We downloaded the dataset in May 2024.

The environmental burden variable represents the cumulative sum of various environmental determinants of health, like air pollution, water pollution, and hazardous and toxic sites in each census tract, as well as its transportation infrastructure (e.g., high-volume roads) and built environment characteristics (e.g., houses built pre-1980)(44). The data for these environmental indicators comes from various sources, including the US Environmental Protection Agency, the US Census Bureau American Community Survey, and the Mine Data Retrieval System, among others. Tract-level percentile ranks for each environmental indicator are calculated and summed, producing an environmental burden score ranking between 0 and 1.

The social vulnerability variable is the cumulative sum of various social determinants of health, considering a census tract's minority status, socioeconomic status, household characteristics, and housing stock(44). The data for these social indicators comes from the US

Census Bureau American Community Survey. Tract-level percentile ranks for each social indicator are calculated and summed, producing a score ranking between 0 and 1.

EJI provides a composite social-environmental score that combines the environmental burden and social vulnerability of a census tract. We define the environmental injustice variable as summing the environmental burden and social vulnerability scores and taking the percentile rank, producing a value between 0 and 1.

2.5 Analysis

We merged the EJI dataset and the geocoded ANES dataset by census tract. After screening out respondents with no responses to the ANES variables of interest and/or those whose geocode could not be matched to a census tract from the EJI dataset, our sample was N = 7,205 respondents, 97% of the total ANES post-survey sample. The EJI dataset only contains indicators for census tracts located in the 48 contiguous US states; thus, ANES respondents located outside of these states were screened out. After merging, we applied the ANES' full-sample post-election survey weight to account for the ANES sampling design and accurately represent the US 2020 electorate population (see (45) for information on weighting).

Our primary analyses consisted of linear regression models run separately for the two dependent variables. We report the results of linear regression models in the main text, which were checked against ordinal logistic regression models (see SI). The results were highly consistent across the two methods. The models included political party leaning (z-scored), environmental injustice score, social vulnerability score, or environmental burden score (each z-score and their interaction). For inference, we rely on point estimates and 95% confidence intervals, evaluating whether the 95% confidence intervals contain zero or not. Simple slopes for the interactions were computed to examine the slopes of the environment injustice/social vulnerability/environmental burden score among Democratic and Republican-leaning

respondents (i.e., +/- 1 SD from the mean on political leaning). We report point estimates and 95% confidence intervals in brackets to summarize results. Survey weighting and all regression analyses were performed using the survey package(46) for R version 4.3.2(47). The emmeans package(48) generated simple slopes for interactions and plotting data. Plotting was performed using ggplot2(49).

3. Results

3.1 Environmental Injustice and Climate Change Policy Support.

There was a weak but significant main effect of environmental injustice scores (z-scored) on climate change importance, b = -0.06 [-0.11, -0.004]. There was a main effect of political leaning (z-scored), such that Republican-leaning respondents perceived climate change as less important than Democrat-leaning respondents, b = -0.71 [-0.75, -0.67]. The interaction effect was significant (Figure 1), b = 0.06 [0.02, 0.10]. Simple slopes analyses revealed a significant negative relationship between environmental injustice scores and climate change importance among Democratic-leaning respondents (-1 SD from the mean on party leaning), b = -0.12 [-0.18, -0.06], while there was no significant relationship for Republican-leaning respondents (+1 SD from the mean on party leaning), b = 0.005 [-0.06, 0.07].

For the greenhouse gas emissions reduction measure, there was also a significant effect of environmental injustice; higher injustice scores were associated with less support, b = -0.10 [-0.17, -0.03]. Party leaning was also associated with this dependent measure such that more Republican-leaning participants reported lower support for emission reductions, b = -0.79 [-0.83, -0.74]. There was statistical evidence of an interaction effect (Figure 1), b = 0.12 [0.08, 0.17]. Simple slopes analyses indicate that, among Democratic-leaning respondents, there was a negative slope for the environmental injustice index on support for greenhouse gas emissions, b = -0.22 [-0.30, -0.15]. Among Republican-leaning respondents, there was no significant

relationship between environmental injustice scores and support for greenhouse gas emissions regulation, b = 0.02 [-0.07, 0.11].

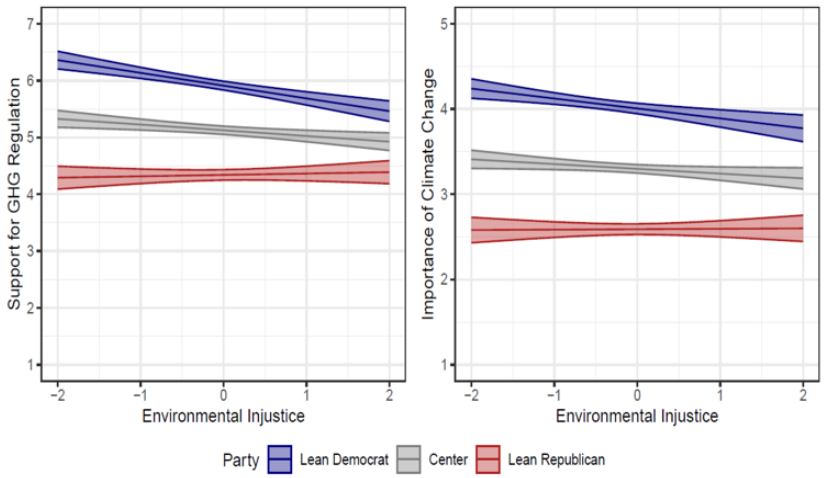

Figure 1. The interaction between environmental injustice and political party leaning on support for greenhouse gas (GHG) regulation and the importance of climate change. Shaded bars represent 95% confidence intervals.

3.2 Environmental Burden, Social Vulnerability, and Climate Change Policy Support.

Next, we examined the effects of environmental burden and social vulnerability EJI sub-scales separately, as other research has found that physical vulnerability variables (e.g., pollution exposure) are weaker in their exploratory power compared to socioeconomic variables(50). Table 1 summarizes the models' main coefficients side-by-side. We also examined models in which socio-demographic variables (age, gender, income, education, and race) were entered as covariates (without interaction terms) alongside our focal model terms. These models attempt to control for the effects of individual demographics (measured via the socio-demographic indicators) while estimating the interaction between the EJI measure(s) and the outcomes. The key parameters (i.e., the regression coefficients for the main effects and interaction) were substantively similar to those reported in the main text when including these covariates, albeit reduced in magnitude compared to those offered in the main text. These covariate models are provided in the supplementary materials for interested readers (SI 13).

Table 1. *Regression Coefficients (b) and 95% Confidence Intervals for Models of Environmental Injustice Sub-scales. Bold cells indicate significant findings.*

		Climate Change Importance	Support for GHG Regulation
Environmental Burden	Intercept	3.29 [3.24, 3.34]	5.11 [5.04, 5.18]
	Environmental Burden (z)	-0.01 [-0.06, 0.03]	-0.01 [-0.06, 0.05]
	Party Leaning (z)	**-0.70 [-0.74, -0.67]**	**-0.78 [-0.82, -0.73]**
	Interaction Term	0.03 [-0.01, 0.06]	0.01 [-0.04, 0.06]
Social Vulnerability	Intercept	3.30 [3.24, 3.35]	5.12 [5.05, 5.20]
	Social Vulnerability (z)	**-0.06 [-0.11, -0.01]**	**-0.12 [-0.18, -0.05]**
	Party Leaning (z)	**-0.71 [-0.74, -0.67]**	**-0.78 [-0.83, -0.74]**
	Interaction Term	**0.07 [0.02, 0.12]**	**0.18 [0.12, 0.23]**

For climate change importance, there was a significant negative slope for the social vulnerability sub-scale but not for environmental burden. This negative slope indicates that higher levels of social vulnerability were associated with the perception of personal climate change importance. A similar pattern of results emerged for the greenhouse gas emission regulation. In all models, there was a strong effect of political leaning such that Republican-leaning respondents reported lower support for emissions regulation and climate change importance than Democrat-leaning respondents.

The main effects in the models were qualified by significant interaction effects for the social vulnerability sub-scale but not the environmental burden sub-scale. Table 2 summarizes the simple slopes for Democrat and Republican-leaning respondents in each model. For the models with significant interactions, the patterns were consistent. For Democrats, there was a negative relationship between social vulnerability scores and support for greenhouse gas emissions regulation and climate change importance. The simple slopes for Republican-leaning respondents were non-significant. Figure 2 plots the interaction effects for both models.

Table 2. *Simple Slopes Coefficients for Models in Table 1. Bold cells indicate significant findings.*

	Party Leaning	Climate Change Importance	Support for GHG Regulation
Environmental Burden	Democrat	-0.04 [-0.09, 0.01]	-0.02 [-0.09, 0.04]
	Republican	0.01 [-0.05, 0.08]	0.01 [-0.07, 0.09]
Social Vulnerability	**Democrat**	**-0.13 [-0.20, -0.06]**	**-0.29 [-0.36, -0.22]**
	Republican	0.01 [-0.06, 0.07]	0.06 [-0.04, 0.16]

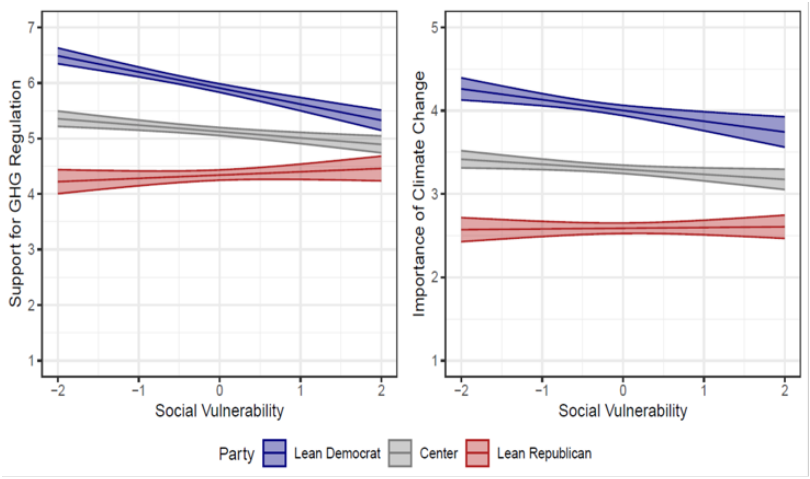

Figure 2. The interaction between social vulnerability and political party leaning on the importance of climate change and support for greenhouse gas (GHG) regulation. Results are derived from two separate weighted linear regression models. Both social vulnerability and political party leaning were z-scored for the analysis, and the effects of party leaning are plotted at +/- 1 standard deviation from the mean. Shaded bars represent 95% confidence intervals.

4. Discussion

The impacts of environmental exposures and climate change are unevenly distributed across populations, particularly affecting marginalized groups. Measures and indicators of environmental justice can help expose these disparities(51), and exploring distributive justice at the community level can be especially helpful in comparing relative levels of impact across different locales and between different populations. This research aimed to address social and environmental injustices and understand how interwoven identities shape views on climate change and policy preferences.

First, we explored how levels of perceived climate change importance varied between people living in areas with different levels of environmental injustice. Survey respondents generally perceived climate change as personally important (mean 3.29 on a 5-point scale). These results are consistent across other nationally representative samples (5), indicating that climate change is increasingly pressing for Americans. However, living in a more environmentally polluted area had no significant main effect on perceptions of climate change's importance. The environmental burden variable considers the cumulative impacts of multiple

factors contributing to environmental degradation—some may not be obviously or directly linked to climate change (e.g., the proportion of polluted waterways, neighborhood walkability, etc.). Thus, people may not attribute their personal experiences with broader environmental issues to climate change. This matters because when people do link environmental problems to climate change, they seem to recognize its threat(38). However, not everyone experiences obvious climate-related events like sea level rise or hurricanes, and consequently, public education may be needed to explain how broader environmental contexts shape vulnerability to climate change.

Our results align with other work that too found environmental factors to have weaker effects on climate change perceptions compared to socioeconomic variables(52). When the social vulnerability variable was examined independently, it appeared to have a significant negative relationship with climate change's importance. Specifically, people living in more socially vulnerable locations, on average, perceived climate change as less important. This negative relationship lends credence to prior work on spatial optimism bias(26) and studies arguing that experiencing environmental hazards might make one familiar with their risks but not necessarily prioritize them over other matters of personal importance(24,51). Indeed, researchers have hypothesized that individuals of higher social status might perceive climate change as more important because they have more to lose because of climate change (i.e., property) and, thus, are more concerned about its impacts(51).

Next, we explored whether support for greenhouse gas emission reduction regulation varies between people experiencing different levels of environmental injustice. Overall, Participants considered greenhouse gas emission reduction relatively important (mean 5.16 on a 7-point scale), consistent with prior work(53). Higher environmental injustice scores were associated with a lower level of support for greenhouse gas emissions reduction policies, which appeared to be driven by community-level social vulnerability rather than the environmental

burden. While support for GHG emission reduction policies and perceived climate change importance were correlated (r=0.62), support for policies was higher overall and had a stronger (and negative) relationship to social vulnerability.

There are several potential reasons why participants with higher environmental justice scores were less supportive of GHG emission reduction policies. First, our data appears to show that experiencing high degrees of environmental burdens may increase one's contractive regulatory scope, where individuals are more likely to focus on immediate and proximal concerns. This concrete focus is unaligned with high-level construals and the expansive scope required to prioritize abstract policies related to GHG regulation. However, those living farther away from environmental and climate injustices may perceive these issues in a more expansive scope, and therefore, may be primed to prioritize abstract solutions to these problems. This may be especially true if climate change is perceived as a distant threat (8–10). Some research has found evidence of this; those who view climate change (and its associated policies) as distant were more motivated to act (8). It could also be that those experiencing environmental burdens are not associating them with climate change or policy solutions to address climate change (10). Greenhouse gas regulations may have economic impacts, which could evoke stronger responses than climate change as an abstract concept. Indeed, living near gas production sites is associated with less support for energy policies(28), as those living near extractive industries are regularly employed by them(29). It is imperative, then, that researchers and policymakers consider individuals' multiple identities and how best to communicate across ideological and place-based differences.

Therefore, we examined how political ideology may moderate the relationship between climate change attitudes for those living in areas with different levels of environmental injustice. Republicans generally scored lower across both climate change importance and support for GHG emission reduction climate policy–experiencing environmental injustice or

being socially vulnerable did not change this result. Democrats experiencing environmental injustices, on average, supported climate change policies less and perceived climate change as less personally important compared to other Democrats. We also examined these differences across income. Higher income was associated with greater climate change importance and support for greenhouse gas emissions reductions, and there was a significant interaction such that Democrat-leaning respondents exhibited this positive relationship between income and the outcomes while Republican-leaning respondents showed no relationship (see SI for income analyses). Our results echo other research that found increased political polarization on climate change beliefs among more educated and higher-income adults(34). This variance may be especially driven by differences among Democrats(31) (analyses in SI).

Various factors could explain the elite polarization of climate change impacts. First, those who benefit more from current social structures may be more aware of party platforms and issues, generally agreeing with elite cues that communicate these interests(34,54,55). Individuals who feel more socially tied to their identity as a Democrat may adhere more strongly to Democratic party issues and in-group social norms, like support policies for greenhouse gas emissions(56). In our data, however, there was a small positive correlation ($r = 0.07$ [95% CI = 0.03, 0.10]) between political party importance and living in an environmentally unjust area. The more critical one finds one's political party affiliation, the more likely one is, on average, to live in a location that experiences environmental injustice (analyses in SI). More research is needed to understand if the strength of social identity could account for the differences in climate change importance among Democrats.

Second, Democrats are not a homogenous group and care about different issues ranging from climate change to income inequality and/or access to free health care. Because the economic impact of climate change will be massive(56), it could be the case that those with more to lose from the climate crisis may consider it more important(51). For example, those

who own homes are less socially vulnerable but will experience substantial financial losses if climate change-related events damage their properties. The variable we used to measure social vulnerability included estimates of home ownership and the age of homes at the census tract level, which may partially account for the differences in perceptions among Democrats. Similarly, if all basic needs are met, there may be more capacity to focus on climate change and to advocate for policies to address it. Because climate and environmental justice are interwoven with all struggles for justice (e.g., disability justice, housing justice, queer liberation), there is a need to recognize the interconnected nature of these challenges and advocate for comprehensive, multifaceted solutions(57).

4.1 Limitations

We relied on composite indicators from the EJI dataset, calculated using a comprehensive list of social and environmental factors; however, this list is not exhaustive. For example, the CDC acknowledges that some relevant environmental exposures, such as pesticide use, are omitted from the indicators because these data are currently unavailable by census tract. Additionally, many indicators involve some uncertainty, which are not factored into the calculations. These uncertainties can stem from various sources, including the estimation methods used to generate the indicators, which may impact the accuracy of the indicators used to generate the EJI. Since the CDC's indicators are aggregated by census tract, they are an overview of community-level social and environmental injustice rather than a measurement of individual exposure. There is a risk of ecological fallacy where conclusions drawn about individuals based on aggregate data may not accurately reflect the diversity of individual circumstances in each census tract. And, because conceptualizations of environmental justice are broad and not all directly related to variables that EJI captures, there are aspects of EJ that EJI as a tool cannot measure.

Still, these data provide a robust foundation for identifying social and environmental injustices across US communities. Another major strength of this study is using ANES survey data to examine climate change policy attitudes. ANES provided access to high-quality data with broad geographic coverage representing the US population. The comprehensiveness of the dataset resulted in a large and diverse sample size. Future research could replicate this study with ANES data and other environmental justice tools to assess how other quantifiable measures of environmental and climate justice are associated with climate change beliefs.

5. Conclusion

Communication tools and strategies vary on their level of abstraction; communicating about polarizing issues must take the audience's construal level and regulatory scope into account. These communication techniques, while varied, operate under the same goal of promoting a more just world. Environmentally-just policies necessitate meaningful involvement from all individuals, regardless of their identity(58). Meaningful involvement requires that:

> 1. People have an opportunity to participate in decisions about activities that may affect their environment and/or health; 2. The public's contribution can influence the regulatory agency's decision; 3. Community concerns will be considered in the decision-making process; and 4. Decision makers will seek out and facilitate the involvement of those potentially affected(59).

Yet, the triple threat of environmental injustice via pollution exposure, structural marginalization, and limited community climate change resilience(11) creates barriers to involvement in policies and democratic decision-making that specifically address these issues (40).

Luckily, tools like the CDC's Environmental Justice Index include key indicators matching current environmental justice frameworks, namely demographics, environment, and health measures, which showcase the relative impacts of the social and environmental determinants of health(57). However, environmental justice extends beyond health impacts alone. Theoretical frameworks also emphasize distributional justice, or fair access to environmental benefits, and recognitional justice, or the acknowledgment of cultural contexts and concerns(60).

Another critical dimension in the conceptualization of environmental justice is procedural justice, which argues for the inclusion of impacted communities in decision-making processes of environmental outcomes(61). While the ANES survey does not specifically capture environmental justice perceptions, it gathers data on public perceptions of climate change importance and related policies. These perceptions can inform procedural justice by highlighting the extent to which different groups support climate policies. Understanding these public views can help policymakers ensure that climate actions and policies are developed through more inclusive processes where diverse voices and concerns are considered in decision-making(36,62).

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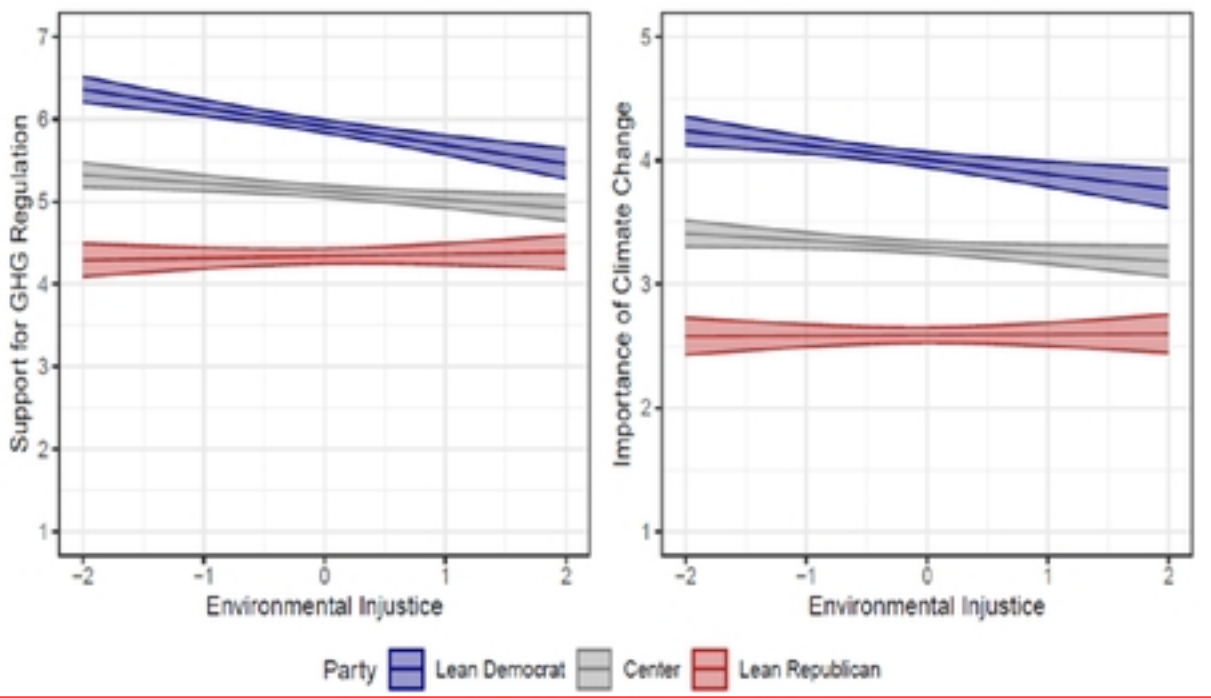

Figure 1

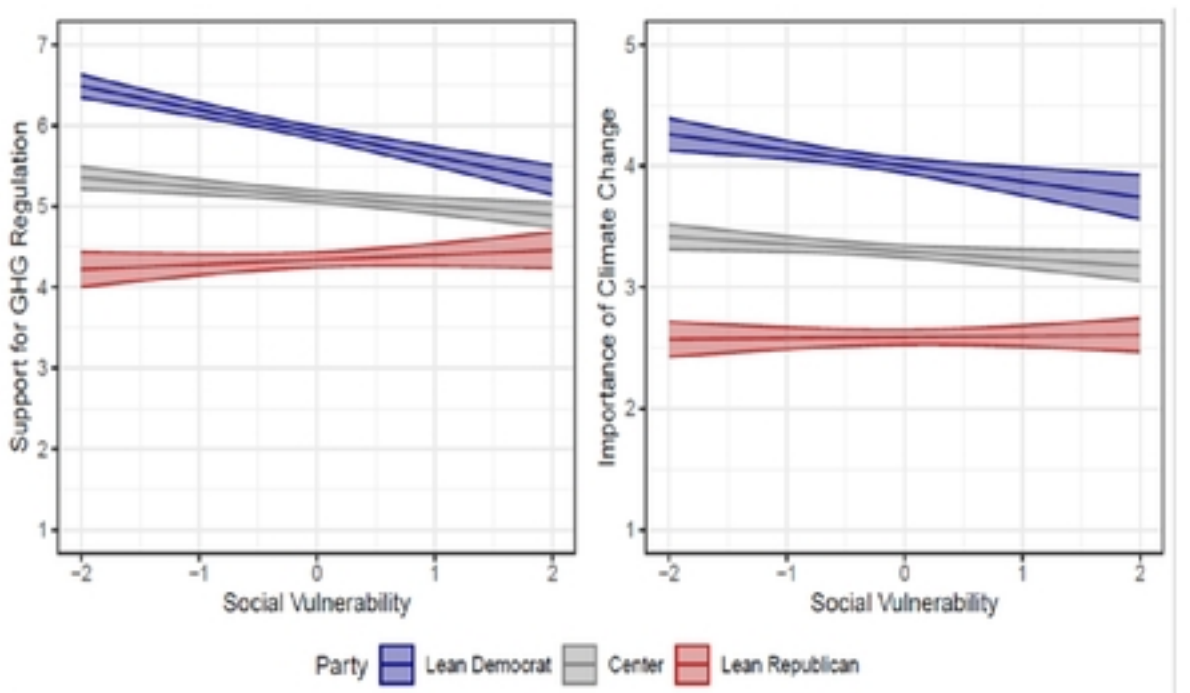

Figure 2