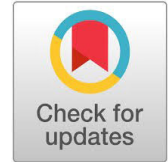
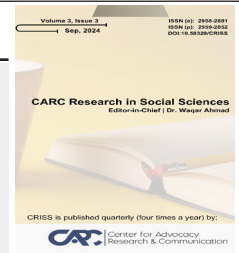




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# Exploring Climate Change's Psychological Association, Between Eco-Anxiety, Eco-Grief and Attitude Towards Environment

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## ABSTRACT

This study investigates the psychological correlations among eco-anxiety, eco-grief, and attitudes toward the environment within the context of climate change. Data were collected using convenience sampling from a sample size 200 in the Malakand district of Khyber Pakhtunkhwa, Pakistan. The sample included 124 males and 76 females. Data collection involved the Eco-Anxiety Questionnaire comprising 22 items, the Eco Grief Questionnaire consisting of 6 items, and the Environmental Attitude Scale containing 20 items. The Statistical Package for Social Sciences was utilized to conduct correlation and t-tests, assessing the frequencies and percentages of demographics, as well as calculating the mean, standard deviation, reliability, and skewness of variables. The correlation analysis indicated a positive relationship among eco-anxiety, eco-grief, and environmental attitudes. A significant positive correlation was observed between eco-anxiety and environmental attitude ( $r=0.82$ ,  $p<0.01$ ), and between eco-grief and environmental attitude ( $r=0.80$ ,  $p<0.01$ ). The T-test was utilized to examine gender differences in the experiences of eco-anxiety and eco-grief. The findings demonstrated that females achieved significantly higher scores on the eco-grief scale compared to males. The findings indicate that eco-anxiety and eco-grief play a crucial role in fostering a proactive environmental attitude among adults, revealing notable differences between genders. The research highlights that eco-anxiety and eco-grief can strengthen an individual's emotional connection to nature. This increased connection often leads to a stronger commitment to preservation, thereby fostering a positive environmental attitude.

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## INTRODUCTION

A major concern with great influence on social systems, economic structures, and ecological systems all around is climate change. Human activities include the burning of fossil fuels and deforestation are driving the temperature of the planet to keep rising, therefore compromising biodiversity, natural resources, and human welfare. Consequently, the consequences of climate change are becoming increasingly apparent. The psychological and affective impact of climate change on individuals is increasingly recognized in the context of these environmental changes.

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Physical health will be threatened by the acute effects of natural disasters, the socially mediated effects of forced migration and conflict, heat, and the increasing prevalence of vector- and water-borne illnesses. Some groups are more susceptible than others due to their physiological characteristics, lack of political or economic power, or increased exposure. These categories encompass children, the elderly, indigenous individuals, and, on occasion, individuals with pre-existing medical conditions. Climate change is a critical and urgent global issue that has significant implications for public health (Cianconi, Betrò & Janiri, 2020; Barrett, Charles & Temte, 2015). It is a substantial health threat due to its direct and indirect effects on a variety of aspects of the daily lives of individuals (Neira, Erguler, Birgani, Al-Hmoud, Fears, et al., 2023). The rise in healthcare costs is one of the significant consequences of these interconnected issues. For example, the United States experienced an estimated USD 819 million in healthcare costs because of weather and climate events between 2000 and 2009. This led to over 760,000 healthcare encounters and 1689 premature deaths (Knowlton, Rotkin-Ellman, Geballe, Max & Solomon, 2011).

The most recent report from the United Nations on climate change has unequivocally established that humans are a significant contributor to global warming and has issued a warning regarding the catastrophic consequences that may occur shortly (Delmotte, Zahi & Pirani, 2021). Globalization has made it easier to procure news of far-off calamities and how they indirectly influence people's lives, as people are more cognizant of system-level changes. The mental implications of climate change are now receiving increasing attention, even though earlier studies (Berry, Waite, Dear, Capon & Murry, 2018) focused more on the physical impact. Both physical and mental health are impacted by a range of factors, including direct influences like trauma resulting from natural disasters, as well as indirect influences such as the impact on physical health (such as heat exhaustion and stroke caused by more frequent heat waves) and the decline in social well-being due to the destruction of the physical environment (Zeier, P., & Wessa, 2024).

The relationship between mental health and climate change should be investigated using a comprehensive framework that incorporates the interaction of proximal, intermediate, and distal processes (Ojala, Cunsolo, Ogunbode & Middleton, 2021). One of the factors that contributes to the depletion of personal resources is isolation. Additionally, food shortages result in widespread disruptions and the increasing burden of taxes on health-related resources. Van Nieuwenhuizen, Hudson, Chen, and Hwong (2021) have identified three primary mechanisms by which climate change impacts mental health: Firstly, abrupt trauma caused by extreme weather, moreover; Vulnerable groups are increasingly recognizing the harmful effects of disruptions in society, economic, and environmental aspects. Additionally, climate change is seen as a worldwide environmental danger that causes emotional anguish and fears about the future. Clayton and colleagues (2020) utilized a three-fold clustering approach, which included direct effects (resulting from acute traumatic events), psychosocial effects (stemming from social impacts caused by migration, drought, and conflicts related to climate change), and indirect effects (arising from the threat posed by the unpredictability of the future or the observation of the impacts). Our current inquiry specifically targets the third classification.

One prominent psychological response to climate change is eco-anxiety, which is a psychological response to the imminent threat of climate-related calamities and environmental deterioration. As individuals confront the realities of a changing environment, they may experience eco-anxiety. This may encompass feelings of futility in the presence of environmental challenges that appear to be insurmountable, apprehensions regarding the health of ecosystems and species, and uncertainties regarding the future (Comtesse, Ertl, Hengst, Rosner & Smid, 2021). Although eco-anxiety indicates that it is strongly linked to dread and concern, it is further distinguished by its ambiguity, unpredictability, and uncontrollability, and its intensity can fluctuate significantly (Pihkala, 2020). Eco-anxiety may encompass rumination, functional impairment, and pure emotional components, such as concern or anxiety. The classification of eco-anxiety as a

pathological or natural phenomenon has been the subject of inconsistent research to date. Granting pathological levels are believed to be rare, but both types may probably manifest (Verplanken, Marks & Dobromi, 2020). A study determined that anxiety regarding climate change was positively associated with Pro Environmental Behavior (PEB), while it was non-associated with pathological issues. Consequently, they concluded that treating it as a mental illness would be inaccurate. However, additional research has demonstrated a correlation between general anxiety and depression, as well as anxiety induced by climate change (Wullenkord Troger, Hamann, Loy & Reese, 2021).

Climate change can also induce eco-grief and mourning when individuals observe the disappearance of beloved environments, species, and landscapes because of environmental degradation and climate-related changes. When cherished natural areas are devastated by harsh weather, wildfires, or sea level rise, or when ecosystems are irreparably transformed, this sadness, which is occasionally referred to as "ecological grief," is induced by an intense sense of loss. Ecological grief, which can manifest as feelings of alienation from nature, wrath, or melancholy, exacerbates the psychological impacts of climate change on individuals' mental health and overall well-being. For instance, although some scholars (Perakslis, 2020) interchangeably refer to ecological mourning and eco-anxiety, these two phenomena require independent investigation for numerous reasons. However, a recent taxonomy of climate emotions identifies "fear- and anxiety-related emotions" and "sadness-related emotions" as distinct categories, as well as their more severe manifestations (Pihkala, 2022).

In addition to emotional responses such as ecological anxiety and ecological grief, climate change can also influence individuals' attitudes toward the environment and their likelihood to implement environmentally favorable behaviors. People's attitudes toward environmental stewardship and sustainability may shift when they face the results of climate change and see how it affects ecosystems and communities. Those who believe that climate change is an urgent problem that requires immediate attention and group action may get more dedicated to the preservation of the environment, the promotion of climate action, and the adoption of sustainable lifestyles. On the other hand, some people could get disengaged from environmental problems due to their overwhelming or demoralizing effect from the scope of the problems we face. Many people have been empowered and educated during the last forty years to change their interactions with their surroundings.

Throughout the world, several projects and campaigns have been carried out to inform people on the need to preserve natural resources (Tankha, 2017). Many parties have focused on evidence-based projects including material conservation and recycling. These projects have promoted positive opinions on the surroundings. Bronfman et al. (2015) claim that significant work is needed to achieve desired results on a worldwide level. This is so because many people have not yet adopted sensible habits that would help to preserve their surroundings. Many developed global societies have launched remarkable initiatives aiming at a moral obligation for environmental protection (Sawitri,

Hadiyanto & Hadi, 2015). This implies that people are aware of the need for environmental preservation activities and ideas and react to them.

## LITERATURE REVIEW

Numerous studies have illustrated the increase in eco-anxiety among individuals who are increasingly concerned about the potential environmental consequences of climate change. Eco-anxiety is associated with increased perceptions of the severity of climate change and individual susceptibility. An examination of the media's portrayal of climate change suggests that exposure to alarming messages may exacerbate eco-anxiety, the influence of environmental education programs on attitudes toward nature and sustainable behaviors was investigated, underscoring the importance of early intervention in the development of pro-environmental attitudes (Doyle, 2024).

A novel proposal and an analysis of narratives were developed concerning the process of ecological anxiety and bereavement. As the ecological crisis intensifies, individuals experience a diverse array of eco-anxiety and eco-grief symptoms, according to the research. The piece constructively constructs a new model of the process of experiencing eco-anxiety and eco-grief, in addition to delving into the broad process. The model's subsequent complex phase of Coping and Changing is one of its most important features. This phase is characterized by three primary dimensions: Action (a variety of pro-environmental behavior), Grieving (which includes other emotional engagement), and Distancing (which includes problematic disavowal and self-care). Adjustment will be more difficult if any of these three aspects are affected (Arias et al., 2021). Consequently, the paradigm facilitates comprehension of the importance of self-care in the context of coping.

Traumatic experiences and climate anxiety affect psychotherapy comprehension. The research found that humans have denied man-made climate change for decades, harming the ecosystem, wildlife, and humans. We must face the truth of this predicament and the irrevocable environmental damage, which rekindles our fears of causing destruction. Our species can stop living beyond its means. There is some progress in the right direction, but can meaningful change happen quickly to save our planet? This paper examines how psychoanalytic theory can illuminate the anxiety caused by climate calamity, particularly among young people who are skeptical of institutions and older people who appear to be failing to address the issue. Using child and adolescent psychotherapy, the internal and exterior effects of climate change on a young person are examined. The psychotherapist's role in acknowledging the climate crisis and its fears is also discussed (Slater, 2023). This is especially crucial when working with patients who suffer from anxiety and climate trauma.

To identify eco-grief, eco-anxiety, and eco-coping in climate-vulnerable environments. Research shows that climate change is a major issue of the 21st century. Environmental trauma can directly damage mental health or indirectly through emotional suffering and future anxiety. Thus, the existence of probable versions of the recently recognized "psychoneurotic" disorders eco-anxiety, eco-guilt, and eco-grief and their ability to cause

discomfort and encourage ecologically friendly conduct are unknown. This study may help academics and practitioners better understand climate change-related emotions and coping techniques (Ágoston et al., 2022).

Researchers are increasingly studying eco-anxiety and climate anxiety, which are regularly mentioned in the media. However, definitions and variations of these events are poorly researched. This essay examines eco-anxiety from many scholarly perspectives. Discussing empirical research on eco-anxiety categories uses insights from several anxiety theories. The article links eco-anxiety to unpredictability, uncontrollability, and uncertainty. Eco-anxiety is mostly non-clinical, but "pathological" cases are handled. Besides ecological trauma, solastalgia, and ecological bereavement are also explored. Eco-anxiety research and ecological effects on emotions are addressed. Multiple sources discuss eco-anxiety as existential anxiety, despite evidence relating it to fear and concern. Sociological and psychosocial approaches emphasize that social variables influence eco-anxiety. Even in paralyzing cases, eco-anxiety can be shown as "practical anxiety," requiring new facts and a review of prospective actions. Public discourse and healthcare should consider eco-anxiety's full range (Pihkala, 2020).

Research, public debate, and popular media have increasingly used "climate change worry," "eco-anxiety," and "ecological grief" in recent years. A few studies have examined and summarized the various ways these emotions are exhibited their processes, and their distribution. This narrative review provides a comprehensive overview of the literature on the intersections of negative emotions about climate change and other environmental issues and mental health in people worldwide, as well as studies on the potential benefits of worry, such as motivating people to act. This review shows that negative emotions are a common and beneficial environmental response. Due to the nature, depth, and severity of these emotions, an assortment of culturally and location-specific coping techniques is needed (Ojala, Cunsolo, Ogunbode, & Middleton, 2021).

## Purpose of the Study

The study "Exploring Climate Change's Psychological Associations between Eco-Anxiety, Eco-Grief, and Attitude towards the Environment" examines the psychological links between these three factors. This research seeks to understand how these emotional responses affect people's environmental views and behaviors. Analyzing these linkages, the study seeks effective behavioral and social treatments to improve mental health and environmental behavior. The study also aims to help mental health practitioners create inclusive climate policies that incorporate affected individuals' mental health.

Climate change is global. This environmental issue also affects people's mental health in numerous social, cultural, and geographic contexts. Examining the psychological links between variables helps us understand and create culturally sensitive solutions. Psychological aspects of climate change improve sustainability measures' comprehensiveness and durability. Increase awareness and resistance to climate change-related psychological stressors to secure a sustainable future for future generations. Global recording of eco-anxiety and eco-grief shows climate change's



psychological effects are being recognized. Promoting individual and societal well-being requires analyzing these linkages. Psychological emotions like eco-grief and eco-anxiety can influence environmental behavior. Promoting environmental awareness and successful communication requires understanding these relationships. Climate change may worsen disparities if certain groups are more susceptible to its psychological effects. Examining demographic differences in psychological reactions can help tailor interventions to alleviate these gaps and promote justice.

Coping mechanisms and adaptive ways for eco-grief and eco-anxiety improve resilience-building initiatives. This study can help develop climate-related mental health treatments and support networks. Exploring the links between eco-anxiety, eco-grief, and environmental views can help develop treatments and policies that address environmental issues and mental health. An integrated strategy is needed for mitigation and adaptation efforts to succeed.

## METHODOLOGY

### Objectives

- To investigate the relationship between eco-anxiety, ecological grief, and attitude towards the environment.
- To evaluate how eco-anxiety and eco-grief influence individuals' attitudes and behaviors towards environmental conservation and sustainability.
- To measure the prevalence and intensity of eco-anxiety and ecological grief across genders.

### Hypotheses

- H<sub>1</sub>: There is a significant correlation between eco-anxiety and ecological grief among adults.
- H<sub>2</sub>: A higher level of eco-anxiety is positively associated with more proactive towards environmental conservation and sustainability.
- H<sub>3</sub>: Females experience higher levels of eco-anxiety and eco-grief than males.

### Research Design & Sampling Technique

Correlational research design was used to explore climate change's psychological associations, between eco-anxiety, eco-grief, and attitude toward the environment. The convenience sampling technique was used for the study. The population for this research was adults of the Malakand division. Data was collected from 200 early adults within the age range of 18 to 30 years of Malakand division. This specific sample included both males and females.

## Instruments

### Eco-Anxiety Scale

The researcher used an eco-anxiety scale to assess eco-anxiety consisting of 22 items, each using a 4-point frequency rating scale from 1=strongly disagree to 4=strongly agree. The habitual ecological anxiety scale demonstrated strong internal consistency (Cronbach's alpha = 0.91). It exhibited a significant positive connection with ecological grieving ( $r = 0.770$ ,  $p < 0.001$ ) as well as the adverse outcomes of the eco-anxiety scale ( $r = 0.553$ ,  $p < 0.001$ ). The negative effects of the eco-anxiety scale demonstrated a high level of internal consistency (Cronbach's alpha = 0.86) and a significant connection with ecological grieving ( $r = 0.555$ ,  $p < 0.001$ ) (Agoston et al., 2022).

### Eco Grief Scale

The eco grief questionnaire was used to assess eco grief consisting of 6 items, each using a 4-point frequency rating scale from 1=strongly disagree to 4=strongly agree. The internal consistency of the scale on the total sample is excellent (Cronbach's alpha= 0.77) (Agoston et al., 2022)

### Environmental Attitude Scale

The environmental attitude scale was used to assess attitude towards the environment consisting of 20 items, each using a 5-point frequency scale from 1=strongly disagree to 5=strongly agree. A scale reliability analysis was done, and Cronbach's alpha was found to be  $\alpha = .971$  "highly reliable" (Akkus, 2020).

### Procedure

The researcher approached the participants through informed consent before the data collection process. Participants were asked to complete the measure in person. Participants completed the surveys in the presence of researchers. Before heading forward the participants were instructed about the purpose of the study and were guided before administration. The researcher checked to see if all questions were answered, and if not, she would ask the participants to fill in the gaps. The procedure met current ethical standards for data collection. It took 15 to 20 minutes to complete the entire survey. Participants were not compensated for taking part.

### Ethical Consideration

The researcher ensured to conduct the study following ethical principles and guidelines such as maintaining confidentiality and receiving informed consent from the participants. Participants were free to leave the study at any time. The researcher avoided any outside access to the collected data.

## RESULTS & FINDINGS

**Table 1**

Frequency and percentages of participants

Demographic Variables	f	%
Gender		
Male	126	63.0
Female	74	37.0
Age		
18-22	158	79.0
23-26	35	17.5
27-30	7	3.5
Education		
Undergraduate	192	96.0
Postgraduate	8	4.0
Marital status		
Single	172	86.0
Engaged	15	7.5
Married	13	6.5
Socioeconomic status		
Lower class	25	12.5
Middle class	162	81.0
Higher/elite class	13	6.5

Table 1 shows participant frequency and percentage by gender, age, education, marital status, and socioeconomic status. Male adults (f=126, 63.0%) outnumber female adults (f=74, 37.0%). Undergraduates (f=192, 96.0%) outnumber

postgraduates (f=8, 4.0%). Participants from middle-class households (f=162, 81.0%) outnumber those from lower and elite classes. Unmarried participants (f=187) outnumber married people.

**Table 2**

Psychometric properties of study variables (N=200)

Variables	Minimum	Maximum	Mean	Std. D	$\alpha$	Skewness	Kurtosis
Eco Anxiety	55.00	100.00	67.4	5.45	0.86	.962	5.15
Eco Grief	13.00	26.00	18.9	1.90	0.77	.118	.49
Environmental Attitude	43.00	93.00	71.8	7.80	.97	-.089	-.519

Table 2 shows the psychometric properties of the study variables. The 22-item Eco Anxiety Questionnaire has an M of 67.74, S. D of 5.45, and  $\alpha$  of 0.86 when reliability is considered. The Eco Grief Questionnaire has 6 questions,

with a M: 18.96, S.D: 1.90, and  $\alpha$ :.77 reliability coefficient. In contrast, the Environmental Attitude Scale has 20 items, with an M of 71.8, S.D of 7.80, and  $\alpha$  of .97.

**Table 3**

Pearson Correlations for Eco-Anxiety, Eco-Grief and Attitude towards Environment (N=200)

Variables	Eco Anxiety	Eco Grief	Environmental Attitude
Eco Anxiety	1	0.85**	0.82**
Eco Grief		1	0.80**
Environmental Attitude			1

Table 3 shows the Pearson association between adult Eco Anxiety and Eco Grief. The Pearson correlation is 0.85. Ecological grief is higher in people who worry about environmental issues. The significance level supports this discovery's reliability. The findings also indicate a high correlation between Eco Anxiety and Environmental Attitude.

The Pearson correlation is 0.82. These findings suggest that people who are concerned about the environment have more positive views of it. Individuals' environmental attitudes are positively correlated with eco grief. The Pearson correlation is 0.80. This shows that Ecological Grief sufferers are more environmentally conscious.

**Table 4**

Mean, Standard Deviation and T-values for male and female adults (N=200)

Variables	Male (n=126)		Female (n=74)		t(200)	p	95%CI		Cohen's d
	M	SD	M	SD			LL	UL	
Eco Anxiety	68.3	5.52	66.78	5.24	1.912	0	0.047	3.08	0.282
Eco Grief	18.83	1.93	19.17	1.85	-1.257	0	.899	0.199	0.179

The average, variability, and t-values for male and female participants are shown in Table 4. Male participants had a somewhat higher mean Eco Anxiety score (68.30) than female ones (66.78). The standard deviations for boys (5.52) and girls (5.24) are similar. This shows that while average scores differ, eco-anxiety levels within each group vary similarly. Eco Grief mean scores are slightly higher for women (19.17) than males (18.82). Eco Grief rating standard deviations for males (1.93) and females (1.85) are similar, suggesting similar heterogeneity within each gender group.

## Discussion

The study aimed to investigate the psychological connections between climate change and eco-anxiety, grief, and attitude towards the environment. Initially, a hypothesis was proposed suggesting a substantial link between eco-anxiety and eco-grief. The findings suggest that there is a statistically significant positive link between eco-anxiety and eco-grief. This means that when individuals become more conscious of eco-anxiety, they tend to suffer intense emotional reactions. Eco-grief encompasses emotions such as sadness, grief, and grieving that arise from the destruction of natural landscapes, species extinction, and environmental loss. Studies suggest that eco-anxiety and eco-grief are appropriate and beneficial emotional reactions to the current dangers presented by climate change. Still, eco-anxiety might aggravate depression since it gets more severe without enough coping mechanisms. This can cause more anxiety of environmental damage aggravating sentiments of great grief, and vice versa (Sineva, Khafizova & Permyakov, 2021; Ágoston et al., 2022).

Moreover, it was hypothesized that a more proactive attitude toward environmental preservation and sustainability directly corresponds with higher degrees of eco-anxiety. The findings show a quite strong positive link between environmental attitude and eco-anxiety. People who are anxious about the state of their surroundings are often driven to adopt more positive attitudes and behaviors to reduce their emotions and actively contribute to obtaining solutions. The outcomes complement the findings of past studies (Clayton & Karazsia, 2020). According to the study, unpleasant feelings connected with environmental concerns and climate change can help to motivate action. It investigated how eco-anxiety affected pro-environmental behavior regarding climate change. Eco-anxiety might cause people to reevaluate their objectives and values, therefore increasing their attention on environmental stewardship, sustainability, and conservation (Verplanken & Roy, 2013).

Moreover, it was hypothesized that those who are grieving over the effects of climate change are more likely to engage in pro-environmental activities. Supported by statistical data, the results imply that ecological grief and

a good environmental attitude have a notable and positive correlation. People may actively participate in important environmental projects honoring what has been lost and protecting what is still to cope with their sense of loss regarding the natural surroundings. This motivation seeks to make a positive impact on environmental views. The findings coincide with the conclusions reached in other studies (Clayton & Karazsia, 2020).

According to the study, eco-grief might strengthen people's emotional connection to the environment. This connectivity usually leads to a stronger will to protect it and a better environmental attitude. Furthermore, it was hypothesized that women show higher degrees of eco-anxiety and eco-grief than men. According to the findings, men show a somewhat higher mean score than women for eco-anxiety. Regarding eco-grief, the results imply that, on average, female participants had a bit higher score than male ones. In the end, even if the differences in eco-anxiety and eco-grief between sexes are somewhat small, they highlight the need to include gender-specific points of view in environmental research and policy development. Still, the concept fits past studies done (Gökoglan, 2024). After a crisis, women are more actively involved in handling the circumstances than males, so they experience more stress and worry. For women, this frequently results in a greater prevalence of post-traumatic stress disorder.

## Implications

- Companies and teams can use research to develop psychosocially supportive climate change environments.
- Mental health services should address climate change's complex psychological effects. These actions may improve environmental perceptions.
- The study can promote awareness of the psychological effects of climate change and spark public debate on the role of mental health in climate action.
- These findings could be used in educational courses to demonstrate the link between psychological reactions and environmental perspectives.
- Knowing the favorable relationship between environmental beliefs and eco-anxiety helps build pro-environmental campaigns.

## Recommendations

- Determine cause and interaction channels using experimental methods.
- Environmental attitudes, eco-anxiety, and eco-grief should be studied longitudinally.
- Examine how media, social norms, and climate events affect relationships.

- Incorporate a range of cultural contexts into your studies to investigate how cultural variations affect the connections among eco-anxiety, eco-grief, and environmental attitudes.
- Make sure study samples vary by geography, socioeconomic status, ethnicity, and other factors. This improves generality.
- Find mediators or modifiers between gender and climate change psychological reactions.

### Limitations

- Use of self-reported data may result in biases like social desirability or recall bias.
- Homogeneous samples may limit the applicability of study outcomes.
- Different cultural contexts can lead to varying psychological responses to climate change. Results may not be widely representative of the population.

### CONCLUSION

Research shows a highly positive association between eco-anxiety, eco-grief, and environmental attitudes. Grieving people who are grieving eco-anxiety are more environmentally conscientious. This means that climate change pain may motivate environmental conservation and sustainability activities and attitudes. Ecological grief and anxiety are emotional responses to environmental degradation losses and risks. Though negative, these feelings might inspire people to find ways to reduce their environmental impact, promoting a proactive and protective approach to ecological issues. Recognizing this positive link is essential to building climate change-related mental health therapies that harness affective reactions to encourage environmentally friendly behavior. Eco-anxiety and eco-grief are higher in women than men, demonstrating gender differences. Public awareness campaigns and specific mental health services are needed due to these inequalities. These gender-specific tactics can increase environmental awareness and better address demographic groups' emotional needs.

Despite these results, the study uses self-reported data, and cross-sectional methods, and struggles to get diverse and representative sample populations. Future studies should use trustworthy and confirmed measurement instruments and environmental and cultural factors that alter psychological reactions to overcome these limits. Finally, environmental attitudes, eco-anxiety, and eco-grief are positively correlated, influencing environmental policy and mental health therapies. While improving mental health, these emotional reactions can make us more proactive and eco-conscious. A joint strategy is needed to build environmental and climatic resilience.

### Conflict of Interests

The authors has declared that no competing interests exist.

### References

- Ágoston, C., Csaba, B., Nagy, B., Kőváry, Z., Düll, A., Rácz, J., & Demetrovics, Z. (2022). Identifying types of eco-anxiety, eco-guilt, eco-grief, and eco-coping in a climate-sensitive population: A qualitative study. *International Journal of Environmental Research and Public Health*, 19(4), 2461. <https://doi.org/10.3390/ijerph19042461>
- Ágoston, C., Urbán, R., Nagy, B., Csaba, B., Kőváry, Z., Kovács, K., Varga, A., Düll, A., Mónus, F., Shaw, C. A., & Demetrovics, Z. (2022). The psychological consequences of the ecological crisis: Three new questionnaires to assess eco-anxiety, eco-guilt, and ecological grief. *Climate Risk Management*, 37, 100441. <https://doi.org/10.1016/j.crm.2022.100441>
- Akkus, A. (2020). Creating an environmental attitude scale. *Journal of Interdisciplinary Educational Research*, 4(7), 188–203. [https://doi.org/10.1007/978-3-030-85796-7\\_2](https://doi.org/10.1007/978-3-030-85796-7_2)
- Arias, P., Bellouin, N., Coppola, E., Jones, R., Krinner, G., & Marotzke, J. (2021). Climate change 2021: The physical science basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change: Technical summary. Oberpfaffenhofen: Electronic Library.
- Berry, H. L., Waite, T. D., Dear, K. B. G., Capon, A. G., & Murray, V. (2018). The case for systems thinking about climate change and mental health. *Nature Climate Change*, 8(4), 282–290. <https://doi.org/10.1038/s41558-018-0102-4>
- Bronfman, N. C., Cisternas, P. C., Lopez-Vazquez, E., de la Maza, C., & Oyanedel, J. C. (2015). Understanding attitudes and pro-environmental behaviors in a Chilean community. *Sustainability*, 7(10), 14133–14152. <https://doi.org/10.3390/su71014133>
- Cianconi, P., Betrò, S., & Janiri, L. (2020). The impact of climate change on mental health: A systematic descriptive review. *Frontiers in Psychiatry*, 11, Article 74. <https://doi.org/10.3389/fpsy.2020.00074>
- Clayton, S., & Karazsia, B. T. (2020). Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology*. <https://doi.org/10.1016/j.jenvp.2020.101434>
- Comtesse, H., Ertl, V., Hengst, S. M. C., Rosner, R., & Smid, G. E. (2021). Ecological grief as a response to environmental change: A mental health risk or functional response? *International Journal of Environmental Research and Public Health*, 18(2), 734. <https://doi.org/10.3390/ijerph18020734>
- Doyle, K. (2024). Understanding the role of eco-anxiety, eco-grief, and eco-guilt in age-related pro-environmental behaviour: A detailed analysis in Germany and the Netherlands [Bachelor's thesis, University of Twente]. <https://essay.utwente.nl/98068/>
- Gökoglan, M. (2024). Gender differences in mental health affections due to climate change and climate paralysis [Bachelor's thesis, University of Twente]. <https://essay.utwente.nl/98087/> <https://doi.org/10.1007/s43621-024-00209-2>



- Klingelhöfer, D., Braun, M., Brüggmann, D., & Groneberg, D. A. (2023). Heatwaves: Does global research reflect the growing threat in the light of climate change? *Israel Journal of Health Policy Research*.  
<https://doi.org/10.1186/s12992-023-00955-4>
- Knowlton, K., Rotkin-Ellman, M., Geballe, L., Max, W., & Solomon, G. M. (2011). Six climate change-related events in the United States accounted for about \$14 billion in lost lives and health costs. *Health affairs (Project Hope)*, 30(11), 2167–2176.  
<https://doi.org/10.1377/hlthaff.2011.0229>
- Neira, M., Erguler, K., Ahmady-Birgani, H., Al-Hmoud, N. D., Fears, R., Gogos, C., Hobbhahn, N., Koliou, M., Kostrikis, L. G., Lelieveld, J., Majeed, A., Paz, S., Rudich, Y., Saad-Hussein, A., Shaheen, M., Tobias, A., & Christophides, G. (2023). Climate change and human health in the Eastern Mediterranean and Middle East: Literature review, research priorities and policy suggestions. *Environmental research*, 216(Pt 2), 114537.  
<https://doi.org/10.1016/j.envres.2022.114537>
- Ojala, M., Cunsolo, A., Ogunbode, C., & Middleton, J. (2021). Anxiety, worry, and grief in a time of environmental and climate crisis: A narrative review. *Annual Review of Environment and Resources*, 46, 305–330.  
<https://doi.org/10.1146/annurev-environ-012420-044019>
- Perakslis, C. (2020). Uncertainty tolerance (UT): Recycling eco-anxiety into eco-empowerment [Last word]. *IEEE Technology and Society Magazine*.  
<http://dx.doi.org/10.1109/MTS.2020.2991503>
- Pihkala, P. (2020). Anxiety and the ecological crisis: An analysis of eco-anxiety and climate anxiety. *Helsinki Institute of Sustainability Science*.  
<https://doi.org/10.3390/su12197836>
- Pihkala, P. (2022). The process of eco-anxiety and ecological grief: A narrative review and a new proposal. *Sustainability*, 14(24), 16628.  
<https://doi.org/10.3390/su142416628>
- Sawitri, D. R., Hadiyanto, H., & Hadi, S. P. (2015). Pro-environmental behavior from a social cognitive theory perspective. *Procedia Environmental Sciences*, 23, 99–104.  
<https://doi.org/10.1016/j.proenv.2015.01.005>
- Searle, G., & Gow, K. (2010). Do concerns about climate change lead to distress? *International Journal of Climate Change Strategies and Management*, 2(2), 295–308.  
<https://doi.org/10.1108/17568691011089891>
- Sineva, I., Khafizova, A., & Permyakov, I. (2021). Environmental determinants of urban mental health: A literature review. *Zdorov e Naseleniâ I Sreda Obitaniâ*, 67–75.  
<https://doi.org/10.35627/2219-5238/2021-29-11-67-75>
- Slater, P. (2023). Climate change: The psychological impact of climate anxiety and trauma: Understanding from the psychotherapeutic encounter. *Journal of Child Psychotherapy*.  
<https://doi.org/10.1080/0075417X.2023.2274081>
- Tankha, G. (2017). *Environmental attitudes and awareness: A psychological perspective*. Cambridge Scholars Publishing.
- Van Nieuwenhuizen, A., Hudson, K., Chen, X., & Hwang, A. R. (2021). The effects of climate change on child and adolescent mental health: Clinical considerations. *Current Psychiatry Reports*, 23(12).  
<https://doi.org/10.1007/s11920-021-01296-y>
- Verplanken, B., & Roy, D. (2013). “My worries are rational; climate change is not”: Habitual ecological worrying is an adaptive response. *PLOS ONE*, 8(11), e74708.  
<https://doi.org/10.1371/journal.pone.0074708>
- Verplanken, B., Marks, E., & Dobromi, S. (2020). On the nature of eco-anxiety: How constructive or unconstructive is habitual worry about global warming? *Journal of Environmental Psychology*.  
<https://doi.org/10.1016/j.jenvp.2020.101528>
- Wullenkord, M. C., Tröger, J., Hamann, K. R. S., Loy, L. S., & Reese, G. (2021). Anxiety and climate change: A validation of the Climate Anxiety Scale in a German-speaking quota sample and an investigation of psychological correlates. *Climate Change*, 168(4).  
<https://doi.org/10.1007/s10584-021-03234-6>
- Zeier, P., & Wessa, M. (2024). Measuring eco-emotions: A German version of questionnaires on eco-guilt, ecological grief, and eco-anxiety. *Discover Sustainability*, 5(1).