nature portfolio

Peer Review File

Determinants of Climate Change Risk Perception in Latin America

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This file contains all reviewer reports in order by version, followed by all author rebuttals in order by version.

Version 0:

Reviewer comments:

Reviewer #1

(Remarks to the Author)
The authors find a strong correlation between worry and risk perception in a group of countries in North and South America. The results are original and relevant. The references are adequate and the paper is clearly written. Nonetheless, I have some comments and suggestions that might help improve the paper.

In lines 46-48 it is mentioned that Latin America is a region that will suffer disproportionately from the effects of climate change. Although the claim is not strictly wrong, I do think it might be slightly misleading. It is true that the IPCC summary for policymakers, used as reference by the authors, mentions Central and South America as regions that could be highly affected by climate change, it also mentions the same for Africa and Asia. There is no clear indication coming from the IPCC supporting a relative comparison that would justify the claim that those regions would be affected in a disproportionate way. Furthermore, the data that the authors use doesn't cover Central America (Mexico is considered as part of North America by the IPCC). The authors should clarify that they can't say anything about Central America, a region that has been hard hit by extreme weather events and that, according to the IPCC, is likely to be highly affected by climate change.

My main concern is related to the coverage of the data used by the authors. The data that they use comes from an online survey. Although the authors show the sample and population distributions by education and sex, they don´t show the distributions by income. The region is characterized by high levels of income inequality and internet access is correlated with income. Arguably, the sample that they have is biased against the poorest households in the respective countries. This cannot be solved simply by weighting the observations. The authors should clearly acknowledge this as it can have an effect on the relationships that they are describing. In particular, it is likely that poor households have less means to protect themselves and adapt to climate change and hence they might be more worried and have higher risk perceptions than other income groups. They might also have had experienced the effects of extreme weather events in a more salient way than richer households. A related comment have to do with the potential underrepresentation of rural households.

The creation of the "personal experience with extreme weather events" variable should be clarified. Is it the case that responses 2, 3, and 4 are converted to 1= experience? How about response 5, how is that treated? What was the frequency of that response and what is the implication of that in the data analysis?

Reviewer #2

(Remarks to the Author)
This paper is well-written in general and the conclusions of correlation are supported. Although the paper says it draws on theory, it does not explain how. My main concern here is that I am very surprised to find this resubmission literally unchanged from the first submission that I reviewed. At a minimum, the authors should delete the grammatical errors, such as in the Abstract: Delete "it is the case in". Overall, I have no further comments as my original comments were completely disregarded.

Reviewer #4

(Remarks to the Author)
Thank you for providing the opportunity to review Correlates of Climate Change Risk Perception: Evidence from Latin

America. I actually already reviewed this paper once, when it was submitted to Nature Climate Change. The paper has not changed since I submitted my prior review. I would recommend the same suggestions, wherever the paper is under review. Moreover, my main critique of the paper—that it doesn't present a novel finding that merits publication in a Nature family journal—also stands. Thus, I here submit the review that I had previously submitted.

In this paper, the authors report the results of a survey measuring climate change attitudes in seven Latin American countries. They focus their discussion on the predictive power of psychological, socio-political, and demographic variables in shaping views of climate change in the region.

I think the results of this study are extremely valuable and worth reporting. This survey is more comprehensive in its assessment of climate change beliefs in Latin America than other studies in the region, which have asked one or two questions about climate change as part of omnibus surveys. For this reason the survey has tremendous value for researchers interested in studying public attitudes about climate change in Latin America.

However, I did not find much that was innovative or surprising about the study's design or its findings. Some of the descriptive correlational findings between demographic and political covariates and climate attitudes are interesting on their face. This includes the weak and heterogeneous predictive power of political ideology and most demographic characteristics. These analyses are worth reporting, but they're not particularly innovative.

I did find the replication failure of some older findings (eg, Lee et al, Van der Linden et al) to be interesting and, again, worthy of reporting. This would be most interesting if the authors were able to speak to some reason why these findings did not replicate. For instance, the authors could highlight some flaw in those studies that the authors have corrected, methodological advance that the present authors implement, sampling difference between studies, or mechanism that has changed in the years since those studies were fielded. As designed and written, this study leaves the reader with a conundrum about who to believe.

My biggest concern is that much of this paper consists of distinct regressions examining the factor structure of climate change beliefs in Latin America, and in this section I didn't find much that was surprising. For instance, the authors report a high correlation between worry about climate change and the expectation of harmful effects from climate change across space. This doesn't surprise me at all, as these two questions are measuring the same concept: worry about climate change. Likewise, the high correlation between perceived vulnerability to extreme events and climate risk perceptions is unsurprising. Perceived vulnerability to extreme events is simply a different, perhaps noisy, measure of perceived risk from climate change. All of these questions are endogenous to each other. In showing that different questions about beliefs and risk perceptions are correlated, the authors are simply showing that climate change attitudes are reduceable to a single dimension in Latin America. This is the argument underlying dimension reduction approaches such as the "Six Americas" construct developed by the Yale Program on Climate Change Communication and, more broadly, many measures of public ideology.

Overall, I definitely think that these descriptive findings are worth reporting. But I did not find anything surprising or innovative about the study to merit publication in a Nature family journal.

Version 1:

Reviewer comments:

Reviewer #1

(Remarks to the Author)
The comments that I made in my review have been taken into account and the concerns that I expressed have been addressed. I therefore consider this paper to be ready for acceptance.

(Remarks on code availability)

Reviewer #2

(Remarks to the Author)
I commend the authors for carefully addressing the concerns of my review and the other as well. They were thorough and I believe the manuscript is vastly improved as a result of their efforts to provide more context, detail, theory, and robustness checks. I support publication of the revised manuscript.

(Remarks on code availability)

Reviewer #4

(Remarks to the Author)
Thanks to the authors for addressing my comments and those of the other reviewers.

I still believe that the findings vis a vis political and demographic correlates are the most interesting findings here. By contrast, examination of psychological factors still seems to me to be riddled with endogeneity. Citing studies that have treated these variables as discrete—without providing evidence that they are—is not sufficient to justify the assertion that they are truly distinct from each other and/ or that they could move independently from each other. Moreover, I find the use of variance inflation factors unsatisfying evidence to the contrary, in part because these analyses lack face validity. For example, it does not seem plausible that “worry” is unrelated to “holistic affect,” even though both have low VIFs. Logically, would the authors really assert that someone would respond to the “worry” question in a way that indicates a lot of worry about climate change, but then also respond that climate change is a “good thing?” Similarly, “Political ideology: left” and “political ideology: progressive” must be closely correlated, or else these questions have no validity as measures. Finally, of more substantive import here, it seems implausible that “worry” and “perceived vulnerability to extreme weather events” are not correlated. If they aren’t, I’m concerned that one or both of those measures lacks validity, because they are extremely closely related conceptually. Have the authors standardized the scale for each variable input into the regression, such that the VIF is reliable? Also, I’d like to see a correlation matrix and a Principle Component Analysis. Lack of correlations (between standardized variables) and a convincingly multidimensional factor structure would provide convincing evidence that these variables are not simply all noisy measures of the same underlying construct.

Incidentally, I was not able to find Figure 3 or Figure 4, which purport to show the robustness of findings to the exclusion of “worry” as a variable.

I agree with Reviewer 1 that the authors should not over-claim regarding the scope of their study. I appreciate the discussion of this limitation in the discussion section. However, I would encourage the authors to temper all language concerning the “comprehensiveness” of this study, which is limited to eight countries in North and South America. Likewise, the authors should steer clear of claiming to be the “first cross-national assessment of the correlates of climate risk perceptions in the Global South,” as Lee et al. performed such an assessment a decade ago (albeit with data that is a decade old now, as the authors point out).

I thank the authors for speaking to my request to theorize about the mechanisms for their null results. However, I found their speculation here to be a bit unsatisfying, because they don’t provide evidence for their specified mechanisms. For example, the argue that, “regions low in social capital and interpersonal trust like Latin America” explains lack of effect of social norms. Are social capital and interpersonal trust low in Latin America? They also argue that the lack of an ideology effect may be due to lack of elite messaging. Are we sure there is no elite messaging on climate change in these countries, or is it the case that elite messaging is simply not polarized? These and other assertions would be stronger if the authors brought some evidence to bear here.

More generally, where the authors claim to find no effect, I'd like them to assess the strength of their null findings--are they convincing findings of no effects (ie, sharp nulls), or are they statistically noisy estimates of substantively small effects? This distinction is important for the interpretation of null findings, and is, as such, crucial to readers' interpretation of the paper and how we should update our priors about the correlates of climate risk perceptions in Latin America.

(Remarks on code availability)

Version 2:

Reviewer comments:

Reviewer #4

(Remarks to the Author)
I thank the authors for their thorough responses to my questions. They have convinced me of the validity of their claims, and I appreciate the softening of some of their claims in response to my suggestion to do so.

(Remarks on code availability)

Revise and Resubmit NCOMMS-23-54286-T

August 7, 2024

Dear Reviewers,

Thank you for the thoughtful and useful comments on NCOMMS-23-54286-T. We are delighted that you saw promise in our manuscript and gave us the opportunity to revise and resubmit. Addressing each one of the points you raise has improved the quality of both the manuscript and the supplementary information. In what follows, we respond to your comments, indicating exactly how we have addressed each concern or problem. Because on occasion we cite other research, we have taken the liberty to add references to our responses when necessary. Please note that all references cited in this letter appear in full form in the main paper. Also, since we have made extensive changes to the original manuscript and tracked changes would end up highlighting most of the updated version, we are submitting a clean revised manuscript. We hope you agree that this new version is more clear, precise, and engaging to the reader.

1 Reviewer 1

In lines 46-48 it is mentioned that Latin America is a region that will suffer disproportionately from the effects of climate change. Although the claim is not strictly wrong, I do think it might be slightly misleading. It is true that the IPCC summary for policymakers, used as reference by the authors, mentions Central and South America as regions that could be highly affected by climate change, it also mentions the same for Africa and Asia. There is no clear indication coming from the IPCC supporting a relative comparison that would justify the claim that those regions would be affected in a disproportionate way. Furthermore, the data that the authors use doesn't cover Central America (Mexico is considered as part of North America by the IPCC). The authors should clarify that they can't say anything about Central America, a region that has been hard hit by extreme weather events and that, according to the IPCC, is likely to be highly affected by climate change.

We thank the reviewer for these well-taken points. In response, we have made the following revisions to our manuscript. First, we have excluded the passage suggesting that Latin America will be disproportionately affected by climate change (line 59). Additionally, we now explicitly state that while our study includes countries representing over 80% of carbon emissions from Latin America, it does not cover Central American countries. Given that these nations have experienced and are likely to continue facing significant impacts from extreme weather events, we emphasize the importance of future research to test the generalizability of our findings in this specific sub-region (lines 367-372).

My main concern is related to the coverage of the data used by the authors. The data that they use comes from an online survey. Although the authors show the sample and population distributions by education and sex, they don´t show

the distributions by income. The region is characterized by high levels of income inequality and internet access is correlated with income. Arguably, the sample that they have is biased against the poorest households in the respective countries. This cannot be solved simply by weighting the observations. The authors should clearly acknowledge this as it can have an effect on the relationships that they are describing. In particular, it is likely that poor households have less means to protect themselves and adapt to climate change and hence they might be more worried and have higher risk perceptions than other income groups. They might also have had experienced the effects of extreme weather events in a more salient way than richer households. A related comment have to do with the potential under-representation of rural households.

We appreciate your attention to this issue, which could indeed have relevant implications for the results and conclusions stemming from our study. In line with your comments, the updated manuscript now does three things.

First, to address concerns about potential bias against the poorest households due to the correlation between internet access and income, we have compared our sample with the LAPOP AmericasBarometer 2021 (the same year for our survey), the most representative cross-national survey on public opinion in Latin America. As Table 1 (SI Table 8) shows, we have a reliable representation across all income levels, and in some cases, we even have a higher representation among low-income individuals. We believe that this helps to attenuate concerns about differential levels of risk perception among income groups and how different predictors might affect climate risk perception.

Second, we would also like to highlight that previous research using nationally representative samples from Latin America has also found income not to be a consistent predictor of climate change opinion among mass publics (e.g., Lee et al. 2015; Lewis et al. 2019). This further reinforces our confidence that the income results in our study are not influenced by

our online sample.

Finally, concerning your point about rural households, we explicitly acknowledge this as a limitation in the discussion section. The under-representation of rural households could indeed affect our findings, particularly given the differences in experiences and perceptions related to climate change between urban and rural populations. We also highlight the need for further research focused on rural populations in Latin America to gain a more comprehensive understanding of climate change impacts (lines 364-367).

The creation of the "personal experience with extreme weather events" variable should be clarified. Is it the case that responses 2, 3, and 4 are converted to 1= experience? How about response 5, how is that treated? What was the frequency of that response and what is the implication of that in the data analysis?

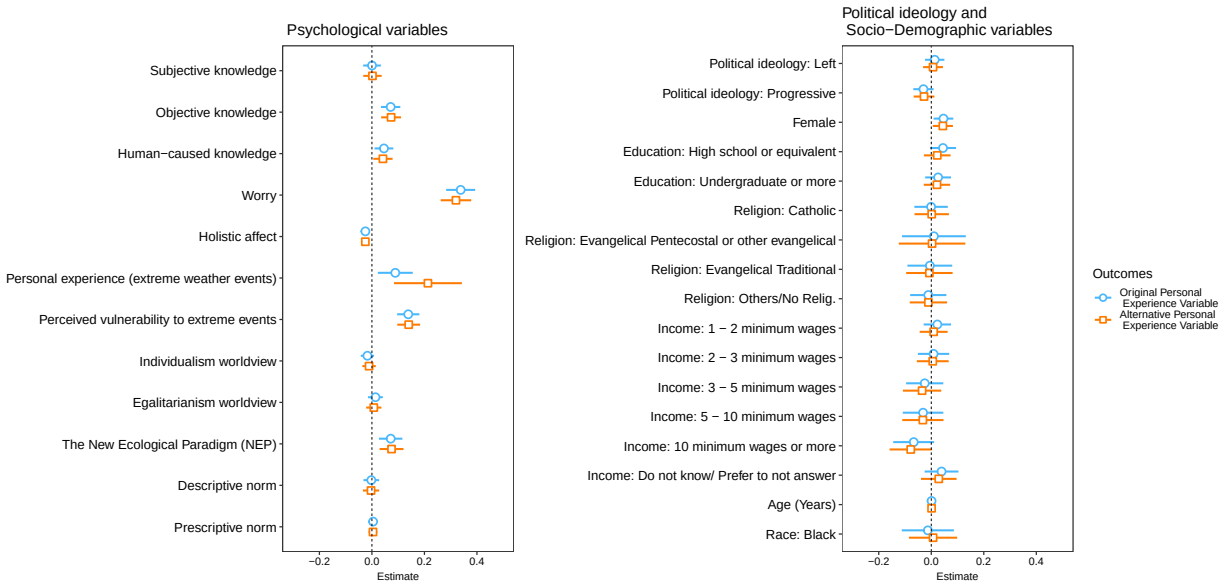
We appreciate your attention to this detail, which helps us ensure the consistency of our results. You are correct that responses 2, 3, and 4 were converted to 1 to represent personal experience with extreme weather events. Responses 1 ("Never") and 5 ("Can't remember") were coded as 0, indicating no personal experience with extreme weather events. Although response 5 ("Can't remember") was selected by only 11.6% of the sample, we recognize the potential impact on our results. To address this concern, we re-estimated our models using a revised "personal experience with extreme weather events" variable, excluding respondents who selected response 5. As shown in Figures 1 and 2 below, our results remained statistically unchanged. This reinforces the reliability of our findings concerning the relationship between climate risk perception and personal experience with extreme weather events.

Table 1. Sample vs. population distribution by income level and country

	Argentina		Brazil	
	(Sample)	(2021 LAPOP)	(Sample)	(2021 LAPOP)
0 - 1 minimum wages	22.80%	28.45%	13.15%	32.50%
1 - 2 minimum wages	23.00%	16.56%	14.91%	32.70%
2 - 3 minimum wages	15.20%	17.48%	15.26%	16.30%
3 minimum wages or more	39.10%	37.50%	56.68%	18.60%
	Chile		Colombia	
	(Sample)	(2021 LAPOP)	(Sample)	(2021 LAPOP)
0 - 1 minimum wages	30.70%	15.43%	36.40%	28.84%
1 - 2 minimum wages	30.20%	15.88%	38.30%	21.02%
2 - 3 minimum wages	13.30%	21.22%	13.30%	27.56%
3 minimum wages or more	25.80%	47.48%	11.90%	22.59%
	Ecuador		Mexico	
	(Sample)	(2021 LAPOP)	(Sample)	(2021 LAPOP)
0 - 1 minimum wages	44.10%	23.51%	32.70%	21.95%
1 - 2 minimum wages	29.60%	15.77%	7.60%	13.41%
2 - 3 minimum wages	11.30%	21.58%	5.50%	19.21%
3 minimum wages or more	15.00%	39.14%	54.10%	45.43%
	Peru			
	(Sample)	(2021 LAPOP)		
0 - 1 minimum wages	34.80%	17.25%		
1 - 2 minimum wages	24.60%	23.32%		
2 - 3 minimum wages	13.70%	23.74%		
3 minimum wages or more	26.90%	35.68%		

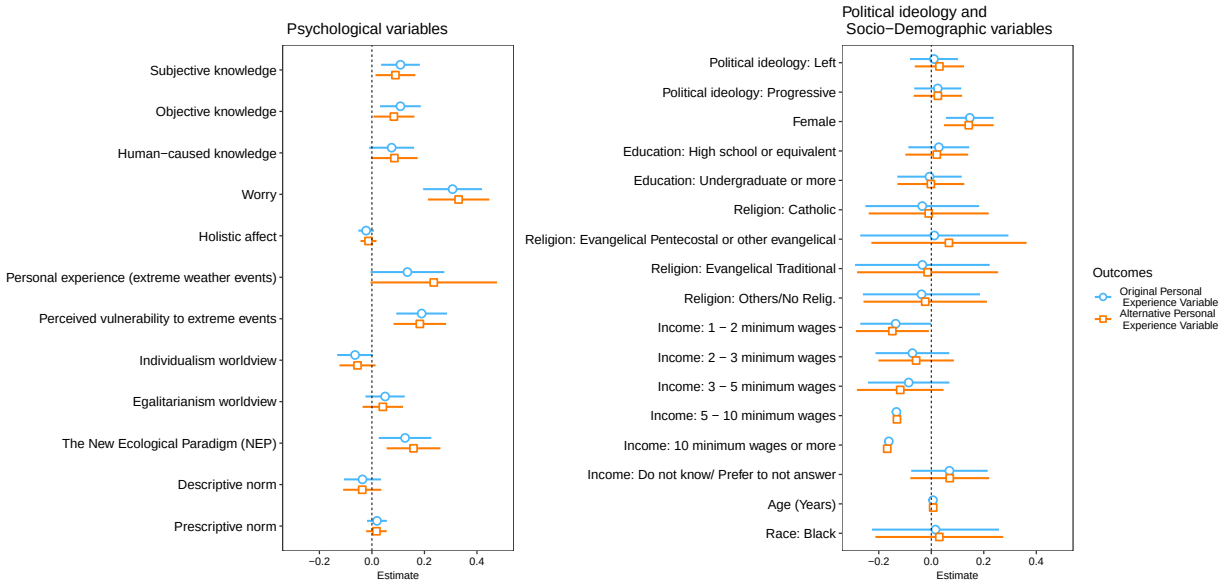
Notes: This table reports the unweighted proportions for the income level by minimum wage for all observations, per country, compared to the LAPOP LAB AmericasBarometer 2021. Respondents who preferred not to answer or didn't know the answer were removed from the estimates.

Figure 1. OLS Results - Correlates of Risk Perception (Spatial Dimension) in Latin America: Alternative "Personal experience" variable



Notes: Results from an ordinary least squares model regressing *Spatial dimension* on a set of independent variables (left) and socio-demographic characteristics (right). Respondents from all countries are included in the model. Blue coefficients represent the results when estimating the model without "Personal experience with extreme weather events" in its original form, while orange coefficients represent the results of removing respondents who chose 5. Coefficients are increases in the *Spatial dimension* measure (1-4) given a unit increase in the covariates. The higher the scale the greater the belief that climate change will have extensive harmful effects. The width of the confidence intervals for each coefficient is 95% with heteroskedasticity-robust standard errors. Reference baseline for Education is “Elementary (Primary) or less”, Religion is “Atheist” and Income is “0 – 1 minimum wages”.

Figure 2. OLS Results - Correlates of Risk Perception (Temporal Dimension) in Latin America: Alternative "Personal experience" variable



Notes: Results from an ordinary least squares model regressing *Temporal dimension* on a set of independent variables (left) and socio-demographic characteristics (right). Respondents from all countries are included in the model. Blue coefficients represent the results when estimating the model without "Personal experience with extreme weather events" in its original form, while orange coefficients represent the results of removing respondents who chose 5. Coefficients are increases in the *Temporal dimension* measure (1-4) given a unit increase in the covariates. The higher the scale the greater the belief that climate change will have extensive harmful effects. The width of the confidence intervals for each coefficient is 95% with heteroskedasticity-robust standard errors. Reference baseline for Education is “Elementary (Primary) or less”, Religion is “Atheist” and Income is “0 – 1 minimum wages”.

Reviewer 2

This study uses "worry" as a predictor of risk perceptions, yet "worry" is itself often used as a measure of perceived risk. Thus, the finding that worry is the strongest correlate of the spatial and temporal dimensions of perceived risk does not seem to present particularly meaningful or novel information.

Thank you for raising this important point. The revised manuscript version now better justifies our decision to retain "worry" as a predictor on both theoretical and empirical grounds.

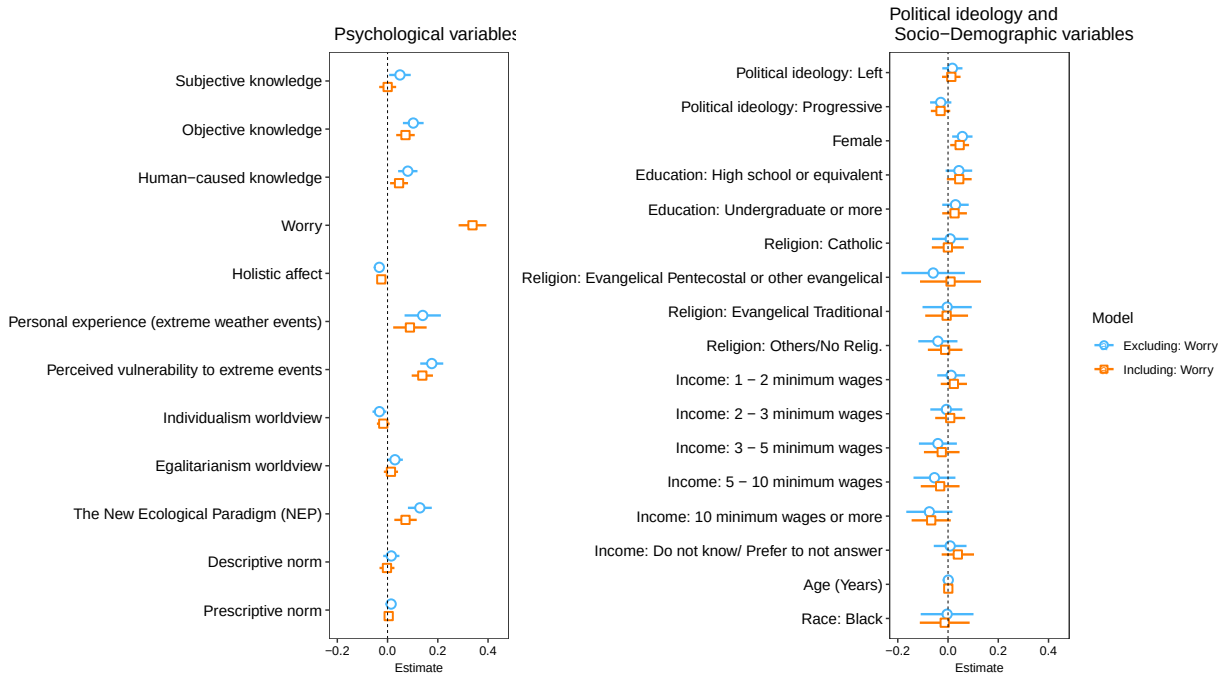
Theoretically, while research on climate public opinion often uses terms such as "worry" and "risk perception" as synonyms, scholars have highlighted that these terms can denote different constructs. Specifically, "worry" can be conceptualized as a discrete emotional reaction that facilitates an affective association with the risks posed by climate change (e.g., Thaker et al. 2020; Goldberg et al. 2021; Smith and Leiserowitz 2014). This emotional response to climate risk helps elucidate why individuals might exhibit heightened levels of risk perception (e.g., Weber 2006, Goldberg et al. 2001; Thaker et al. 2020). For our study, this characteristic distinguishes "worry" from risk perception, which generally denotes a negative perception toward an issue but lacks specific motivational or emotional content (Van der Linden, 2017, p.24). Thus, in alignment with previous studies in the field, we conceptualize "worry" as a discrete affective dimension and a potential determinant in decision-making about risks.

Empirically, in response to your valid concern, we have now performed additional statistical analyses excluding "worry" as an independent variable in our regression models. As Figures 3 and 4 show, the primary conclusions regarding other predictors remain substantially similar. Notably, perceived vulnerability to extreme weather events continues to be statistically significant and emerges as the single most important predictor of climate change risk perception. These findings indicate that even when accounting for the potential

limitations of "worry," our study still yields meaningful and novel insights into the factors influencing climate change risk perception in Latin America.

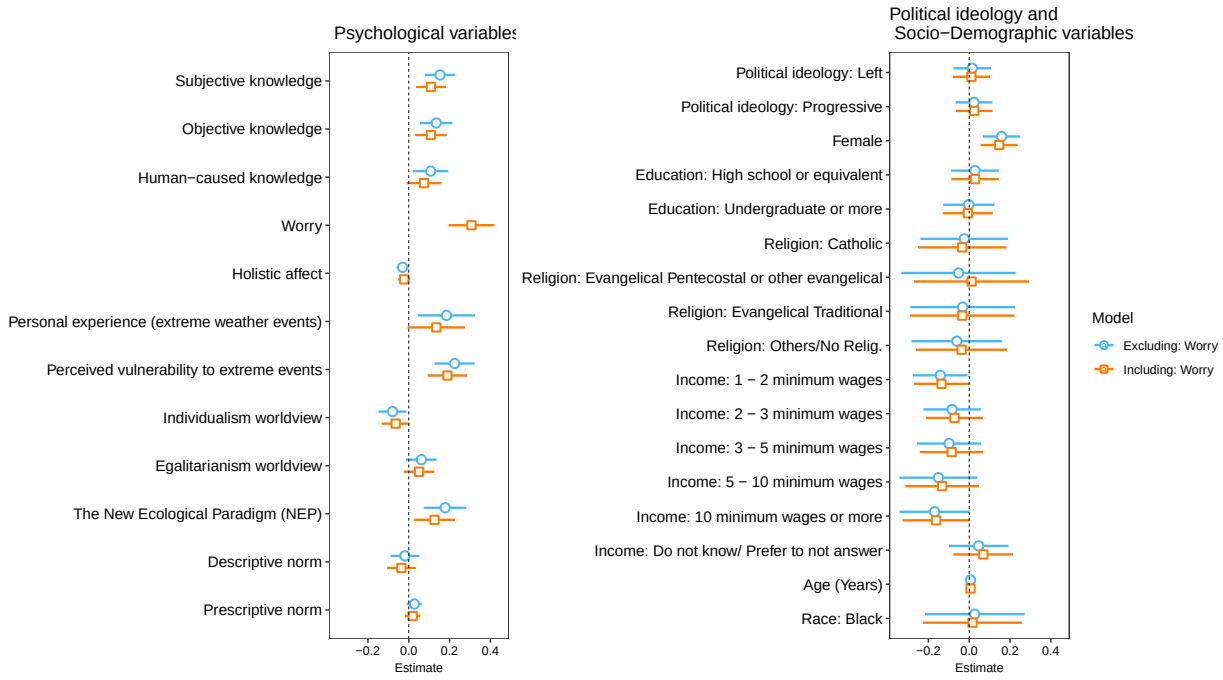
In light of all this, we have created a robustness section in the revised version. This section acknowledges the potential limitations of using "worry" as a predictor while noting that some scholars operationalize this variable as a proxy for risk perception. We also present new analyses in this section showing that the primary findings of the study remain robust and substantively unaltered even when "worry" is excluded from the primary statistical models (lines 221-237).

Figure 3. OLS Results - Correlates of Risk Perception (Spatial Dimension) in Latin America: Including and Excluding "worry" as a predictor



Notes: Results from an ordinary least squares model regressing *Spatial dimension* on a set of independent variables (left) and socio-demographic characteristics (right). Respondents from all countries are included in the model. Blue coefficients represent the results when estimating the model without "Worry" as an independent variable, while orange coefficients represent the results when including "Worry". Coefficients are increases in the *Spatial dimension* measure (1-4) given a unit increase in the covariates. The higher the scale the greater the belief that climate change will have extensive harmful effects. The width of the confidence intervals for each coefficient is 95% with heteroskedasticity-robust standard errors. Reference baseline for Education is “Elementary (Primary) or less”, Religion is “Atheist” and Income is “0 – 1 minimum wages”.

Figure 4. OLS Results - Correlates of Risk Perception (Temporal Dimension) in Latin America: Including and Excluding "worry" as a predictor



Notes: Results from an ordinary least squares model regressing *Temporal dimension* on a set of independent variables (left) and socio-demographic characteristics (right). Respondents from all countries are included in the model. Blue coefficients represent the results when estimating the model without "Worry" as an independent variable, while orange coefficients represent the results when including "Worry". Coefficients are increases in the *Temporal dimension* measure (1-4) given a unit increase in the covariates. The higher the scale the greater the belief that climate change will have extensive harmful effects. The width of the confidence intervals for each coefficient is 95% with heteroskedasticity-robust standard errors. Reference baseline for Education is “Elementary (Primary) or less”, Religion is “Atheist” and Income is “0 – 1 minimum wages”.

Another concern is with the framing of the analysis around the spatial versus temporal dimensions of risk perceptions. The only motivation provided for this analysis is that "Studying these two dimensions of risk assessment separately has the advantage of shedding light on the extent to which each one of them may be influenced by different antecedents." While this may be an interesting question, the same question could be posed of any of a wide variety of dimensions. Why these two? They do not appear to be grounded in theory and it is unclear why different results are expected. Temporal discounting theory is not mentioned, for example, and construal theory is also not mentioned, both of which could provide grounding and might suggest differences in expected results. It is not clear, however, whether differences are expected and if so, how, and why

You are right that the explanation of the rationale behind the choice of temporal and spatial dimensions is underspecified in the original manuscript. In the updated version we are now submitting for your assessment, we have addressed this point in the following ways.

To begin with, we have added new content in the introduction to justify the spatial and temporal dimensions of risk perception. We now emphasize that research on climate risk has often adopted a two-dimensional view of climate change risk perception, identifying it as a distant psychological phenomenon—both spatially and temporally (e.g., Van der Linden 2015; Gifford et al. 2009; Leiserowitz 2006; Poortinga et al. 2011). We highlight that this perspective is important because understanding the perceived spatial and temporal distances of climate change, along with their underlying factors, provides insights into why individuals may consider climate risks more or less relevant to themselves, significantly affecting their perceived need for personal action (e.g., Tvinnereim et al. 2020; Van der Linden 2015) (lines 69-77). Moreover, by employing this two-dimensional framework, we claim to address limitations in earlier studies that assessed climate change risk as a single construct. Such studies may have led to either overestimating or underestimating public risk perception and

provided a limited view of how people mentally represent the phenomenon (lines 47-53).

That said, we also recognize that spatial and temporal dimensions are not the only potential factors influencing risk perception, but explicitly state that they offer a robust starting point for disentangling the complex ways individuals perceive and respond to climate risks. In the discussion section, we now note that future research on climate risk perception in Latin America should consider additional dimensions such as societal and hypothetical distance of climate change (lines 354-357).

In addition, the revised version of the manuscript now reinforces the theoretical discussion on whether and how different antecedents may affect the spatial and temporal dimensions of climate risk perception. Overall, we make it clearer that antecedents used in our research follow the widely used "climate change risk perception model (CCRPM)", which includes cognitive factors, experiential processing, socio-cultural influences, and socio-demographics. We higlight that the CCRPM has explained a substantial portion of the variance in climate change risk perceptions across countries (e.g., Van der Liden 2015, 2017; Thaker et al. 2023), motivating us to employ the framework to identify the primary factors associated with climate risk perception in Latin America (lines 79-82).

Furthermore, we followed your suggestion and incorporated insights from Construal Level Theory (CLT) (e.g., Trope and Liberman 2010) and Temporal Discounting (TD) (e.g., Critchfield and Kollins 2001) to reinforce our discussion on predictors of climate risk perception. We now argue that the factors theorized by the CCRPM align with CLT because they influence how people represent distant objects like climate change (e.g., Wang et al. 2019; Brugger et al. 2016). Specifically, we emphasize how these different factors, which vary in their construal level—whether they yield concrete or abstract representations of climate change—may help individuals transcend the psychological distance of climate change in space and time, thereby shaping their judgments and decisions regarding climate change risks (lines 82-88).

Our study includes factors associated with a more *concrete* construal level that can make

climate change feel psychologically close. For instance, the study highlights how experiential factors such as perceived personal experience with and vulnerability to extreme weather events, along with emotional responses like holistic affect and worry, are thought to enhance the recognition of the problem and heighten the perception that climate change poses imminent harm to people and places.

Our study also presents other predictors based on more *abstract* and high-level information, including personal values, ideology, and knowledge. Regarding knowledge, we highlight that individuals with higher knowledge and stronger beliefs about human-caused climate change are better equipped to understand its consequences and represent it more concretely, leading to heightened risk perception. In the case of values, we note that they shape the assessment of distant situations like climate change due to their abstract and high-level nature. We focus on two prevalent values: individualistic and egalitarian worldviews. Individualistic values may lead to lower risk perceptions of climate change, as addressing it could restrict commerce and industry, while egalitarian values may result in higher risk perception, given their skepticism towards industry and its environmental impact.

To avoid being exhaustive, we argue that it is reasonable to state that many of these predictions for the temporal dimension can also be grounded in the context of TD theory (e.g., experiential factors). This overlap is not surprising because CLT also encompasses the temporal dimension. What sets TD theory apart is its specific expectations regarding how demographic factors may affect the temporal dimension of climate risk perception. For instance, studies suggest a negative relationship between age and risk perception, often explained by the expectation that younger people have more to lose from climate change and therefore are more concerned about it (e.g., Poortinga et al. 2023; Milfont 2012). Additionally, low-income individuals are more likely to discount future payoffs compared with wealthier individuals, which can lead these individuals to minimize the long-term risks and consequences associated with climate change (e.g., Ruggeri et al. 2022). We now explicitly highlight these connections in the revised version of the manuscript

From this discussion, it is important to note that most factors associated with risk perception produce similar predictions for both the spatial and temporal dimensions of climate risk. This similarity arises partly because there is no underlying reasoning to expect different results, and partly because most studies on climate change risk perception have not thoroughly theorized (ex ante) how distinct predictors might yield different outcomes across these dimensions. We acknowledge this as a general limitation in the research on climate risk perception (e.g., Van der Liden 2015, 2017; Thaker et al. 2020, 2023; Lee et al. 2015) and we aimed to address it by providing a clearer rationale for the expected outcomes and their theoretical foundations, as you suggested.

It appears "experience" was measured only through a self-reported question; whether individuals who experienced different measured climate changes or extreme weather events was not considered. It would be helpful to be clear that "experience" here refers to self-reported experience only.

We greatly appreciate your cautionary note regarding our claim about the results based on "personal experience." You are correct that the measure used in this study is self-reported, which limits our ability to make broad claims about the association between experience and climate risk perception. Thus, we are now more precise when using this predictor throughout the article and explicitly note that to more definitively assess the relationship between personal experience and climate risk in the region, it is crucial to examine both objective temperature data and non-temperature-related experiences. We highlight that a thorough literature review shows mixed results from studies using 'objective' measures of climate change experience (e.g., Howe et al. 2019), which closely align with findings from self-reported measures (lines 274-278).

How was multicollinearity handled in the OLS, especially given the unusually large number of predictors employed?

This point is well-taken. We recognize the potential issue of multicollinearity due to the numerous independent variables in our analysis. To address this, Supplementary Table 16 provides the variance inflation factor (VIF), which we used to evaluate multicollinearity in our OLS estimates. As a general guideline, a VIF below 5 indicates low multicollinearity. In our study, all independent variables have VIF values well below 1.5, mitigating concerns about potential correlations among them. We have referenced this evidence of the absence of multicollinearity in both the robustness checks (lines 239-240) and methods sections (lines 633-638).

The Abstract overstates the conclusions by stating "in Latin America climate risk perception is influenced by affect but not by cognition, ideology, demographics, or exposure to experience," which, when I read the results, is not exactly true – the results are much more nuanced.

We thank the reviewer the close attention. Here's our revised abstract:

"Climate change risk perceptions are subjective constructs that individuals use to interpret potential harm from climate change. Identifying the factors shaping these perceptions is crucial, as risk assessments can facilitate or hinder public engagement in climate change mitigation and adaptation. This study challenges established factors associated with climate risk perception in affluent Western nations, such as cognitive processes, political ideology, and socio-cultural factors. Using a novel cross-national survey conducted in Argentina, Brazil, Colombia, Chile, Ecuador, Peru, and Mexico (N=5338), we show that emotional responses, particularly worry and perceived vulnerability to extreme weather events, are the strongest predictors of risk perception in this region. Cognitive factors, political ideology, socio-cultural and demographic variables exhibit weaker and less consistent associations. Our findings provide a basis for developing public risk communication strategies tailored to effectively mobilize public support for climate action in the Global South."

Many references are duplicated (e.g., 13 & 40, 34 & 35; 47 & 57; 60 & 61).

Fair point. The issue arises because we had not yet adopted Nature's final referencing system, which uses the same numbering for identical references throughout the article. If the paper successfully passes peer review, we will make this update during the proof stage.

More broadly, while the study is important and will make a very valuable contribution to the literature after some of these issues are resolved, the findings do not reach the level of a typical study in NCC. In fact, the results here highlight that we have little understanding of what does influence heterogenous risk perceptions in Latin America, and more work is therefore needed in the region.

We appreciate the reviewer's recognition of the importance and potential value of our study. Our research aims to fill a significant gap in the literature by providing the first systematic, cross-national assessment of climate risk perception in Latin America. While it is true that our findings highlight the heterogeneity of risk perceptions in the region, this very heterogeneity underscores the necessity of our work. By demonstrating that factors such as political beliefs and demographic variables do not consistently predict climate risk perception in Latin America, our study challenges assumptions based on findings from affluent Western societies and calls attention to the unique dynamics at play in developing countries.

Furthermore, our study serves as a crucial first step in understanding these dynamics, providing a foundational basis for future research. We have identified key affective and experiential predictors, such as worry and perceived vulnerability, which significantly influence climate risk perception in Latin America. These insights pave the way for more targeted and effective public risk communication strategies tailored to the region. While we acknowledge that more work is needed to fully elucidate the drivers of climate risk perception in Latin America, our findings contribute valuable empirical evidence to the literature and set the stage for further investigation. As noted in recent calls for replication and generalization

studies ("Replication studies hold the key to generalization," Nat Commun 13, 7004, 2022), it is essential to identify and scrutinize established effects in diverse contexts, particularly in under-researched regions like Latin America.

Reviewer 4

...I did not find much that was innovative or surprising about the study's design or its findings. Some of the descriptive correlational findings between demographic and political covariates and climate attitudes are interesting on their face. This includes the weak and heterogeneous predictive power of political ideology and most demographic characteristics. These analyses are worth reporting, but they're not particularly innovative.

We are very grateful for this comment, as it prompted us to explicitly situate our distinctive contribution to the literature. While our study utilizes a survey design to examine the determinants of climate risk perception in line with current research, we believe our cross-national approach introduces several innovative elements.

Our study departs from the conventional single-item measurement of climate risk perception, which is prevalent in most research. Single-item measures are susceptible to significant measurement error and inconsistent results, as highlighted by Van der Linden (2017) and Renouf and Nisbet (2008), and they tend to overestimate climate risk perceptions (Van der Linden, 2015). Additionally, these measures often ignore critical spatial and temporal dimensions associated with climate change risk perception. Differentiating these dimensions is crucial, as research has shown that they have distinct antecedents and are instrumental in explaining varying levels of political support for climate action across countries (Wang et al., 2019; Brugger et al., 2016).

Our primary contribution lies in examining the consistency of individual-level variables identified in previous studies as influential in shaping climate change risk perception, within a Global South context. The majority of existing research originates from affluent, developed countries; thus, our study provides a comparative perspective that highlights similarities and differences between developed and developing nations. This effort aligns with a recent editorial in Nature Communications ("Replication studies hold the key to generalization," Nat

Commun 13, 7004, 2022), which calls for studies that scrutinize and potentially challenge previously established effects, particularly in developing countries. This call is reinforced by extensive literature on climate opinion, which urges scholars to investigate the global generalizability of factors influencing citizens' risk perceptions (Poortinga et al., 2019; Simpson et al., 2021; Lee et al., 2015; Howe et al., 2019; Hornsey et al., 2018).

Our cross-national findings also offer novel insights within the current understanding of climate risk perception, particularly concerning political covariates. Van der Linden's (2017) seminal review notes the significant role of political beliefs in shaping risk perception in Europe and the U.S., yet much less is known about their impact in other regions. Our study addresses this gap by systematically assessing the influence of political beliefs on climate risk perception in Latin America, and by extension, the Global South. Our results reveal that political beliefs are not consistently predictive of climate risk perception, even amid recent political polarization in the region.

Regarding demographic factors, our study contrasts sharply with findings from developed countries. While research suggests a socio-demographic "risk profile" where typically younger, female, higher educated, political liberals, and racial minorities express greater concern about climate change (Van der Linden, 2017), our findings indicate that these demographic variables do not reliably predict climate risk perception in the Global South.

In summary, we believe our combination of innovative design and unique findings underscores the relevance and novelty of our study. We have emphasized these points in the revised introduction and discussion sections of the manuscript, highlighting our unique cross-national investigation of the spatial and temporal dimensions of climate risk perception in developing countries. In the discussion, we detail how each set of predictors aligns with or diverges from existing studies, underscoring the uniqueness of our findings.

I did find the replication failure of some older findings (eg, Lee et al, Van der Linden et al) to be interesting and, again, worthy of reporting. This would be

most interesting if the authors were able to speak to some reason why these findings did not replicate. For instance, the authors could highlight some flaw in those studies that the authors have corrected, methodological advance that the present authors implement, sampling difference between studies, or mechanism that has changed in the years since those studies were fielded. As designed and written, this study leaves the reader with a conundrum about who to believe.

Thank you for prompting us to clarify the reasons for our results in comparison with the prevalent literature on the topic. We agree that this will help readers gain a broader understanding of our study's findings. We have addressed this point in several ways:

First, we delve deeper into the theoretical reasons for our results in the discussion section, particularly those that diverge from current research on climate risk perception. Our study contrasts with three general findings from existing literature (e.g., Lee et al. 2015, Van der Linden 2015, 2017).

Our study does not replicate the cross-national finding that understanding the anthropogenic cause of climate change is the strongest predictor of climate change risk perception in Latin America (e.g., Lee et al. 2015). We suggest that this discrepancy may reflect intensified media coverage and public discourse on climate change in Latin America over the years, leading individuals to base their risk perceptions more on emotional responses than on cognitive understanding (lines 266-278).

Second, we find that socio-cultural factors do not significantly influence climate risk perception in Latin America. This contrasts with findings from diverse countries like the U.S., the UK, and India, where socio-cultural factors explain much of the variance in climate risk perception (e.g., Wen et al. 2014; Smith et al. 2014; Thaker et al. 2020). We note that a possible explanation could be that cultural worldviews have less impact in regions with broader consensus on climate change issues, such as Latin America. In more polarized societies like the U.S., discussions on climate change are often linked with cultural values,

resulting in significant variations in risk perception based on one's cultural worldview (lines 319-331).

Third, we find that political ideology is not a consistent factor associated with climate risk perception, unlike in the U.S. and Western European countries where this variable is a key predictor (e.g., McCright et al. 2016; Hornsey et al. 2016; Poortinga et al. 2019). We argue that despite increasing political polarization in Latin America, this has not extended to the climate sphere. In the absence of elite-driven debate, people may not frame climate change within traditional political ideologies such as left-right or progressive-conservative. Indeed, studies in Latin America suggest that these ideological labels become less relevant when not connected to specific issues like climate change (lines 293-301).

Last but not least, we now highlight in the discussion section that while we aimed to align with previous studies on climate risk perception, differences in survey methodology (e.g., sampling, question order, and timing) might explain why we may not fully replicate earlier findings and have identified some distinct patterns. Nevertheless, we note that the consistency of some of our results with existing literature across several predictors suggests that these methodological differences alone do not fully account for the failure of replication (lines 357-363).

My biggest concern is that much of this paper consists of distinct regressions examining the factor structure of climate change beliefs in Latin America, and in this section I didn't find much that was surprising. For instance, the authors report a high correlation between worry about climate change and the expectation of harmful effects from climate change across space. This doesn't surprise me at all, as these two questions are measuring the same concept: worry about climate change. Likewise, the high correlation between perceived vulnerability to extreme events and climate risk perceptions is unsurprising. Perceived vulnerability to extreme events is simply a different, perhaps noisy, measure

of perceived risk from climate change. All of these questions are endogenous to each other. In showing that different questions about beliefs and risk perceptions are correlated, the authors are simply showing that climate change attitudes are reduceable to a single dimension in Latin America. This is the argument underlying dimension reduction approaches such as the "Six Americas" construct developed by the Yale Program on Climate Change Communication and, more broadly, many measures of public ideology.

We thank you for raising this crucial point, which has significant implications for our study's results and conclusions. To address your concerns, we have reinforced the discussion to distinguish between worry and risk perception as separate phenomena and addressed the issue of endogeneity in climate opinion research.

As noted in our response to Reviewer 2, research on climate opinion frequently conflates worry and risk perception. However, substantial research treats worry as distinct from risk perception (Smith and Leiserowitz 2014; Leiserowitz 2006). Worry is seen as a discrete emotional reaction that enables individuals to connect emotionally with the risks posed by climate change, thereby contributing to higher levels of risk perception (Weber 2006; Goldberg et al. 2001; Thaker et al. 2020). Following these studies, we treat worry as a dimension of affect, which extensive research indicates as a heuristic informing judgment and decision-making in the context of climate change (lines 108-110).

Despite this, we acknowledge your valid concern and performed additional statistical analyses excluding "worry" as an independent variable (lines 223-237). These analyses demonstrate that even without "worry," our study still offers significant and novel insights into climate change opinion research. As illustrated in Figure 3 and Figure 4, the primary conclusions regarding other predictors remain largely unchanged. Specifically, perceived vulnerability to extreme weather events remains statistically significant and is highlighted as the most important predictor of climate change risk perception in Latin America.

Regarding your comment that perceived vulnerability may be a noisy measure of perceived risk of climate change, conceptually, it is unclear how perceived vulnerability could be a proxy for risk perception. Our review of studies on the determinants of climate risk perception found no evidence of operationalizing perceived vulnerability as a proxy for risk perception. However, we acknowledge the possibility of a bidirectional relationship between these variables. Although research suggests perceived vulnerability as a plausible antecedent of climate risk perception (Thaker et al. 2020), our correlational study cannot rule out reverse causality (lines 350-352). Rather than aiming to resolve the debate on any potentially endogenous relationship between some of our variables, we assert that there are theoretical reasons to believe some predictors in our study are strongly associated with climate risk perception. We leave questions about the larger causal relationship between perceived vulnerability (and other climate-related variables) and climate risk perception to future work. Our focus here is on addressing what we consider a prior and fundamental question that must be answered first, given the limited research on climate change attitudes in developing countries, particularly in Latin America: to identify if there exists a relationship among these variables.

Revise and Resubmit NCOMMS-23-54286A

November 10, 2024

Dear Reviewers,

We are pleased that Reviewers 1 and 2 support the publication of our study, and we appreciate Reviewer 4 for providing us with the opportunity to revise and resubmit. Below, we respond to Reviewer 4's comments, detailing how we have addressed each concern. As we reference additional research, we have included citations in our responses where appropriate. Please note that all references cited in this letter are fully listed in the main paper.

Reviewer 4

I still believe that the findings vis a vis political and demographic correlates are the most interesting findings here. By contrast, examination of psychological factors still seems to me to be riddled with endogeneity. Citing studies that have treated these variables as discrete—without providing evidence that they are—is not sufficient to justify the assertion that they are truly distinct from each other and/ or that they could move independently from each other. Moreover, I find the use of variance inflation factors unsatisfying evidence to the contrary, in part because these analyses lack face validity. For example, it does not seem plausible that "worry" is unrelated to "holistic affect," even though both have low VIFs. Logically, would the authors really assert that someone would respond to the "worry" question in a way that indicates a lot of worry about climate change, but then also respond that climate change is a "good thing?" Similarly, "Political ideology: left" and "political ideology: progressive" must be closely correlated, or else these questions have no validity as measures. Finally, of more substantive import here, it seems implausible that "worry" and "perceived vulnerability to extreme weather events" are not correlated. If they aren't, I'm concerned that one or both of those measures lacks validity, because they are extremely closely related conceptually. Have the authors standardized the scale for each variable input into the regression, such that the VIF is reliable? Also, I'd like to see a correlation matrix and a Principle Component Analysis. Lack of correlations (between standardized variables) and a convincingly multidimensional factor structure would provide convincing evidence that these variables are not simply all noisy measures of the same underlying construct.

We appreciate these valuable observations and the opportunity to clarify and address your concerns regarding the potential endogeneity and the distinctiveness of these variables.

Before addressing these points, we would like to emphasize that, following your suggestion, we have further highlighted the importance of our findings on the lack of association between political ideology and climate change risk perception. In the revised manuscript, we explicitly include political ideology alongside psychological variables as part of the primary results (abstract; lines 251-258 (red); lines 379-387 (red)). We agree with the reviewer that this is a key result, particularly as it contrasts with much of the research from developed countries. Moreover, prior studies have highlighted that "there is little cross-national data available on the role of political ideology for a global comparison" (Lee et al., 2015, pp. 1016-1017), underscoring the value of our findings in this broader context. Specifically, the finding that climate change is not framed as a politically divisive issue suggests an opportunity for cross-party collaboration on climate initiatives.

That said, we now address your second set of comments, specifically concerning whether our psychological variables are distinct constructs. To demonstrate this distinction, we followed your suggestions and conducted a multicollinearity assessment after standardizing all independent variables in our main model. Additionally, we provide evidence from correlation matrices and Principal Component Analysis (PCA), which further support the differentiation between these constructs.

For the **Variance Inflation Factors (VIFs)**, Table 1 shows that our psychological variables exhibit relatively low VIFs, with most values well below the commonly accepted threshold of 5. Specifically, the VIFs for "Worry" (1.34), "Holistic Affect" (1.23), "Perceived Vulnerability" (1.27), "Political Ideology (Left-Right = 1.15)", and "Political Ideology (Progressive-Conservative = 1.11) all fall within an acceptable range, indicating that multicollinearity is unlikely to pose a significant concern for these variables.

In addition, we provide a **Correlation Matrix** of the standardized psychological variables. The Pearson correlation coefficients among these variables are presented in Table 2. The variables "Worry" and "Holistic Affect" exhibit a correlation of -0.20 (Table 2 - the correlation is negative because the climate change variable is scaled inversely, reflecting that

negative values represent more negative perceptions of climate change as a bad thing), aligning with our expectation that these constructs, while related, are not perfectly collinear. This is also consistent with previous studies suggesting that, although both concepts encompass the affective dimension, worry represents a specific negative emotion, whereas holistic affect reflects a person's general positive or negative feelings toward issues like climate change (e.g., Smith and Leiserowitz 2014; Goldberg et al. 2021). Similarly, Table 2 shows that "Perceived Vulnerability to Extreme Events" correlates moderately with "Worry" (0.26), reinforcing the idea that, while these variables are somewhat correlated, they do not capture the same underlying construct. This aligns with research suggesting that the strength of this relationship hinges on whether people actually attribute their vulnerability to climate change - an assumption that does not always hold (e.g., Thomas et al. 2019). Furthermore, the correlation magnitude between perceived vulnerability and worry aligns with findings from other studies (e.g., India), which report similar relationships between the two variables (e.g., Thaker et al. 2020). We also would like to emphasize that we did not expect standardization to change these results, as standardization does not affect correlation by definition. Standardization involves rescaling variables to have a mean of 0 and a standard deviation of 1; however, this process does not alter the relationships between the variables themselves. Thus, while standardization changes the scale of the variables, it does not impact their correlation structure.

Finally, to further assess the dimensionality of the psychological constructs, we performed a **Principal Component Analyses (PCA)** using all standardized psychological variables. The results, shown in Table 3, indicate that these variables load onto multiple dimensions rather than a single one, suggesting that they measure distinct underlying constructs. The eigenvalues for the first three dimensions are all above 1, with Dim. 1 explaining 21.49% of the variance and Dim. 2 accounting for 12.79%, among others. This demonstrates that multiple dimensions account for substantial portions of the total variance. The cumulative variance explained by the first five dimensions exceeds 58%, indicating that several components are

necessary to capture the variability in the data. Furthermore, dimensions beyond the first few continue to contribute meaningfully, collectively accounting for nearly 30% of the total variance. Overall, the distribution of variance suggests that the variables capture distinct constructs rather than a single underlying concept.

While these additional tests suggest that psychological variables—particularly personal experience, holistic affect, and perceived vulnerability—are not merely noise measurements of a single underlying concept, we also show that our results remain robust even when excluding these variables, which, as noted, exhibit some correlation. To assess this, we conducted stepwise regressions, first omitting and then incrementally adding personal experience, holistic affect, and perceived vulnerability. As shown in Tables 4, 5, and 6, the results remained largely consistent with the full model, indicating that our substantive conclusions are not sensitive to specific model specifications.

In summary, we have addressed your comments in the following ways. The revised manuscript now highlights that the lack of association between political ideology and climate risk perception is a key finding, especially given its contrast with research from developed countries, and the potential it suggests for cross-party climate collaboration. To address concerns regarding distinctiveness among psychological variables, we conducted multicollinearity checks, correlation analyses, and Principal Component Analysis (PCA), all of which suggest that psychological variables capture distinct constructs. Finally, we confirm that our results are robust to different model specifications, with findings remaining consistent even when excluding certain psychological variables, thus reinforcing the reliability of our conclusions.

Table 1. Multicollinearity Assessment (after standardization)

Term	VIF	VIF CI low	VIF CI high	Increased SE	Tolerance	Tolerance CI low	Tolerance CI high
Psychological variables							
Subjective knowledge	1.13	1.09	1.19	1.06	0.88	0.84	0.92
Objective knowledge	1.20	1.15	1.26	1.09	0.83	0.79	0.87
Human-caused knowledge	1.09	1.05	1.15	1.04	0.92	0.87	0.95
Worry	1.34	1.28	1.41	1.16	0.75	0.71	0.78
Holistic affect	1.23	1.18	1.29	1.11	0.82	0.77	0.85
Personal experience (extreme weather events)	1.04	1.02	1.12	1.02	0.96	0.90	0.98
Perceived vulnerability to extreme events	1.27	1.21	1.34	1.13	0.79	0.75	0.82
Individualism worldview	1.17	1.12	1.23	1.08	0.86	0.82	0.89
Egalitarianism worldview	1.33	1.27	1.40	1.15	0.75	0.71	0.79
The New Ecological Paradigm (NEP)	1.29	1.24	1.36	1.14	0.77	0.74	0.81
Descriptive norm	1.63	1.55	1.72	1.28	0.61	0.58	0.65
Prescriptive norm	1.80	1.71	1.91	1.34	0.55	0.52	0.59
Political ideology and Socio-Demographic variables							
Political ideology: Left	1.15	1.11	1.21	1.07	0.87	0.83	0.90
Political ideology: Progressive	1.11	1.07	1.17	1.05	0.90	0.86	0.93
Female	1.14	1.10	1.20	1.07	0.87	0.83	0.91
Education: High school or equivalent	1.74	1.65	1.84	1.32	0.58	0.54	0.61
Education: Undergraduate or more	1.97	1.86	2.09	1.40	0.51	0.48	0.54
Religion: Catholic	4.72	4.41	5.06	2.17	0.21	0.20	0.23
Religion: Evangelical Pentecostal or other evangelical	2.09	1.97	2.22	1.45	0.48	0.45	0.51
Religion: Evangelical Traditional	2.58	2.43	2.75	1.61	0.39	0.36	0.41
Religion: Others/No Relig.	3.64	3.40	3.89	1.91	0.27	0.26	0.29
Income: 1 - 2 minimum wages	2.28	2.15	2.43	1.51	0.44	0.41	0.46
Income: 2 - 3 minimum wages	2.23	2.10	2.37	1.49	0.45	0.42	0.48
Income: 3 - 5 minimum wages	1.82	1.72	1.93	1.35	0.55	0.52	0.58
Income: 5 - 10 minimum wages	1.89	1.78	2.00	1.37	0.53	0.50	0.56
Income: 10 minimum wages or more	1.63	1.55	1.73	1.28	0.61	0.58	0.65
Income: Do not know/ Prefer to not answer	1.70	1.61	1.80	1.30	0.59	0.56	0.62
Age (Years)	1.21	1.16	1.27	1.10	0.83	0.79	0.86
Race: Black	1.03	1.01	1.12	1.01	0.97	0.89	0.99

Notes: This table reports a multicollinearity assessment. The columns represent the variance inflation factor (VIF) and the associated 95% confidence intervals; the factor by which the standard error is increased due to possible correlation with other terms; the tolerance values including their 95% confidence intervals. Tolerance is calculated as $\frac{1}{VIF}$. All variables were standardized.

Table 2. Correlation Matrix - Psychological Variables (after standardization and with all observations)

	Subjective knowledge	Objective knowledge	Human-caused knowledge	Worry	Holistic affect	The New Ecological Paradigm	Individualism worldview	Egalitarianism worldview	Personal experience	Perceived vulnerability	Descriptive norm	Prescriptive norm
Subjective knowledge	1	.	.	.	.	.	.	.	.	.	.	.
Objective knowledge	.14	1	.	.	.	.	.	.	.	.	.	.
Human-caused knowledge	.09	.16	1	.	.	.	.	.	.	.	.	.
Worry	.26	.30	.17	1	.	.	.	.	.	.	.	.
Holistic affect	-.11	-.25	-.15	-.20	1	.	.	.	.	.	.	.
The New Ecological Paradigm	.11	.26	.13	.29	-.21	1	.	.	.	.	.	.
Individualism worldview	-.03	-.08	-.04	-.05	.17	.01	1	.	.	.	.	.
Egalitarianism worldview	.07	.13	.06	.18	-.07	.21	.14	1	.	.	.	.
Personal experience	.14	.15	.05	.19	-.08	.07	-.04	.03	1	.	.	.
Perceived vulnerability	.03	.18	.06	.26	-.12	.23	.06	.26	.05	1	.	.
Descriptive norm	.12	.06	-.01	.18	.05	.13	.17	.19	.03	.18	1	.
Prescriptive norm	.14	.19	.06	.26	-.12	.27	.10	.32	.07	.28	.59	1

Notes: This table reports the Pearson correlation coefficients between all psychological independent variables. All variables were standardized

Table 3. Eigenvalues and Variance Explained by PCA Components

	Eigenvalue	Variance (%)	Cumulative Variance (%)
Dim.1	2.58	21.49	21.49
Dim.2	1.53	12.79	34.28
Dim.3	1.07	8.94	43.22
Dim.4	0.96	8.02	51.24
Dim.5	0.93	7.76	58.99
Dim.6	0.86	7.20	66.20
Dim.7	0.80	6.70	72.90
Dim.8	0.78	6.48	79.38
Dim.9	0.74	6.14	85.52
Dim.10	0.72	5.96	91.48
Dim.11	0.64	5.37	96.85
Dim.12	0.38	3.15	100.00

Notes: This table reports the results of Principal Component Analysis (PCA) showing the eigenvalues, percentage of variance explained, and cumulative variance for each principal component (Dim.1 to Dim.12).

Table 4. Stepwise OLS Results - Correlates of Risk Perception (Spatial Dimension)

Dependent Variable:	Spatial Dimension			
Model:	(1)	(2)	(3)	(4)
Psychological variables				
Subjective knowledge	-0.006	-0.005	-0.004	0.0004
	(0.017)	(0.017)	(0.017)	(0.017)
Objective knowledge	0.085***	0.079***	0.081***	0.071***
	(0.019)	(0.019)	(0.019)	(0.019)
Human-caused knowledge	0.055***	0.047***	0.048***	0.046**
	(0.019)	(0.018)	(0.018)	(0.018)
Worry	0.366***	0.358***	0.352***	0.338***
	(0.028)	(0.028)	(0.028)	(0.028)
Individualism worldview	-0.022	-0.012	-0.013	-0.017
	(0.013)	(0.013)	(0.013)	(0.013)
Egalitarianism worldview	0.028**	0.028**	0.030**	0.013
	(0.014)	(0.014)	(0.014)	(0.014)
The New Ecological Paradigm (NEP)	0.105***	0.089***	0.088***	0.071***
	(0.022)	(0.022)	(0.022)	(0.023)
Descriptive norm	-0.006	0.004	0.004	-0.002
	(0.015)	(0.015)	(0.015)	(0.015)
Prescriptive norm	0.016*	0.012	0.010	0.004
	(0.008)	(0.008)	(0.008)	(0.008)
Political ideology and Socio-Demographic variables				
Political ideology: Left	0.030	0.020	0.018	0.013
	(0.019)	(0.019)	(0.019)	(0.019)
Political ideology: Progressive	-0.040**	-0.042**	-0.039**	-0.030
	(0.020)	(0.019)	(0.019)	(0.020)
Female	0.055***	0.055***	0.054***	0.046**
	(0.019)	(0.019)	(0.019)	(0.019)
Education: High school or equivalent	0.042*	0.035	0.040	0.045*
	(0.025)	(0.025)	(0.025)	(0.025)
Education: Undergraduate or more	0.026	0.013	0.014	0.026
	(0.026)	(0.025)	(0.025)	(0.025)
Religion: Catholic	0.010	0.004	0.004	-0.0007
	(0.032)	(0.032)	(0.032)	(0.032)
Religion: Evangelical Pentecostal or other evangelical	0.009	0.017	0.014	0.010
	(0.061)	(0.061)	(0.061)	(0.062)
Religion: Evangelical Traditional	-0.001	-0.003	-0.006	-0.006
	(0.043)	(0.043)	(0.043)	(0.043)
Religion: Others/No Relig.	0.007	0.003	-0.001	-0.011
	(0.034)	(0.034)	(0.034)	(0.035)
Income: 1 - 2 minimum wages	0.029	0.023	0.018	0.023
	(0.027)	(0.027)	(0.026)	(0.027)
Income: 10 minimum wages or more	-0.086**	-0.093**	-0.098**	-0.067*
	(0.039)	(0.039)	(0.039)	(0.040)
Income: 2 - 3 minimum wages	0.006	-0.0007	-0.003	0.009
	(0.030)	(0.030)	(0.030)	(0.030)
Income: 3 - 5 minimum wages	-0.033	-0.041	-0.038	-0.025
	(0.035)	(0.035)	(0.036)	(0.036)
Income: 5 - 10 minimum wages	-0.048	-0.056	-0.058	-0.031
	(0.040)	(0.040)	(0.040)	(0.039)
Income: Do not know/ Prefer to not answer	0.030	0.030	0.032	0.039
	(0.033)	(0.033)	(0.033)	(0.033)
Age (Years)	0.001**	0.001**	0.001**	0.001*
	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Race: Black	-0.026	-0.021	-0.022	-0.013
	(0.053)	(0.051)	(0.051)	(0.051)
Climate-related independent variables				
Holistic affect		-0.029***	-0.029***	-0.025***
		(0.006)	(0.006)	(0.006)
Personal experience (extreme weather events)			0.088**	0.089***
			(0.035)	(0.034)
Perceived vulnerability to extreme events				0.138***
				(0.022)
Const	1.49***	1.63***	1.57***	1.33***
	(0.124)	(0.129)	(0.130)	(0.133)
Fit statistics				
Observations	2,518	2,518	2,518	2,474
R^2	0.32439	0.33299	0.33635	0.35709

Notes: Results from stepwise ordinary least squares models regressing risk perception (spatial dimension) on a set of independent variables and socio-demographic characteristics. We gradually include climate-related independent variables from columns 2 - 4. Heteroskedasticity-robust standard errors in parentheses. Reference baseline for Education is "Elementary (Primary) or less", Religion is "Atheist" and Income is "0 – 1 minimum wages". Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.

Table 5. Stepwise OLS Results - Correlates of Risk Perception (Temporal Dimension)

Dependent Variable:	Temporal Dimension			
Model:	(1)	(2)	(3)	(4)
Psychological variables				
Subjective knowledge	0.091**	0.092**	0.093**	0.109***
	(0.037)	(0.037)	(0.037)	(0.038)
Objective knowledge	0.127***	0.122***	0.124***	0.109***
	(0.039)	(0.039)	(0.039)	(0.040)
Human-caused knowledge	0.095**	0.088**	0.089**	0.075*
	(0.043)	(0.043)	(0.043)	(0.044)
Worry	0.371***	0.364***	0.354***	0.307***
	(0.056)	(0.056)	(0.057)	(0.057)
Individualism worldview	-0.067*	-0.059*	-0.059*	-0.064*
	(0.035)	(0.035)	(0.035)	(0.035)
Egalitarianism worldview	0.068*	0.067*	0.070*	0.050
	(0.038)	(0.038)	(0.038)	(0.038)
The New Ecological Paradigm (NEP)	0.168***	0.154***	0.153***	0.126**
	(0.051)	(0.051)	(0.051)	(0.051)
Descriptive norm	-0.026	-0.018	-0.018	-0.036
	(0.035)	(0.036)	(0.036)	(0.036)
Prescriptive norm	0.029	0.025	0.024	0.019
	(0.019)	(0.019)	(0.019)	(0.019)
Political ideology and Socio-Demographic variables				
Political ideology: Left	0.026	0.017	0.013	0.010
	(0.047)	(0.046)	(0.046)	(0.047)
Political ideology: Progressive	0.008	0.007	0.011	0.025
	(0.045)	(0.045)	(0.046)	(0.046)
Female	0.172***	0.171***	0.171***	0.147***
	(0.046)	(0.046)	(0.046)	(0.046)
Education: High school or equivalent	0.032	0.026	0.034	0.029
	(0.058)	(0.059)	(0.059)	(0.059)
Education: Undergraduate or more	-0.007	-0.018	-0.018	-0.007
	(0.062)	(0.062)	(0.062)	(0.063)
Religion: Catholic	-0.045	-0.049	-0.049	-0.034
	(0.111)	(0.113)	(0.113)	(0.111)
Religion: Evangelical Pentecostal or other evangelical	0.019	0.027	0.022	0.012
	(0.143)	(0.145)	(0.144)	(0.144)
Religion: Evangelical Traditional	-0.034	-0.035	-0.039	-0.034
	(0.131)	(0.132)	(0.132)	(0.131)
Religion: Others/No Relig.	-0.042	-0.045	-0.052	-0.037
	(0.114)	(0.116)	(0.115)	(0.114)
Income: 1 - 2 minimum wages	-0.107	-0.113	-0.119*	-0.136**
	(0.068)	(0.068)	(0.069)	(0.069)
Income: 10 minimum wages or more	-0.173**	-0.177**	-0.185**	-0.162*
	(0.082)	(0.082)	(0.082)	(0.084)
Income: 2 - 3 minimum wages	-0.055	-0.061	-0.065	-0.072
	(0.072)	(0.072)	(0.072)	(0.072)
Income: 3 - 5 minimum wages	-0.083	-0.089	-0.084	-0.086
	(0.079)	(0.079)	(0.080)	(0.079)
Income: 5 - 10 minimum wages	-0.140	-0.147	-0.150	-0.133
	(0.093)	(0.093)	(0.093)	(0.092)
Income: Do not know/ Prefer to not answer	0.081	0.080	0.083	0.069
	(0.074)	(0.074)	(0.074)	(0.074)
Age (Years)	0.007***	0.007***	0.007***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
Race: Black	0.008	0.012	0.011	0.016
	(0.123)	(0.122)	(0.122)	(0.123)
Climate-related independent variables				
Holistic affect		-0.026*	-0.025*	-0.022
		(0.015)	(0.015)	(0.015)
Personal experience (extreme weather events)			0.134*	0.135*
			(0.071)	(0.072)
Perceived vulnerability to extreme events				0.189***
				(0.049)
Const	2.21***	2.34***	2.25***	2.03***
	(0.296)	(0.300)	(0.298)	(0.310)
Fit statistics				
Observations	2,637	2,637	2,637	2,583
R^2	0.13881	0.14023	0.14188	0.14230

Notes: Results from stepwise ordinary least squares models regressing risk perception (temporal dimension) on a set of independent variables and socio-demographic characteristics. We gradually include climate-related independent variables from columns 2 - 4. Heteroskedasticity-robust standard errors in parentheses. Reference baseline for Education is "Elementary (Primary) or less", Religion is "Atheist" and Income is "0 – 1 minimum wages". Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.

Table 6. Stepwise OLS Results - Correlates of Risk Perception

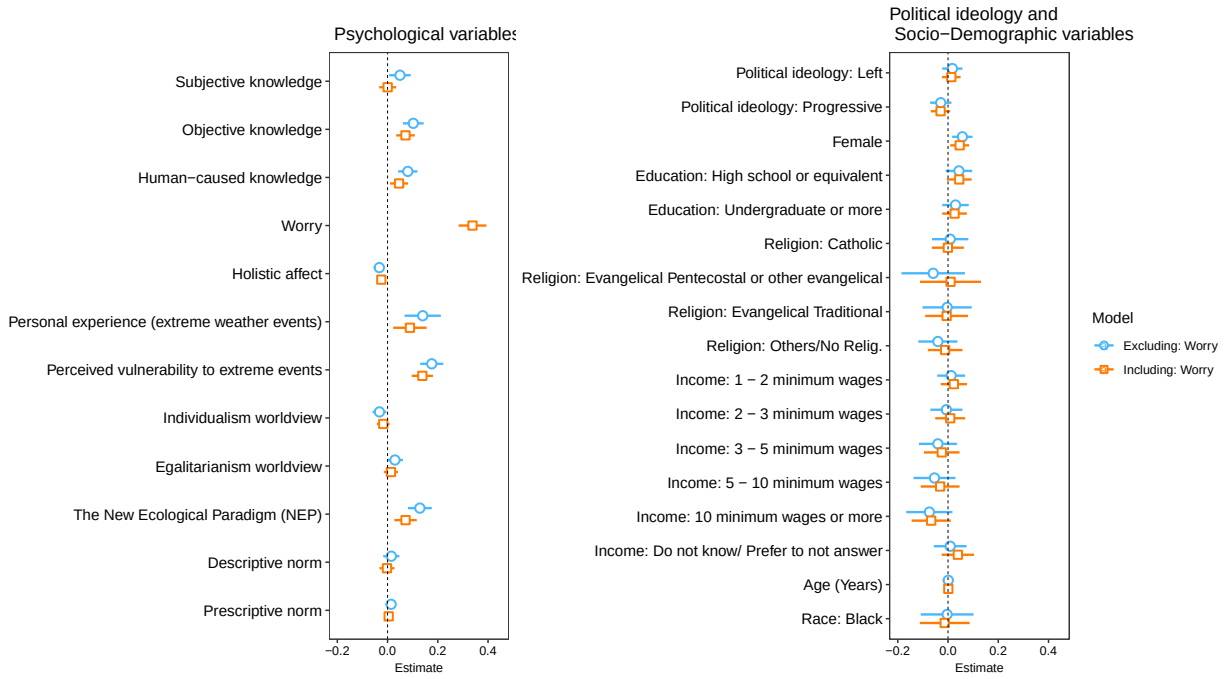
Dependent Variable:	Index			
Model:	(1)	(2)	(3)	(4)
Psychological variables				
Subjective knowledge	0.042*	0.044**	0.045**	0.052**
	(0.022)	(0.022)	(0.022)	(0.023)
Objective knowledge	0.110***	0.105***	0.107***	0.092***
	(0.025)	(0.025)	(0.025)	(0.024)
Human-caused knowledge	0.067***	0.060**	0.061**	0.053**
	(0.025)	(0.025)	(0.025)	(0.025)
Worry	0.371***	0.364***	0.357***	0.334***
	(0.037)	(0.037)	(0.037)	(0.036)
Individualism worldview	-0.037*	-0.028	-0.028	-0.034*
	(0.020)	(0.020)	(0.020)	(0.020)
Egalitarianism worldview	0.043*	0.043**	0.044**	0.028
	(0.022)	(0.022)	(0.022)	(0.022)
The New Ecological Paradigm (NEP)	0.128***	0.113***	0.111***	0.091***
	(0.031)	(0.031)	(0.031)	(0.031)
Descriptive norm	-0.021	-0.012	-0.012	-0.022
	(0.021)	(0.021)	(0.021)	(0.021)
Prescriptive norm	0.021*	0.017	0.016	0.011
	(0.011)	(0.011)	(0.011)	(0.011)
Political ideology and Socio-Demographic variables				
Political ideology: Left	0.036	0.026	0.024	0.019
	(0.027)	(0.027)	(0.027)	(0.027)
Political ideology: Progressive	-0.018	-0.020	-0.017	-0.005
	(0.027)	(0.027)	(0.027)	(0.027)
Female	0.119***	0.119***	0.118***	0.106***
	(0.027)	(0.027)	(0.027)	(0.027)
Education: High school or equivalent	0.040	0.033	0.038	0.039
	(0.034)	(0.034)	(0.035)	(0.034)
Education: Undergraduate or more	0.010	-0.002	-0.002	0.014
	(0.036)	(0.036)	(0.036)	(0.036)
Religion: Catholic	-0.006	-0.011	-0.011	-0.006
	(0.061)	(0.063)	(0.062)	(0.060)
Religion: Evangelical Pentecostal or other evangelical	0.038	0.046	0.042	0.037
	(0.083)	(0.084)	(0.083)	(0.083)
Religion: Evangelical Traditional	0.012	0.010	0.008	0.012
	(0.072)	(0.074)	(0.074)	(0.072)
Religion: Others/No Relig.	0.003	-0.0008	-0.005	-0.003
	(0.063)	(0.064)	(0.064)	(0.062)
Income: 1 - 2 minimum wages	-0.023	-0.029	-0.033	-0.039
	(0.040)	(0.040)	(0.039)	(0.039)
Income: 10 minimum wages or more	-0.096*	-0.104**	-0.109**	-0.083
	(0.050)	(0.050)	(0.050)	(0.051)
Income: 2 - 3 minimum wages	-0.011	-0.018	-0.020	-0.018
	(0.042)	(0.042)	(0.042)	(0.042)
Income: 3 - 5 minimum wages	-0.034	-0.042	-0.038	-0.035
	(0.046)	(0.046)	(0.047)	(0.046)
Income: 5 - 10 minimum wages	-0.089	-0.097*	-0.099*	-0.077
	(0.056)	(0.055)	(0.055)	(0.054)
Income: Do not know/ Prefer to not answer	0.068	0.068	0.070	0.062
	(0.044)	(0.043)	(0.044)	(0.044)
Age (Years)	0.004***	0.004***	0.004***	0.004***
	(0.0008)	(0.0008)	(0.0008)	(0.0008)
Race: Black	-0.018	-0.014	-0.014	-0.009
	(0.075)	(0.074)	(0.074)	(0.073)
Climate-related independent variables				
Holistic affect		-0.028***	-0.028***	-0.024***
		(0.009)	(0.009)	(0.009)
Personal experience (extreme weather events)			0.091**	0.089**
			(0.043)	(0.042)
Perceived vulnerability to extreme events				0.163***
				(0.030)
Const	1.85***	1.99***	1.93***	1.68***
	(0.178)	(0.182)	(0.181)	(0.188)
Fit statistics				
Observations	2,518	2,518	2,518	2,474
R^2	0.24925	0.25373	0.25570	0.26734

Notes: Results from stepwise ordinary least squares models regressing risk perception on a set of independent variables and socio-demographic characteristics. We gradually include climate-related independent variables from columns 2 - 4. Heteroskedasticity-robust standard errors in parentheses. Reference baseline for Education is "Elementary (Primary) or less", Religion is "Atheist" and Income is "0 – 1 minimum wages". Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.

Incidentally, I was not able to find Figure 3 or Figure 4, which purport to show the robustness of findings to the exclusion of "worry" as a variable.

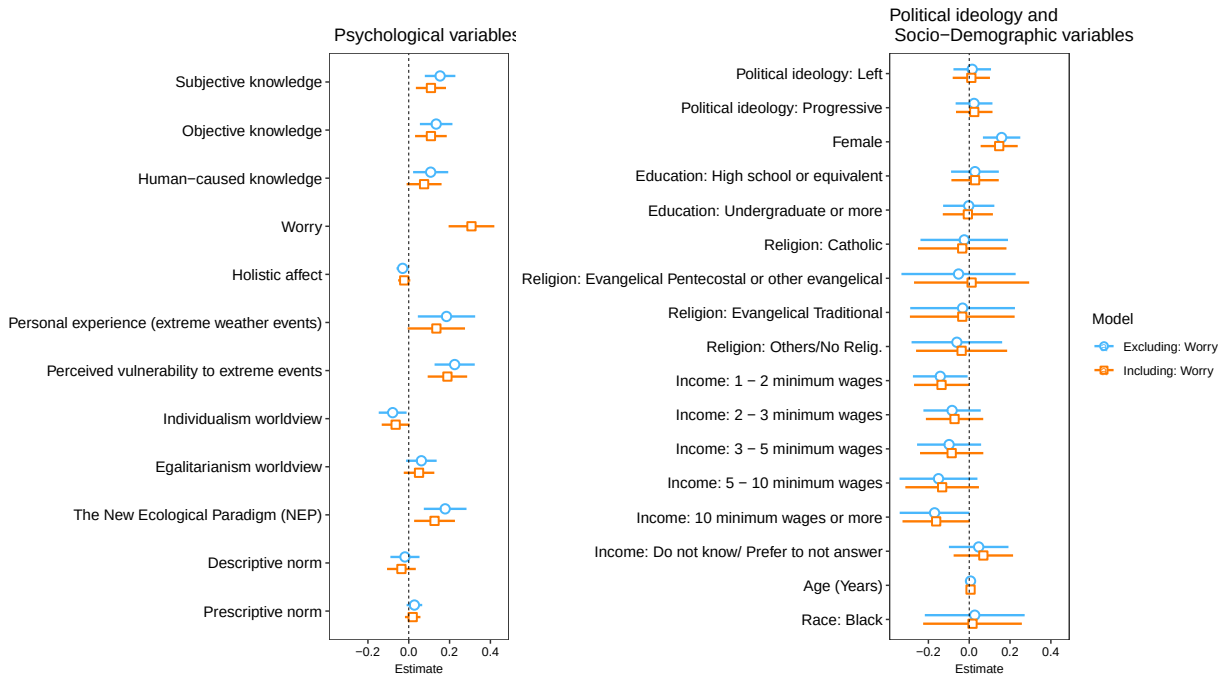
We appreciate the reviewer's close attention to this point. The figures were included in the pages containing our responses to Reviewer 2 in the memo to reviewers but were omitted from the main updated manuscript you received. We apologize for this oversight and are providing the figures below to address this issue and facilitate visualization.

Figure 1. OLS Results - Correlates of Risk Perception (Spatial Dimension) in Latin America: Including and Excluding "worry" as a predictor



Notes: Results from an ordinary least squares model regressing *Spatial dimension* on a set of independent variables (left) and socio-demographic characteristics (right). Respondents from all countries are included in the model. Blue coefficients represent the results when estimating the model without "Worry" as an independent variable, while orange coefficients represent the results when including "Worry". Coefficients are increases in the *Spatial dimension* measure (1-4) given a unit increase in the covariates. The higher the scale the greater the belief that climate change will have extensive harmful effects. The width of the confidence intervals for each coefficient is 95% with heteroskedasticity-robust standard errors. Reference baseline for Education is "Elementary (Primary) or less", Religion is "Atheist" and Income is "0 – 1 minimum wages".

Figure 2. OLS Results - Correlates of Risk Perception (Temporal Dimension) in Latin America: Including and Excluding "worry" as a predictor



Notes: Results from an ordinary least squares model regressing *Temporal dimension* on a set of independent variables (left) and socio-demographic characteristics (right). Respondents from all countries are included in the model. Blue coefficients represent the results when estimating the model without "Worry" as an independent variable, while orange coefficients represent the results when including "Worry". Coefficients are increases in the *Temporal dimension* measure (1-4) given a unit increase in the covariates. The higher the scale the greater the belief that climate change will have extensive harmful effects. The width of the confidence intervals for each coefficient is 95% with heteroskedasticity-robust standard errors. Reference baseline for Education is “Elementary (Primary) or less”, Religion is “Atheist” and Income is “0 – 1 minimum wages”.

I agree with Reviewer 1 that the authors should not over-claim regarding the scope of their study. I appreciate the discussion of this limitation in the discussion section. However, I would encourage the authors to temper all language concerning the "comprehensiveness" of this study, which is limited to eight countries in North and South America. Likewise, the authors should steer clear of claiming to be the "first cross-national assessment of the correlates of climate risk perceptions in the Global South," as Lee et al. performed such an assessment a decade ago (albeit with data that is a decade old now, as the authors point out).

We appreciate your comment regarding the scope of our study, which prompted us to clarify our claims. We do not intend to overstate our contribution beyond what our results support. In response, we have revised the manuscript accordingly. Specifically, we removed passages that emphasized the study's comprehensiveness, including claims that it is the first cross-national assessment of climate risk perception correlates in the Global South. As you rightly noted, Lee et al. (2015) conducted a seminal analysis on this topic, though with a narrower definition of risk perception and a limited set of explanatory variables, which we aim to expand upon in this paper.

I thank the authors for speaking to my request to theorize about the mechanisms for their null results. However, I found their speculation here to be a bit unsatisfying, because they don't provide evidence for their specified mechanisms. For example, the argue that, "regions low in social capital and interpersonal trust like Latin America" explains lack of effect of social norms. Are social capital and interpersonal trust low in Latin America? They also argue that the lack of an ideology effect may be due to lack of elite messaging. Are we sure there is no elite messaging on climate change in these countries, or is it the case that elite messaging is simply not polarized? These and other assertions would be stronger if the authors brought some evidence to bear here.

This is a well-taken and fair point. We agree with the reviewer that our discussion of the mechanisms driving the results related to social norms and political ideology was somewhat underdeveloped in the previous version of the manuscript. To address this, we have taken two specific steps in the revised manuscript.

First, we support the claim that Latin America is a region characterized by low social capital and interpersonal trust by citing a widely referenced book based on multiple surveys across the region (Keefer and Scartascini, 2022) (lines 339-343 (red)) In this book, Keeper and Scartascini assert that "Trust is the most pressing and yet least discussed problem confronting Latin America and the Caribbean... [and] trust is lower in the region than anywhere else in the world" (pii). This evidence, drawn from multiple surveys conducted over time, empirically supports the assertion that Latin America is characterized by high levels of social capital and interpersonal trust.

Second, we appreciate your comment regarding the relationship between ideology and elite messaging. Our intention is not to suggest that elite messaging around climate change is totally absent in the countries surveyed. Instead, we aim to clarify that in Latin America, such elite messaging is not framed as an issue of political ideology, as is the case in the

developed world. This observation aligns with recent research indicating that political elites in Latin America have generally not integrated climate change into national politics or party platforms (e.g., Ryan 2017; Franchini 2021). As noted in the manuscript, without political elite mobilization around this issue, individuals may find it challenging to perceive climate change through the lens of left-right or progressive-conservative divides. Research that we have cited in the manuscript (Zechmeister, E. and Corral 2013; Zechmeister 2006), indicates that ideological labels lack significance in Latin America when they are not linked to issues like climate change. While we cannot provide definitive evidence for this explanation, the accumulated knowledge regarding how individuals associated political ideology with specific issues - alongside the dynamics of elite politics surrounding climate change in Latin America - supports its plausibility. We have revised this passage in the manuscript to clarify these points further (lines 301-305 (red)).

More generally, where the authors claim to find no effect, I'd like them to assess the strength of their null findings–are they convincing findings of no effects (ie, sharp nulls), or are they statistically noisy estimates of substantively small effects? This distinction is important for the interpretation of null findings, and is, as such, crucial to readers' interpretation of the paper and how we should update our priors about the correlates of climate risk perceptions in Latin America.

Thank you the reviewer for encouraging a deeper examination of our null results. In response, we conducted two additional tests to further evaluate the robustness of our findings.

First, to address the concern that the null result could be attributed to statistical noise or insufficient power, we conducted a multiple regression power analysis to assess the robustness of our null findings in both the spatial and temporal models of risk perception. As shown in Table 7, both models exhibit high power, with a power of 1. This indicates that the probability of correctly rejecting a false null hypothesis (i.e., detecting a true effect) is

virtually 100%. The spatial model has a large effect size ($f^2 = 0.56$), suggesting it explains a substantial portion of the variance in the dependent variable, while the temporal model has a moderate effect size ($f^2 = 0.17$). Together, these results indicate that our null findings are unlikely to be attributed to statistical noise or insufficient power.

Second, we examined the standardized estimates of our key variables alongside their corresponding coefficients and p-values. The use of standardized coefficients helps address concerns that the null results might be artifacts of variables measured on different scales, offering a clearer comparison across variables. When examining the variables that showed null effects in the study—such as political ideology, social norms, and education—the results remain substantially consistent, with most continuing to be insignificant at conventional significance levels (0.05). For instance, in Tables 8 and 9, political ideology, whether measured on a left-right scale or a progressive-conservative spectrum, is not statistically associated with climate risk perception at conventional levels. Similarly, both descriptive and prescriptive social norms remain statistically indistinguishable from zero. This test is also valuable as it demonstrates that the key variables associated with risk perception models remain consistent. Variables such as worry (estimate = 0.3380361, p-value < 0.0001, std_estimate = 0.3852879) and perceived vulnerability to extreme events (estimate = 0.1383890, p-value < 0.0001, std_estimate = 0.1556007) continue to be strongly associated with climate risk perception, reinforcing the study's primary conclusions.

In summary, these additional analyses—such as the power test and effect size—suggest that our null findings represent true null effects rather than statistical noise, reinforcing the robustness of our primary conclusions.

Table 7. Multiple regression power calculation - Risk Perception

	Spatial Dimension	Temporal Dimension
Number of Indep. Vars	29	29
Degrees of Freedom	5358	5358
Cohen's f^2	0.56	0.17
Significance Level	0.05	0.05
Power	1	1

Table 8. Effect Size Analysis - Risk Perception Spatial Dimension

term	estimate	std.error	statistic	p.value	conf.low	conf.high	std_estimate
Subjective knowledge	0.0003972	0.0142936	0.0277867	0.9778345	-0.0276317	0.0284260	0.0004799
Objective knowledge	0.0713072	0.0126637	5.6308309	0.0000000	0.0464745	0.0961399	0.0999814
Human-caused knowledge	0.0457387	0.0166846	2.7413822	0.0061627	0.0130214	0.0784561	0.0463353
Worry	0.3380361	0.0164565	20.5411768	0.0000000	0.3057659	0.3703062	0.3852879
Holistic affect	-0.0249183	0.0050869	-4.8985304	0.0000010	-0.0348934	-0.0149433	-0.0879797
Personal experience (extreme weather events)	0.0890101	0.0248538	3.5813516	0.0003485	0.0402735	0.1377468	0.0593416
Perceived vulnerability to extreme events	0.1383890	0.0162457	8.5185036	0.0000000	0.1065323	0.1702458	0.1556007
Individualism worldview	-0.0171566	0.0125769	-1.3641344	0.1726509	-0.0418191	0.0075059	-0.0238847
Egalitarianism worldview	0.0134770	0.0136314	0.9886739	0.3229206	-0.0132533	0.0402074	0.0184788
The New Ecological Paradigm (NEP)	0.0714730	0.0174078	4.1058073	0.0000416	0.0373375	0.1056085	0.0756671
Descriptive norm	-0.0023607	0.0135925	-0.1736803	0.8621311	-0.0290147	0.0242932	-0.0035931
Prescriptive norm	0.0044535	0.0070221	0.6342189	0.5259973	-0.0093163	0.0182233	0.0138181
Political ideology: Left	0.0130880	0.0172113	0.7604335	0.4470688	-0.0206622	0.0468383	0.0132252
Political ideology: Progressive	-0.0297900	0.0172920	-1.7227584	0.0850587	-0.0636985	0.0041186	-0.0294189
Female	0.0463118	0.0173204	2.6738216	0.0075491	0.0123475	0.0802760	0.0463996
Education: High school or equivalent	0.0446520	0.0220594	2.0241683	0.0430614	0.0013949	0.0879090	0.0432920
Education: Undergraduate or more	0.0260279	0.0226494	1.1491669	0.2505996	-0.0183860	0.0704418	0.0261336
Religion: Catholic	-0.0007425	0.0348003	-0.0213367	0.9829788	-0.0689837	0.0674987	-0.0007519
Religion: Evangelical Pentecostal or other evangelical	0.0100002	0.0464246	0.2154068	0.8294681	-0.0810355	0.1010359	0.0050486
Religion: Evangelical Traditional	-0.0055406	0.0419447	-0.1320918	0.8949226	-0.0877915	0.0767104	-0.0034411
Religion: Others/No Relig.	-0.0113943	0.0369488	-0.3083812	0.7578185	-0.0838486	0.0610600	-0.0095384
Income: 1 - 2 minimum wages	0.0231662	0.0242521	0.9552277	0.3395570	-0.0243905	0.0707230	0.0194293
Income: 2 - 3 minimum wages	0.0086506	0.0287794	0.3005815	0.7637592	-0.0477840	0.0650851	0.0058538
Income: 3 - 5 minimum wages	-0.0250514	0.0301268	-0.8315330	0.4057538	-0.0841282	0.0340253	-0.0166631
Income: 5 - 10 minimum wages	-0.0313250	0.0357604	-0.8759687	0.3811331	-0.1014488	0.0387988	-0.0170864
Income: 10 minimum wages or more	-0.0669752	0.0333625	-2.0074994	0.0448064	-0.1323968	-0.0015535	-0.0394332
Income: Do not know/ Prefer to not answer	0.0390785	0.0282180	1.3848797	0.1662157	-0.0162551	0.0944122	0.0264599
Age	0.0010539	0.0004947	2.1303324	0.0332438	0.0000838	0.0020240	0.0379806
Race: Black	-0.0131311	0.0428466	-0.3064680	0.7592745	-0.0971504	0.0708882	-0.0050451

Table 9. Effect Size Analysis - Risk Perception Temporal Dimension

term	estimate	std.error	statistic	p.value	conf.low	conf.high	std_estimate
Subjective knowledge	0.1086723	0.0349900	3.1058136	0.0019184	0.0400607	0.1772839	0.0605001
Objective knowledge	0.1085370	0.0307211	3.5329744	0.0004182	0.0482961	0.1687779	0.0705803
Human-caused knowledge	0.0751030	0.0410923	1.8276658	0.0677164	-0.0054746	0.1556807	0.0349380
Worry	0.3072294	0.0403325	7.6174127	0.0000000	0.2281416	0.3863171	0.1613919
Holistic affect	-0.0221954	0.0124304	-1.7855728	0.0742871	-0.0465702	0.0021793	-0.0361955
Personal experience (extreme weather events)	0.1352351	0.0605599	2.2330795	0.0256301	0.0164836	0.2539867	0.0417643
Perceived vulnerability to extreme events	0.1893939	0.0399756	4.7377334	0.0000023	0.1110060	0.2677819	0.0977636
Individualism worldview	-0.0642385	0.0308180	-2.0844493	0.0372185	-0.1246693	-0.0038077	-0.0411625
Egalitarianism worldview	0.0503559	0.0334364	1.5060211	0.1321855	-0.0152093	0.1159211	0.0318881
The New Ecological Paradigm (NEP)	0.1262865	0.0426955	2.9578383	0.0031265	0.0425651	0.2100079	0.0613124
Descriptive norm	-0.0359442	0.0333461	-1.0779118	0.2811750	-0.1013324	0.0294440	-0.0252045
Prescriptive norm	0.0192723	0.0172399	1.1178901	0.2637191	-0.0145333	0.0530778	0.0274849
Political ideology: Left	0.0102731	0.0423612	0.2425122	0.8084028	-0.0727928	0.0933390	0.0047663
Political ideology: Progressive	0.0246243	0.0425061	0.5793130	0.5624291	-0.0587256	0.1079743	0.0111512
Female	0.1467645	0.0427540	3.4327618	0.0006070	0.0629283	0.2306006	0.0675145
Education: High school or equivalent	0.0287029	0.0540422	0.5311205	0.5953815	-0.0772682	0.1346740	0.0127933
Education: Undergraduate or more	-0.0067590	0.0557605	-0.1212150	0.9035302	-0.1160994	0.1025813	-0.0031084
Religion: Catholic	-0.0343679	0.0865975	-0.3968696	0.6914968	-0.2041764	0.1354405	-0.0159670
Religion: Evangelical Pentecostal or other evangelical	0.0116669	0.1148818	0.1015560	0.9191170	-0.2136040	0.2369379	0.0027124
Religion: Evangelical Traditional	-0.0340582	0.1041991	-0.3268567	0.7438030	-0.2383815	0.1702652	-0.0096693
Religion: Others/No Relig.	-0.0372969	0.0917620	-0.4064520	0.6844446	-0.2172325	0.1426387	-0.0143606
Income: 1 - 2 minimum wages	-0.1356415	0.0598510	-2.2663199	0.0235152	-0.2530030	-0.0182801	-0.0520672
Income: 2 - 3 minimum wages	-0.0718445	0.0712728	-1.0080210	0.3135399	-0.2116028	0.0679139	-0.0221402
Income: 3 - 5 minimum wages	-0.0860207	0.0738699	-1.1644888	0.2443348	-0.2308718	0.0588304	-0.0263949
Income: 5 - 10 minimum wages	-0.1327093	0.0883490	-1.5021036	0.1331940	-0.3059523	0.0405336	-0.0331028
Income: 10 minimum wages or more	-0.1618964	0.0818161	-1.9787833	0.0479477	-0.3223291	-0.0014637	-0.0439003
Income: Do not know/ Prefer to not answer	0.0691820	0.0691446	1.0005405	0.3171438	-0.0664032	0.2047672	0.0215862
Age	0.0065013	0.0012195	5.3309988	0.0000001	0.0041100	0.0088927	0.1072810
Race: Black	0.0160075	0.1030563	0.1553281	0.8765750	-0.1860750	0.2180901	0.0028870