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Climate Anxiety, Wellbeing and Pro-Environmental Behavior: The Role of Intolerance of Uncertainty

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Abstract

Climate anxiety has emerged as a growing concern, influencing both psychological wellbeing and pro-environmental behavior (PEB). While individuals channel their climate anxiety into action, others experience distress and disengagement. Intolerance of uncertainty (IOU) has been proposed as a factor that may explain these different outcomes, since people who struggle with uncertainty might react differently to climate-related distress.

The present study examined the associations between climate anxiety, IOU, wellbeing, and PEB in a sample of young adults (N = 254) who completed an online survey. Measures included climate anxiety (HEAS-13), wellbeing (SPANE-B), psychological distress (PHQ-4), IOU (IUS-12), and PEB, with additional items on digital sustainability. Results showed that climate anxiety was not related to wellbeing once general psychological distress was controlled, but it consistently predicted higher levels of PEB. IOU was linked to lower wellbeing and less PEB, but no moderating effects were found. Exploratory analyses suggested overlap between climate anxiety and general distress, as well as possible floor effects due to low overall climate anxiety in the sample.

Overall, the findings suggest that climate anxiety mainly acts as a motivator for sustainable behavior, while IOU appears to function as a vulnerability factor for both reduced wellbeing and lower engagement.

Introduction

Climate change is a pressing global crisis with severe environmental, economic, and psychological consequences. Reports from the Intergovernmental Panel on Climate Change (IPCC, 2023) highlight increasing extreme weather events, biodiversity loss, and ecological disruptions. Beyond its tangible effects, climate change has been linked to psychological distress, raising concerns about its impact on mental health and behavior (Clayton et al., 2020). Climate-related distress is recognized as a factor influencing psychological wellbeing, often contributing to anxiety, stress, and depressive symptoms (Gago et al., 2024). The psychological burden of climate change can lead to helplessness, frustration, and eco-grief, particularly among younger generations (Pihkala, 2020).

While some individuals respond to these emotions with engagement, others experience emotional exhaustion or disengagement, a phenomenon often described as eco-paralysis (Clayton et al., 2020). The question of why climate distress fosters action in some but leads to avoidance in others is crucial for understanding the broader psychological implications of climate change. Given the growing prevalence of climate anxiety and its potential psychological consequences, further research is needed to clarify its impact on wellbeing and behavioral engagement.

Conceptualizing Climate Anxiety

Climate anxiety is a multifaceted emotional response that encompasses cognitive (e.g., worry, uncertainty), affective (e.g., distress, fear), and behavioral (e.g., avoidance, engagement) components (Van Valkengoed et al., 2023). It has been conceptualized both as a specific form of existential distress and as a more general concern about environmental degradation (Pihkala, 2020). While climate anxiety shares features with generalized anxiety, its focus on environmental threats makes it distinct, as it can manifest in behaviors

such as excessive information-seeking or withdrawal from climate-related discussions (Clayton & Karazsia, 2020).

The relationship between climate anxiety and psychological wellbeing is complex. A metaanalysis by Gago et al. (2024) found that climate anxiety is negatively correlated with wellbeing, contributing to stress, emotional exhaustion, and reduced life satisfaction. Individuals with high climate anxiety often report feeling powerless or overwhelmed, which can lead to rumination and an increased risk of depressive symptoms. However, not all experiences of climate anxiety are detrimental. Some studies suggest that moderate levels of climate anxiety may enhance psychological resilience by fostering a sense of purpose and engagement (Kurth & Pihkala, 2022). When individuals feel they have agency to address environmental concerns, climate anxiety can transform into motivation, potentially buffering against its negative psychological effects.

Despite this potential for positive engagement, chronic or severe climate anxiety has been associated with maladaptive outcomes. Emotional distress stemming from climate concerns can interfere with daily functioning, increase feelings of hopelessness, and contribute to eco-grief, particularly in populations with lower perceived control over environmental outcomes (Pihkala, 2020). This highlights the need to identify psychological moderators that determine whether climate anxiety leads to constructive engagement or exacerbates distress and avoidance.

Climate Anxiety and Pro-Environmental Behavior

Pro-environmental behavior (PEB) includes sustainable consumption, energy conservation, and activism (Steg & Vlek, 2009). Although climate anxiety is proposed as a driver of PEB, empirical evidence remains inconsistent.

Several studies suggest a positive correlation between climate anxiety and PEB. Ogunbode et al. (2022) found that climate anxiety is associated with increased climate-

related actions across 32 countries. Similarly, Innocenti et al. (2023) suggest that individuals who believe they can make a difference are more likely to act despite their anxiety. Coates et al. (2024) found that climate anxiety predicts PEB, particularly in individuals with strong environmental values.

Conversely, other studies question whether climate anxiety consistently predicts PEB. Goldwert et al. (2023) found that individuals with high climate distress often avoid engagement because they are overwhelmed by the crisis. Similarly, Gago et al. (2024) found that the relationship between climate anxiety and PEB varies across individuals, suggesting that additional psychological moderators are at play. Given these inconsistencies, understanding the psychological mechanisms that shape the impact of climate anxiety on behavior is essential.

Intolerance of Uncertainty

One explanation for these mixed findings is the role of intolerance of uncertainty (IOU). Climate change is inherently uncertain, making it particularly distressing for individuals who struggle with ambiguity (Clayton et al., 2020). IOU is a dispositional trait that reflects how individuals respond to uncertain situations (Carleton et al., 2007), and it has been linked to heightened distress and rigid coping mechanisms (Freeston et al., 2020).

Unlike personal uncertainties (e.g., financial issues), climate change is a global, long-term, and uncontrollable threat. Individuals with high IOU may struggle more with its unpredictability. Some may engage in PEB to regain a sense of control, while others may disengage due to overwhelming distress. Goldwert et al. (2023) found that IOU is positively associated with PEB, suggesting that those who struggle with uncertainty may act to reduce anxiety. However, IOU may also exacerbate the harmful effects of climate anxiety on wellbeing, increasing distress when individuals feel powerless to address climate change.

This study examines the role of intolerance of uncertainty in determining whether climate anxiety fosters constructive engagement or leads to emotional disengagement, highlighting its implications for pro-environmental behavior and psychological wellbeing.

Hypothesis Development

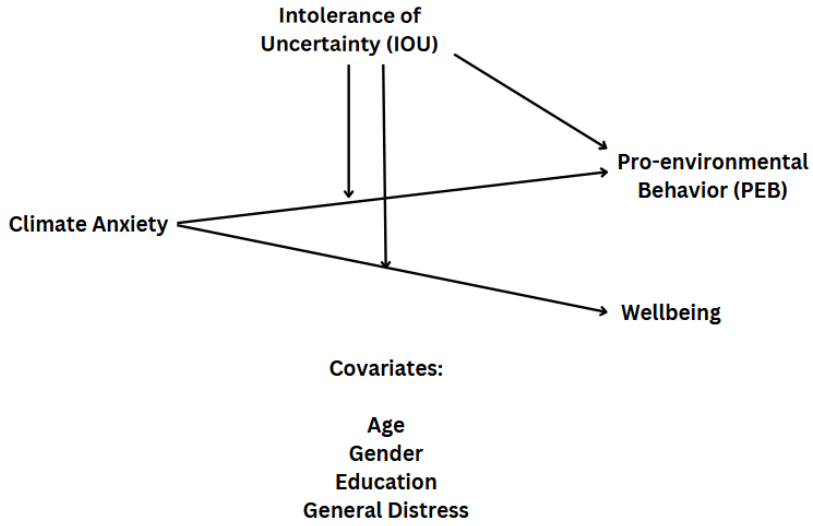
Given the somewhat inconsistent findings in the literature regarding the relationships between climate anxiety, psychological wellbeing, and pro-environmental behavior, the first two hypotheses remain non-directional to reflect this uncertainty. In contrast, the third hypothesis is based on Goldwert et al. (2023), who found that intolerance of uncertainty (IOU) is positively associated with pro-environmental behavior. The last two hypotheses focus on the possible moderation effect of intolerance of uncertainty, examining how it shapes the relationships between climate anxiety, pro-environmental behavior, and wellbeing.

- *H1*: Climate anxiety is associated with psychological wellbeing.
- *H2*: Climate anxiety is associated with pro-environmental behavior.
- *H3*: Intolerance of uncertainty is positively associated with pro-environmental behavior, as individuals with high IOU may take action to reduce uncertainty and regain control.
- *H4a*: IOU moderates the relationship between climate anxiety and pro-environmental behavior.
- *H4b*: IOU moderates the relationship between climate anxiety and psychological wellbeing, potentially amplifying its adverse effects due to heightened uncertainty and distress.

To provide an overview of the hypothesized relationships, a conceptual model was created (see *Figure 1*).

Figure 1

Hypothesized model of the relationships between climate anxiety, intolerance of uncertainty (IOU), wellbeing, and pro-environmental behavior (PEB).



Note. This figure illustrates the conceptual model underlying the present research.

To ensure that other psychological or sociodemographic factors do not confound observed effects, this study includes gender, general anxiety and depression (PHQ-4 scores), and education as covariates. Gender is controlled as women tend to report higher climate anxiety and pro-environmental behavior (Clayton & Karazsia, 2020). PHQ-4 scores account for general psychological distress, ensuring that climate anxiety effects are not confounded by broader mental health factors (Kroenke et al., 2009). Education was included because higher educational attainment has been linked to greater environmental awareness and more frequent engagement in pro-environmental behavior (Meyer, 2015).

Methodology

Participants

A total of 271 individuals completed the online questionnaire. Seventeen participants were excluded for failing the attention check (e.g., not selecting the specified response option), resulting in a final sample of N = 254.

The sample consisted of 69.7% women, 29.5% men, and 0.8% non-binary participants, with an average age of 27.6 years (SD = 8.2). Regarding education, 24.0% held a high school diploma or lower, 41.3% a Bachelor's degree, and 34.6% a Master's or PhD degree.

Participants were primarily recruited through social media platforms (e.g., Facebook, Instagram, Reddit), online study exchange platforms (e.g., Survey Circle), and university bulletin boards and posters.

The study specifically targeted young adults aged 18–30, a group identified as both highly exposed to climate-related information and particularly vulnerable to climate anxiety (Pihkala, 2020). This demographic was chosen because young adulthood represents a transitional life stage in which future-oriented concerns, such as climate change, may have a significant influence on wellbeing and behavioral engagement (Ojala, 2012).

A priori power analysis conducted with G*Power indicated that a minimum sample size of 264 participants would be required to achieve a statistical power of .80 ($f^2 = 0.03$; Cohen, 1988). The final sample of 254 participants was therefore slightly below this threshold but still approached adequate power to detect small-to-moderate effects in multiple regression analyses.

Measures

The study employed validated psychometric instruments to assess climate anxiety, pro-environmental behavior, intolerance of uncertainty, and psychological wellbeing. The validity of these measures has been established through extensive research.

- *Climate Anxiety*: The Hogg Eco-Anxiety Scale (HEAS-13) (Hogg et al., 2021) was used to assess climate anxiety. The scale has shown strong psychometric properties across diverse populations and distinguishes climate-specific distress from general anxiety.
- *General Anxiety & Depression*: The Patient Health Questionnaire-4 (PHQ-4) (Kroenke et al., 2009) measured general anxiety and depressive symptoms. This scale was included to differentiate climate-specific anxiety from broader mental health conditions, ensuring that any observed effects are not confounded by general psychological distress. PHQ-4 scores were included as covariates to control for baseline mental health differences.
- *Psychological Wellbeing*: Subjective wellbeing was measured using the Scale of Positive and Negative Experience (SPANE) (Diener et al., 2010), which captures the frequency of positive and negative emotions. The terms “wellbeing” and “psychological wellbeing” are used interchangeably throughout this thesis.
- *Intolerance of Uncertainty*: The Intolerance of Uncertainty Scale-12 (IUS-12) (Carleton et al., 2007) was utilized to evaluate participants’ difficulty coping with uncertain or ambiguous situations. Since climate change is inherently uncertain, IOU was expected to be a key psychological factor influencing the relationship between climate anxiety and behavior.
- *Pro-Environmental Behavior (PEB)*: The Pro-Environmental Behavior Scale (PEBS) (Milfont & Duckitt, 2010) was selected due to its comprehensive

assessment of sustainable behaviors, including waste reduction, transportation choices, and energy conservation. Additionally, given the growing impact of digital consumption on environmental sustainability, the scale was expanded with four to five new items assessing digital sustainability behaviors (e.g., AI use, streaming habits, and search engine selection). This addition addresses an emerging research gap, as traditional PEB assessments often overlook digital behaviors.

This study was conducted in collaboration with a research partner using the same participant sample. In addition to the measures relevant to this study, participants completed the Need Satisfaction Questionnaire (Deci & Ryan, 2000) as part of the collaborative project. However, this measure was not analyzed in the present study.

Procedure

The study was conducted entirely online via QuestionPro to ensure accessibility and efficient data collection. All materials and instructions were provided in German. Before the main data collection, translated versions of all scales were pilot tested with 1–3 individuals to evaluate clarity and comprehension. Minor wording adjustments were made based on participant feedback.

Upon accessing the study link, participants were presented with an informed consent form detailing the study's purpose, confidentiality measures, and their right to withdraw at any time without penalty. After providing consent, participants completed the questionnaire, which took approximately 15–20 minutes.

At the end of the survey, participants received a debriefing statement summarizing the study's objectives and providing contact information for further inquiries. The study was conducted in accordance with ethical guidelines of the University of Vienna's Faculty of Psychology.

Data analysis

The data was analyzed using IBM SPSS Statistics (Version 29.0) to conduct the statistical tests. Before conducting the primary analyses, all variables were inspected for missing data, normality, and outliers. Missing data were handled using multiple imputation, and outliers were identified based on standardized residuals exceeding ±3 SD.

To test the hypotheses, multiple linear regression analyses were conducted. Climate anxiety, intolerance of uncertainty (IOU), wellbeing, and pro-environmental behavior (PEB) served as the main variables. All models included age, gender, education, and psychological distress (PHQ-4) as covariates to control for potential confounding effects.

Hypotheses 1–3 examined the direct relationships between climate anxiety, IOU, wellbeing, and PEB. Hypotheses 4a and 4b tested whether IOU moderated the effects of climate anxiety on PEB and wellbeing, respectively.

Interaction terms (climate anxiety × IOU) were created manually after mean-centering the predictors. The interaction effects were examined within the same regression models as the main effects. Model assumptions (linearity, homoscedasticity, multicollinearity, and normality of residuals) were verified and met.

Results

Data Preparation and Reliability

All scale scores were computed according to published guidelines, with higher values reflecting higher levels of the respective construct. To reduce multicollinearity in the moderation models, continuous predictors were mean-centered. Gender and education were dummy coded: female participants were compared against a combined non-female reference group (male, non-binary), and Bachelor's and Master/PhD degrees were compared against a combined reference group of compulsory education and high school

(Matura). This approach allowed us to account for potential differences across major demographic groups while retaining sufficient statistical power.

All main scales demonstrated good to excellent internal consistency: climate anxiety (HEAS-13, α = .89), intolerance of uncertainty (IUS-12, α = .87), psychological distress (PHQ-4, α = .80), and pro-environmental behavior (PEB_total, α = .75). The SPANE showed high reliability for both positive (α = .90) and negative affect (α = .83), as well as for the overall affect balance score (SPANE-B, α = .89). Both wellbeing (SPANE-B) and pro-environmental behavior (PEB_total) were treated as primary outcomes. In addition, several PEB subscales were computed (Energy, Consumption, Food, Transport, and Digital) and analyzed in exploratory models.

Descriptive Statistics

Table 1 displays the means, standard deviations, and internal consistencies (Cronbach's α) for all main study variables. On average, participants reported moderate levels of climate anxiety and intolerance of uncertainty, as well as low to moderate psychological distress. The mean SPANE balance score indicated slightly more positive than negative affect, suggesting generally positive wellbeing in the sample.

Table 1

Descriptive statistics and internal consistencies of the main variables (N = 254)

	M	*SD*	*Range*	α
Climate anxiety (HEAS-13)	21.10	6.30	13–47	.89
Psychological distress (PHQ-4)	4.39	2.79	0–12	.80
Wellbeing (SPANE-B)	5.97	8.26	-16–23	.89[1]
Intolerance of uncertainty (IUS-12)	36.24	8.67	12–59	.87
Pro-environmental behavior (PEB total)	3.03	0.57	1.45–4.68	.75

Note. M = mean, *SD* = standard deviation, α = Cronbach's alpha.

[1] The SPANE showed α = .90 for positive affect and α = .83 for negative affect; α refers to SPANE-B.

Correlations

Intercorrelations among the main study variables are displayed in *Table 2*. Psychological distress was strongly negatively correlated with wellbeing ($p < .001$). It was also positively correlated with intolerance of uncertainty and climate anxiety ($p < .001$). Climate anxiety was positively correlated with PEB and negatively correlated with wellbeing ($p < .001$). IOU was negatively associated with wellbeing ($p < .001$), while its association with PEB was not significant. Wellbeing and PEB were likewise not significantly correlated.

Table 2

Intercorrelations among main study variables (N = 254)

	1	2	3	4	5
1. PHQ-4	–				
2. SPANE-B	-.733***	–			
3. IOU	.509***	-.541***	–		
4. HEAS	.438***	-.355***	.271***	–	
5. PEB total	.110	-.029	-.062	.398***	–

Note. ***$p < .001$.

Hypothesis Testing

Associations with Wellbeing

To test Hypotheses 1 and 4b, multiple regression analyses were conducted with wellbeing as the dependent variable. The first model (H1) included climate anxiety (HEAS) and psychological distress (PHQ-4) as main predictors, controlling for age, gender, and education level.

As shown in *Table 3*, psychological distress was the strongest negative predictor ($\beta = –.73$, $p < .001$). Age ($\beta = –.10$, $p < .05$) also negatively predicted wellbeing, while gender ($\beta = .10$, $p < .05$) showed a small positive effect, with women reporting slightly higher wellbeing. Contrary to H1, climate anxiety was not a significant predictor of wellbeing ($\beta = –.06$, $p = .29$).

In the second model (H4b), the interaction term between climate anxiety and intolerance of uncertainty (IOU) was included to test a potential moderation effect. IOU itself was negatively associated with wellbeing ($\beta = –.23$, $p < .001$), but the interaction effect was not significant ($\beta = –.01$, $p = .83$), indicating no moderation.

Table 3

Multiple regression results predicting wellbeing (N = 254)

	H1	**H4b**
Age	-.10*	-.09*
Gender	.10*	.11*
Education (Bachelor)	.04	.05
Education (Master/PhD)	.07	.06
PHQ-4	-.73***	-.62***
Climate anxiety (HEAS)	-.06	-.05

	H1	H4b
IOU	—	-.23***
HEAS × IOU	—	-.01
R²	.56	.59
F(df)	51.84***	45.00***

Note. β = standardized regression coefficient.

*$p < .05$, **$p < .01$, ***$p < .001$

Associations with Pro-Environmental Behavior

To test Hypotheses 2–4a, multiple regression analyses were conducted with pro-environmental behavior (PEB) as the dependent variable. Climate anxiety (HEAS), intolerance of uncertainty (IOU), and psychological distress (PHQ-4) were entered as predictors, while age, gender, and education were included as control variables.

Consistent with H2, climate anxiety was a significant positive predictor of PEB (β = .40, $p < .001$), indicating that higher levels of climate anxiety were associated with greater engagement in pro-environmental behavior. Gender also showed a significant effect (β = .23, $p < .001$), while age, education, and psychological distress were not significant predictors.

For H3, a positive relationship between IOU and PEB had been expected. However, the results revealed a negative association, with IOU significantly predicting lower levels of PEB (β = –.18, $p < .05$). Thus, H3 was not supported.

To test H4a, the interaction term between climate anxiety and IOU (HEAS × IOU) was included in the model. The interaction was not significant (β = –.11, $p = .12$), indicating that IOU did not moderate the relationship between climate anxiety and PEB.

Full regression results are presented in *Table 4*.

Table 4

Multiple regression results predicting pro-environmental behavior (N = 254)

	H2	H3	H4a
Age	-.02	-.02	-.02
Gender	.23***	.28***	.23***
Education (Bachelor)	.06	.08	.07
Education (Master/PhD)	.01	.01	.01
PHQ-4	-.11	.14*	-.03
Climate anxiety (HEAS)	.40***	—	.46***
IOU	—	-.18*	-.20**
HEAS × IOU	—	—	-.11
R^2	.22	.12	.26
F(df)	11.72***	5.60***	10.80***

Note. β = standardized regression coefficient.

*$p < .05$, **$p < .01$, ***$p < .001$.

Exploratory Analyses

In addition to the main models, exploratory analyses were conducted to examine whether the observed effects generalized across different domains of pro-environmental behavior (PEB). Separate regression models were therefore computed for each of the five PEB subscales (Food, Environmental Citizenship, Consumption, Transport, and Digital behavior).

Internal consistencies of the subscales varied considerably, ranging from poor to good (α = .46 for Environmental Citizenship, .50 for Transport, .55 for Consumption, .55 for Digital, and .84 for Food).

Across all domains, climate anxiety was a consistent positive predictor of pro-environmental behavior (βs = .16–.46, all *ps* < .05). IOU displayed a negative trend across domains, but reached significance only for Transport (β = –.19, *p* = .008). Gender was a significant positive predictor for Food-related (β = .28, *p* < .001) and Digital-related behavior (β = .23, *p* < .001). Age (β = –.20, *p* = .004) and psychological distress (β = –.16, *p* = .025) negatively predicted Transport behavior. For the remaining domains, no other significant associations were observed.

Hierarchical regressions were further conducted as robustness checks to test whether the effects of climate anxiety and IOU explained variance beyond demographic and psychological covariates. For H1, adding climate anxiety after covariates did not explain additional variance in wellbeing (ΔR^2 = .003, *p* = .234). For H2, climate anxiety explained substantial additional variance in PEB beyond covariates (ΔR^2 = .125, *p* < .001). For H3, IOU accounted for incremental variance in PEB (ΔR^2 = .023, *p* = .011). In both moderation models (H4a and H4b), the interaction terms did not improve model fit (ΔR^2 < .01).

Sensitivity analyses were also conducted for the wellbeing subscales to further differentiate between the direct effects (H1) and moderation hypotheses (H4b). When analyzing positive affect (SPANE-P) and negative affect (SPANE-N) separately, climate anxiety did not significantly predict either dimension once general distress was included (SPANE-P: β = –.06, *p* = .275; SPANE-N: β = .05, *p* = .358). In both models, psychological distress emerged as the dominant predictor (SPANE-P: β = –.63, *p* < .001; SPANE-N: β =

.72, $p < .001$). No significant interactions were found (all $ps > .10$). IOU directly predicted lower positive affect ($\beta = -.22$, $p < .001$) and higher negative affect ($\beta = .20$, $p < .001$).

Finally, inspection of the climate anxiety score distribution indicated a potential floor effect ($M = 21.10$, $SD = 6.30$; range 13–47 of a possible 13–65), suggesting that restricted variance may have limited the detection of both direct and interactive effects.

Overall, the robustness checks indicated that the main effects of climate anxiety and IOU were consistent across models, indicating stable patterns in the data.

Discussion

The present study examined the relationships between climate anxiety, intolerance of uncertainty (IOU), wellbeing, and pro-environmental behavior (PEB) in a sample of young adults. Contrary to expectations, climate anxiety did not predict wellbeing once general psychological distress was controlled for, but it consistently predicted higher levels of PEB.

IOU emerged as a negative predictor of PEB, in contrast to previous findings suggesting a positive association, and no moderation effects of IOU were found. Exploratory and robustness analyses further supported the stability of these findings, highlighting the role of psychological distress as the most consistent predictor of reduced wellbeing.

Climate anxiety, wellbeing, and distress

Climate anxiety was not directly associated with wellbeing. Instead, general psychological distress (PHQ-4) emerged as the strongest predictor, confirming that broader affective symptoms overshadow the unique contribution of climate-related distress (Gago et al., 2024). When distress was excluded, climate anxiety predicted reduced wellbeing (lower positive affect, higher negative affect), but these effects disappeared once distress was reintroduced. This points to conceptual and empirical overlap between climate anxiety

and general distress, consistent with previous research (Clayton et al., 2020; Pihkala, 2020). Age also emerged as a small but consistent predictor of wellbeing, suggesting that even within young adulthood, developmental differences (e.g., coping strategies, future orientation) may shape wellbeing. Female participants reported slightly higher wellbeing, in line with research on gendered differences in emotional expression and coping (Clayton & Karazsia, 2020).

Climate anxiety and pro-environmental behavior

In contrast, climate anxiety showed a robust positive association with PEB, supporting Hypothesis 2. This aligns with studies suggesting that climate-related distress can motivate sustainable action (Ogunbode et al., 2022; Coates et al., 2024). The positive effect extended across all PEB subscales in exploratory analyses, indicating a broad and generalizable relationship.

Wellbeing and PEB were not significantly correlated, suggesting that sustainable behaviors are not contingent on subjective wellbeing. Individuals may act pro-environmentally regardless of whether they feel distressed or well. Female participants reported more sustainable behavior across several domains, consistent with earlier findings that women often show higher environmental concern and engagement (Clayton & Karazsia, 2020).

Intolerance of uncertainty as predictor and moderator

Contrary to Hypothesis 3, IOU negatively predicted PEB. At the bivariate level, IOU was unrelated to PEB, but in regression analyses it became a negative predictor once other variables were controlled. This pattern suggests that IOU may act as a vulnerability factor that undermines rather than motivates engagement. Individuals with high IOU may perceive climate change as overwhelming and uncontrollable, resulting in avoidance instead of proactive action.

No moderation effects of IOU were found for the link between climate anxiety and wellbeing or PEB. This may partly reflect the restricted variance and relatively low levels of climate anxiety in the sample (floor effect). Alternatively, IOU may primarily operate as a direct risk factor rather than moderating the effects of climate anxiety. Hierarchical regressions confirmed that the main effects of climate anxiety and IOU on PEB were robust, whereas the moderation terms consistently failed to explain additional variance.

Theoretical implications

Taken together, these findings highlight the dual nature of climate anxiety as both a risk and a resource. While it did not predict diminished wellbeing beyond general distress, it was reliably associated with pro-environmental action. This supports theoretical accounts suggesting that climate anxiety can mobilize behavior when opportunities for engagement are available, but may undermine wellbeing in psychologically vulnerable individuals (Kurth & Pihkala, 2022). The results also underscore IOU as a psychological vulnerability factor that appears to reduce engagement and wellbeing directly, rather than shaping the impact of climate anxiety as a moderator.

Limitations and future directions

Several limitations should be acknowledged. First, the cross-sectional design precludes causal conclusions; longitudinal or experimental studies are needed to clarify the directionality of effects. Second, all measures relied on self-report, which may have introduced social desirability and common method bias. Third, the sample consisted mainly of highly educated young adults, limiting generalizability to other age groups and cultural contexts. The achieved sample size (N = 254) fell slightly short of the a priori target (N = 264), which may have reduced statistical power to detect smaller effects, particularly in moderation analyses. Another limitation concerns the measurement of PEB: while the total scale demonstrated acceptable reliability, some subscales showed low internal

consistencies, and the newly added digital sustainability items have not yet been validated. Finally, the relatively low mean and restricted variance in climate anxiety scores suggest a floor effect, which may have limited its observed associations with wellbeing.

Future studies should (a) employ longitudinal designs to disentangle causal pathways, (b) validate digital sustainability items and improve PEB subscale reliability, (c) examine IOU subdimensions (prospective vs. inhibitory) to clarify their distinct roles, and (d) recruit more diverse samples across age, education, and cultural backgrounds to strengthen generalizability.

Practical and societal implications

Practically, these findings suggest that climate anxiety does not necessarily undermine wellbeing but can act as a driver of sustainable behavior when individuals feel capable of acting. Climate communication should therefore avoid pathologizing climate anxiety and instead emphasize agency and collective efficacy. At the same time, individuals with high IOU may require targeted support, as they appear at risk of both lower wellbeing and disengagement. Mental health professionals and educators could focus on strategies that validate distress while fostering adaptive coping and constructive engagement.

Conclusion

In sum, this study provides evidence that climate anxiety is more consistently linked to pro-environmental engagement than to wellbeing, whereas IOU possibly functions as a vulnerability factor for both lower wellbeing and reduced engagement. These findings emphasize the need to distinguish climate-specific distress from general psychological distress and point to IOU as a direct risk factor rather than a moderator. Interventions should aim to channel climate anxiety into constructive engagement while addressing intolerance of uncertainty as a potential barrier to sustainable action.

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Abstrakt

Klimaangst gewinnt in den letzten Jahren zunehmend an wissenschaftlicher und gesellschaftlicher Bedeutung, da sie sowohl psychisches Wohlbefinden als auch umweltfreundliches Verhalten beeinflussen kann. Während manche Menschen ihre Klimaangst in aktives Handeln umsetzen, reagieren andere mit Überforderung und Rückzug. Ein möglicher Erklärungsfaktor für diese unterschiedlichen Reaktionen ist die Unsicherheitstoleranz: Personen, die Unsicherheit schlecht aushalten, könnten auf klimabezogene Belastung anders reagieren.

In der vorliegenden Studie wurden die Zusammenhänge zwischen Klimaangst, Unsicherheitstoleranz, Wohlbefinden und umweltfreundlichem Verhalten in einer Stichprobe junger Erwachsener (N = 254) mithilfe einer Online-Erhebung untersucht. Erfasst wurden Klimaangst (HEAS-13), Wohlbefinden (SPANE-B), psychische Belastung (PHQ-4), Unsicherheitstoleranz (IUS-12) sowie umweltfreundliches Verhalten (PEB), ergänzt um Items zur digitalen Nachhaltigkeit. Die Ergebnisse zeigten, dass Klimaangst nach Kontrolle allgemeiner psychischer Belastung nicht mit dem Wohlbefinden zusammenhing, jedoch zuverlässig höhere Werte im umweltfreundlichen Verhalten vorhersagte. Eine niedrige Unsicherheitstoleranz war mit geringerem Wohlbefinden und weniger umweltfreundlichem Verhalten verbunden; moderierende Effekte zeigten sich nicht. Explorative Analysen deuten auf eine Überschneidung zwischen Klimaangst und allgemeiner Belastung sowie auf mögliche Floor-Effekte aufgrund insgesamt niedriger Klimaangst in der Stichprobe hin.

Insgesamt legen die Ergebnisse nahe, dass Klimaangst vor allem als Antrieb für nachhaltiges Verhalten wirkt, während eine geringe Unsicherheitstoleranz als Risikofaktor für vermindertes Wohlbefinden und geringeres Engagement erscheint.