

# Exploring the Relationship between Climate Anxiety and Solastalgia Among University Students in Pakistan: A Study of Environmental Distress and Psychological Well-Being

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## Abstract

*In recent years, climate change has emerged not only as a critical environmental issue but also as an escalating psychological concern, particularly among youth. This study explores the relationship between climate anxiety and solastalgia among university students in Pakistan—a population increasingly exposed to climate-related stress. Climate anxiety refers to persistent worry about the planet's future, while solastalgia describes the emotional distress experienced due to the degradation of one's familiar environment. Adopting a cross-sectional, quantitative approach, data were gathered from 300 university students using standardized tools: the Climate Anxiety Scale (CAS), the Scale of Solastalgia (SOS), and the Environmental Perceived Threat Scale (EPTS). Results showed a significant positive correlation between climate anxiety and solastalgia ( $r = .215, p < .001$ ), and between climate anxiety and perceived environmental threat ( $r = .225, p < .001$ ). However, the association between solastalgia and perceived environmental threat was weak and statistically non-significant ( $r = .075, p = .098$ ). Multiple regression analysis indicated that climate anxiety and perceived environmental threat significantly predicted solastalgia, collectively explaining 4.7% of its variance ( $R^2 = .047, p < .001$ ). These findings highlight the psychological toll of environmental decline and underscore the importance of culturally sensitive mental health interventions in climate-vulnerable contexts. The study adds to the growing field of eco-psychology in the Global South and advocates for incorporating emotional resilience strategies within environmental education and university mental health services.*

**Keywords:** Climate Anxiety, Environmental Stress, Youth Resilience.

## Introduction

In recent decades, climate change has emerged not only as an environmental crisis but also as a pressing psychological and emotional challenge. Beyond the visible impacts on ecosystems, agriculture, and weather patterns, climate change has deeply affected human mental health, particularly among young people who perceive it as a threat to their future well-being. Among the psychological consequences linked to environmental degradation, climate anxiety and solastalgia have gained growing scholarly attention as distinct but interconnected constructs. These concepts capture the distress individuals experience due to current and anticipated environmental disruptions, often rooted in a sense of helplessness and loss of environmental identity. Climate

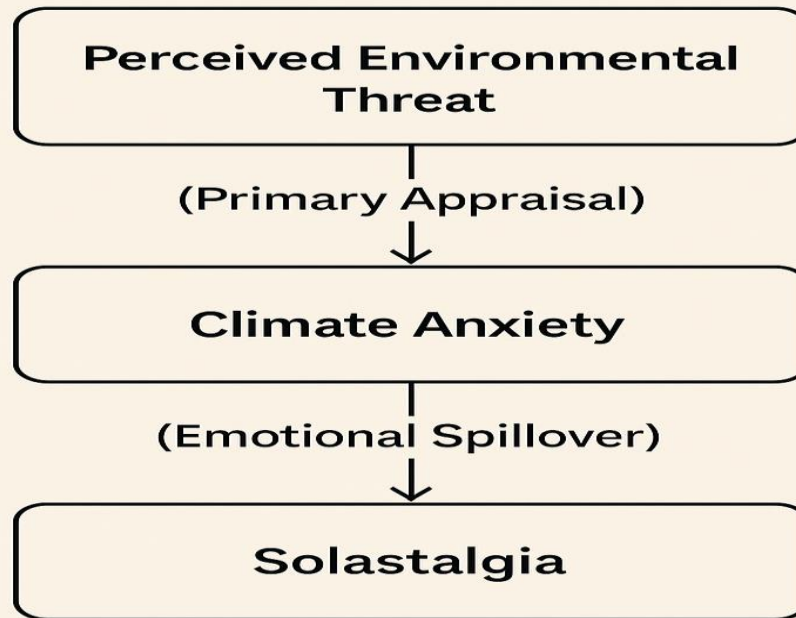
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anxiety refers to the chronic fear, worry, or unease about the consequences of climate change. It is characterized by persistent concern over environmental decline, ecological disaster, and uncertainty about the future of the planet (Clayton et al., 2017). Individuals who are environmentally conscious or directly exposed to climate-related information often report heightened anxiety, accompanied by feelings of frustration, guilt, and powerlessness (Pihkala, 2020). Young adults, in particular, exhibit strong emotional responses due to their perceived long-term exposure to climate impacts and limited control over policy-level decisions (Hickman et al., 2021). As a result, climate anxiety can interfere with daily functioning, increase emotional distress, and diminish life satisfaction. Closely related is the concept of solastalgia, defined as the distress produced by environmental change occurring close to one's home, particularly when individuals feel a loss of connection to the place they belong to (Albrecht et al., 2007). Unlike nostalgia, which refers to the longing for a past place or time, solastalgia captures the pain of witnessing one's immediate environment deteriorate whether through deforestation, pollution, urbanization, or climate related disasters. For university students living in rapidly changing urban landscapes, solastalgia may manifest as emotional exhaustion, despair, and a sense of alienation from one's surroundings. Recent studies emphasize the interrelation between climate anxiety and solastalgia. As environmental degradation accelerates, individuals are not only worried about the future but also grieve the loss of present-day natural spaces, cultural heritage, and ecological stability. This dual burden can intensify psychological vulnerability, particularly in regions like Pakistan, where climate-related challenges such as floods, heat waves, and water scarcity are increasingly prevalent (UNDP, 2021). Young people living in such contexts may face both anticipatory anxiety and present-moment grief, leading to a complex emotional landscape that affects their mental health and daily engagement. The university student population is especially relevant in this discourse. As emerging adults, students are forming their worldviews, career aspirations, and social identities all of which are increasingly influenced by environmental realities. In the absence of adequate institutional support or climate education, students may internalize ecological stress, leading to mental fatigue and disengagement from civic or academic activities. Studies have shown that young people experiencing climate distress are more likely to feel that governments are failing them, which further contributes to emotional disillusionment and reduced trust in institutions (Hickman et al., 2021). Despite growing international awareness, empirical research on climate anxiety and solastalgia remains scarce in the South Asian context. In Pakistan, where climate events increasingly disrupt daily life, little is known about how university students internalize and respond to these psychological impacts. Understanding this connection is crucial not only for promoting mental health but also for fostering climate resilience and youth engagement in environmental advocacy. Therefore, the present study aims to examine the relationship between climate anxiety and solastalgia among university students in Pakistan. By exploring how emotional responses to environmental change influence one another, this research seeks to contribute to the growing field of eco-psychology, with implications for mental health policy, education systems, and climate communication strategies. The findings may also inform culturally relevant interventions aimed at supporting youth in coping with the psychological dimensions of climate change.

**Figure 1: Theoretical Framework**

### Literature Review

Climate change has emerged as one of the most pressing global challenges, with profound consequences not only for environmental systems but also for human mental health. Among the psychological impacts of environmental change, climate anxiety and solastalgia have gained increasing recognition, particularly among young populations such as university students. Climate anxiety refers to the chronic fear and emotional distress associated with the anticipated effects of climate change, including extreme weather events, biodiversity loss, and global instability (Clayton et al., 2017). Solastalgia, a related yet distinct concept, describes the emotional suffering individuals experience when familiar environments undergo ecological degradation, often accompanied by a deep sense of loss and powerlessness (Albrecht et al., 2007). These emotional responses are not only significant psychological phenomena but are also reflective of a generation grappling with environmental uncertainty, disrupted place attachment, and diminished hope for the future. Several studies have documented the widespread prevalence of climate anxiety among young adults globally. For instance, Hickman et al. (2021) reported that over 60% of surveyed youth across multiple countries expressed high levels of worry about climate change, with many reporting feelings of sadness, helplessness, and anger. Similarly, Helm et al. (2018) found that university students often experience intrusive thoughts, sleep disturbances, and difficulty concentrating due to persistent climate-related concerns. While solastalgia is less frequently studied among student populations, emerging research suggests that exposure to local environmental degradation such as deforestation, pollution, or loss of green spaces can evoke strong feelings of grief and alienation, particularly when such changes affect areas of personal or cultural significance (Cunsolo & Ellis, 2018). These emotional responses are shaped by various factors, including media exposure to climate information, personal values, perceived vulnerability, and sociopolitical contexts (O'Neill & Nicholson-Cole, 2009; Stanley et al., 2021). For university students, academic settings often expose them to alarming scientific data about climate change

without necessarily equipping them with tools to manage the resulting psychological burden. As a result, these students may struggle with motivation, concentration, and academic performance, as their cognitive and emotional resources become consumed by climate-related worries (Helm et al., 2018). In social contexts, some students may find comfort and solidarity in peer networks that share similar concerns, while others may experience isolation or invalidation when their emotional responses are dismissed (Cunsolo & Ellis, 2018). Coping mechanisms play a critical role in mediating the psychological impact of climate anxiety and solastalgia. Lazarus and Folkman (1984) outlined emotion-focused and meaning-focused coping strategies that individuals may adopt in response to stress. In the climate context, these may include connecting with nature, engaging in pro-environmental behavior, or seeking social support. Hayes et al. (2011) emphasized the therapeutic benefits of acceptance-based interventions such as Cognitive Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT), which help individuals regulate distress without disengaging from environmental realities. Social support defined as the perception of being cared for and understood has also been identified as a protective factor against psychological distress (Hobfoll, 1989). When students are surrounded by empathetic peers, educators, or community members who validate their concerns and offer constructive dialogue, their ability to manage climate-related emotions may improve.

Moreover, climate anxiety and solastalgia do not always result in withdrawal or paralysis. In some cases, these emotions serve as catalysts for meaningful action. Corner et al. (2015) noted that strong emotional responses to climate threats can inspire individuals to engage in sustainability initiatives or climate activism, thus transforming distress into agency. This emotional activation provides a sense of purpose and connection, mitigating feelings of helplessness. University-led initiatives such as environmental clubs, educational programs, and resilience training can help students channel their concerns into productive efforts while fostering psychological resilience (Monroe et al., 2019).

Despite growing recognition of these issues, there are notable gaps in the current literature. First, few studies have explored the interplay between climate anxiety and solastalgia, especially in non-Western contexts. Although international research has highlighted the psychological toll of environmental change (Hickman et al., 2021; Albrecht et al., 2007), there is limited empirical investigation of these phenomena within the Pakistani university context, where rapid urbanization, pollution, and climate-induced disasters such as floods and heat waves are prevalent. Moreover, there is a lack of longitudinal studies examining how these emotional experiences evolve over time, and how factors such as gender, socioeconomic status, or prior trauma may influence individual responses.

Second, existing interventions often overlook the importance of cultural relevance. In Pakistan, environmental education is limited, and discussions around emotional well-being remain stigmatized, particularly among youth. As a result, students may suppress their climate-related distress or lack access to supportive resources, thereby increasing psychological vulnerability. Understanding the specific experiences of Pakistani university students can shed light on how environmental threats intersect with sociocultural dynamics to shape emotional outcomes.

Therefore, the current study seeks to address these gaps by examining the relationship between climate anxiety and solastalgia among university students in Pakistan. This research aims to explore whether these two emotional constructs co-occur, how they influence mental well-being, and what coping strategies students employ in response. By shedding light on these issues within a local context, the study hopes to inform the development of culturally appropriate psychosocial interventions and university-based support systems that can enhance student resilience and

promote environmental engagement. The findings may offer valuable insights for mental health professionals, educators, and policymakers working at the intersection of climate change and youth mental health.

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**Figure 2: Conceptual Framework**

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## Methodology

### Research Design

This study utilized a cross sectional research design with a quantitative approach to investigate the prevalence and correlates of climate anxiety and solastalgia among university students. This design allows for the collection of data at a single point in time, facilitating the examination of relationships between psychological responses to climate change and associated variables, including perceived environmental threat and demographic characteristics.

### Participants

The sample consisted of 300 university students aged between 18 and 26 years, recruited from various colleges and universities in Sialkot. A purposive sampling technique was employed to target participants actively enrolled in academic institutions. This age group was selected due to their heightened vulnerability to climate-related psychological stress and their critical role as future stakeholders in environmental decision-making. Participation was voluntary, and informed consent was obtained from all individuals.

### Instruments

Data were collected using standardized self-report questionnaires designed to assess climate anxiety, solastalgia, and perceived environmental threat:

- *Climate Anxiety Scale (CAS)*: Developed by Clayton and Karazsia (2020), this 13-item instrument evaluates emotional distress and functional impairment associated with climate change concerns. Items are rated on a 5-point Likert scale ranging from “Not at all” to “Very often.” The scale has demonstrated good internal consistency and construct validity in prior research.
- *Scale of Solastalgia (SOS)*: This 11-item scale measures distress resulting from environmental changes. It comprises two factors: *Solace* (Items 1–7), assessing emotional loss and sadness; and *Algia* (Items 8–11), assessing anxiety and distress. Responses are recorded on a Likert-type scale. The two-factor structure has been validated through exploratory and confirmatory factor analyses, with high internal consistency reported.

- *Environmental Perceived Threat Scale (EPTS)*: Originally developed by William D. Reisel and Moshe Banai, this scale assesses perceptions of environmental change and its implications for job and life security. Items are scored on a 5-point Likert scale, with higher scores reflecting greater perceived threat. Though initially designed for workplace contexts, its items were adapted for academic settings to reflect perceived environmental risks relevant to student life.

### Procedure

Prior to data collection, formal permission was obtained from the developers of the Climate Anxiety Scale. Ethical clearance was secured from the relevant institutional review board to ensure compliance with research ethics involving human participants. Participants were approached within academic settings with the cooperation of instructors to minimize disruption to classes. They were briefed about the study's objectives, procedures, and ethical safeguards. Written informed consent was obtained from all participants. Participants completed the survey in a quiet classroom setting, with the researcher present to assist with any clarifications. The survey packet included a demographic form, the CAS, SOS, and EPTS. The administration took approximately 20 minutes. To ensure reliability and avoid response bias, all questionnaires were completed in one sitting. Responses were collected immediately and reviewed for completeness.

### Data Analysis

Data were coded and entered into the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize demographic data and the means and standard deviations of study variables. Pearson correlation analysis was employed to examine relationships among climate anxiety, solastalgia, and perceived environmental threat. Multiple linear regression analyses were conducted to assess the predictive power of environmental threat perceptions on climate-related psychological responses. The significance level was set at  $p < .05$ .

### Ethical Considerations

This study was conducted in strict adherence to ethical guidelines. Ethical approval was obtained prior to data collection. Participants were informed of their right to withdraw at any point without any repercussions. All responses were kept confidential and used solely for academic purposes. Written consent forms were provided and signed before participation. The anonymity and psychological well-being of participants were prioritized throughout the research process.

### Results

**Table 1: Explains the descriptive of the demographics of the current research.**

|                  | N   | Minimum | Maximum | Mean | SD   |
|------------------|-----|---------|---------|------|------|
| <b>Gender</b>    | 300 | 1.00    | 2.00    | 1.50 | 0.50 |
| <b>Age</b>       | 300 | 1.00    | 3.00    | 1.58 | 0.56 |
| <b>Residency</b> | 300 | 1.00    | 2.00    | 1.48 | 0.50 |
| <b>Education</b> | 300 | 1.00    | 2.00    | 1.02 | 0.13 |

Table 1 presents the descriptive statistics for the demographic variables of the sample (N = 300). The gender distribution had a mean of 1.50 (SD = 0.50), indicating an equal representation of males and females in the sample (1 = Male, 2 = Female). Participants' ages were categorized into three groups (1 = 18–20, 2 = 21–23, 3 = 24–26), with a mean of 1.58 (SD = 0.56), suggesting that most respondents were between 18 and 23 years of age. Regarding residency status (1 = Urban, 2

= Rural), the mean of 1.48 (SD = 0.50) reflects a slightly higher proportion of urban residents. Education level was coded as 1 = Undergraduate and 2 = Graduate, with a mean of 1.02 (SD = 0.13), indicating that the vast majority of participants were undergraduate students.

**Table 2: Pearson Correlation Coefficients among Study Variables (N = 300)**

| Variables            | SD    | M     | Sig  | 1      | 2     | 3      |
|----------------------|-------|-------|------|--------|-------|--------|
| Climate Anxiety      | 26.20 | 19.23 | .000 | -----  | ----- | .225** |
| Solastalgia          | 53.64 | 178.0 | .000 | .215** | ----- | .075   |
| Environmental Threat | 56.84 | 69.87 | .000 | .225** | .075  | -----  |

Note:  $p < .001$  (1-tailed); N = 300

Table 2 presents Pearson correlation coefficients among climate anxiety, solastalgia, and perceived environmental threat among university students (N = 300). The results revealed a significant and positive correlation between climate anxiety and solastalgia, ( $r = .215$ ,  $p < .001$ ), indicating that individuals who experience higher levels of concern about climate change also report greater emotional distress related to the degradation of their home or local environment. This finding supports previous research suggesting that environmental degradation can provoke place-based psychological distress. A significant positive correlation was also observed between climate anxiety and perceived environmental threat ( $r = .225$ ,  $p < .001$ ). This suggests that individuals who perceive greater threats to the environment are more likely to experience anxiety about climate change, highlighting a psychological response to ecological risk perceptions. The correlation between solastalgia and perceived environmental threat was weak and statistically non-significant, ( $r = .075$ ,  $p = .098$ ), suggesting that while some emotional distress may be related to perceived threats, this association was not strong enough to reach statistical significance in this sample.

## Summary

Overall, these findings highlight meaningful associations between environmental concern, emotional distress, and perceived threat. The significant correlations between climate anxiety and both solastalgia and environmental threat emphasize the psychological burden of environmental degradation. These initial results justify further analysis, such as regression, to explore predictive relationships among the variables.

**Table 3: Model Summary for Multiple Regression Predicting Solastalgia (N = 300)**

| Model | R    | R <sup>2</sup> | AdjustedR <sup>2</sup> | SE of Estimate | F    | df1 | df2 | p   |
|-------|------|----------------|------------------------|----------------|------|-----|-----|-----|
| 1     | .217 | .047           | .041                   | 4.24           | 7.33 | 2   | 297 | .00 |

Note: R = Multiple correlation; R<sup>2</sup> = Coefficient of determination; SE = Standard error of estimate; df = degrees of freedom; p = significance level

The multiple regression analysis was conducted to examine whether climate anxiety and perceived environmental threat significantly predict solastalgia among university students (N = 300). The model was found to be statistically significant,  $F(2, 297) = 7.33$ ,  $p = .001$ , indicating that the predictors reliably account for variations in solastalgia. The R<sup>2</sup> value of .047 suggests that

approximately 4.7% of the variance in solastalgia can be explained by the combined effects of climate anxiety and environmental threat. The adjusted  $R^2$  (.041) accounts for the number of predictors in the model, indicating a slightly more conservative estimate of explained variance. The standard error of the estimate ( $SE = 4.24$ ) reflects the average distance that the observed values fall from the regression line, indicating a reasonable level of accuracy for the model's predictions. The correlation coefficient ( $R = .217$ ) represents a small but meaningful association between the combined predictors and solastalgia.

### Summary

The regression model demonstrated a statistically significant but modest predictive relationship between climate-related psychological factors (climate anxiety and environmental threat) and solastalgia. Although only a small portion of variance was explained, the findings underscore the relevance of environmental concerns in shaping emotional responses to ecological change. This highlights the need for further research to explore additional psychological, social, or contextual variables that may influence solastalgia.

**Table 4: ANOVA Summary for Regression Predicting Solastalgia (N = 300)**

|            | SS      | Df  | MS     | F    | P    |
|------------|---------|-----|--------|------|------|
| Regression | 264.20  | 2   | 132.10 | 7.33 | .001 |
| Residual   | 5350.64 | 297 | 18.02  |      |      |
| Total      | 5614.84 | 299 |        |      |      |

*Note:* SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Square; F = F-ratio; p = Significance Level.

Table 4 presents the ANOVA summary for the multiple regression model predicting solastalgia from climate anxiety and environmental threat. The total sum of squares ( $SS = 5614.84$ ) reflects the overall variance in solastalgia scores among the 300 participants. The regression sum of squares ( $SS = 264.20$ ) indicates the amount of variance in solastalgia that is explained by the two predictors combined—climate anxiety and environmental threat. The residual sum of squares ( $SS = 5350.64$ ) represents the unexplained variance, which may be due to other variables not included in the model or random error. The degrees of freedom (df) for the regression (2) corresponds to the number of predictors, while the residual df (297) is calculated by subtracting the number of predictors and the intercept from the total sample size ( $N - k - 1 = 300 - 2 - 1 = 297$ ). The mean squares (MS) are obtained by dividing each sum of squares by its respective df, resulting in  $MS = 132.10$  for regression and  $MS = 18.02$  for residuals. The F-statistic of 7.33 compares the explained variance to the unexplained variance, and the corresponding p-value (.001) indicates that the overall model is statistically significant at the  $p < .05$  level. This means the combination of climate anxiety and environmental threat significantly predicts solastalgia.

### Summary

The ANOVA results confirm that the multiple regression model including climate anxiety and environmental threat significantly predicts solastalgia,  $F(2, 297) = 7.33$ ,  $p = .001$ . Although the overall explained variance is modest (4.7%), the significant F-test indicates that the predictors collectively contribute meaningfully to understanding variations in solastalgia levels among the

sample. This supports further examination of the individual effects of each predictor through regression coefficients.

| Table 5: Regression Coefficients Predicting Solastalgia |       |      |         |      |      |
|---------------------------------------------------------|-------|------|---------|------|------|
|                                                         | B     | SE B | $\beta$ | t    | P    |
| Constant                                                | 24.22 | 2.96 | —       | 8.19 | .000 |
| Climate Anxiety                                         | 0.16  | 0.04 | .209    | 3.60 | .000 |
| Environmental Threat                                    | 0.04  | 0.07 | .28     | 0.48 | .633 |

Note: B = unstandardized regression coefficient; SE B = standard error of B;  $\beta$  = standardized coefficient.  $p < .05$  is considered significant.

Table 5 presents the regression coefficients for the prediction of solastalgia based on climate anxiety and environmental threat. The overall regression model was statistically significant, and among the two predictors, only climate anxiety significantly contributed to the prediction of solastalgia. Specifically, climate anxiety showed a significant positive relationship with solastalgia ( $\beta = .209$ ,  $t = 3.60$ ,  $p < .001$ ), indicating that higher levels of anxiety related to climate change are associated with increased feelings of solastalgia. The unstandardized coefficient ( $B = 0.16$ ) suggests that for each one-unit increase in climate anxiety, solastalgia scores are expected to increase by 0.16 units, holding environmental threat constant. In contrast, environmental threat was not a significant predictor of solastalgia ( $\beta = .028$ ,  $t = 0.48$ ,  $p = .633$ ), implying that when climate anxiety is accounted for, perceived environmental threat does not significantly explain additional variance in solastalgia scores.

Summary

In summary, the regression results underscore climate anxiety as a significant psychological predictor of solastalgia among participants. While both variables were initially included in the model, only climate anxiety showed a meaningful impact, reinforcing its central role in shaping emotional responses to environmental change. The non-significant effect of environmental threat suggests that subjective emotional distress (i.e., anxiety) may be more influential than general perceptions of environmental conditions in predicting solastalgia. These findings provide important implications for understanding how individuals internalize and react emotionally to ecological disruption.

Discussion

The present study sought to examine the psychological impact of climate change by exploring the relationships between climate anxiety, solastalgia, and perceived environmental threat among university students. The findings offer valuable insights into the emotional and cognitive experiences of young adults in the face of environmental degradation. Descriptive statistics revealed moderate levels of both climate anxiety and solastalgia, alongside notably high levels of perceived environmental threat. These patterns suggest that students are not only cognitively aware of environmental issues but are also emotionally affected by them. Consistent with global trends, these results reflect the heightened vulnerability of younger populations to ecological stressors, who often experience anxiety and distress when confronted with environmental uncertainty. The positive and significant correlation found between climate anxiety and solastalgia supports

previous theoretical work by Albrecht et al. (2007), which conceptualizes solastalgia as a form of place-based ecological grief. The strong relationship between these variables indicates that students who report greater worry about climate change are also more likely to experience emotional distress associated with environmental change in their familiar surroundings. The moderate positive correlation between perceived environmental threat and climate anxiety aligns with the cognitive appraisal theory, suggesting that when individuals interpret environmental change as threatening, it may intensify emotional responses such as anxiety. However, the correlation between perceived environmental threat and solastalgia was weak and statistically insignificant. This finding underscores the notion that cognitive perceptions of environmental danger do not automatically translate into solastalgia unless accompanied by heightened emotional reactivity such as anxiety or grief. Regression analysis further substantiated the role of climate anxiety as a significant predictor of solastalgia, whereas perceived environmental threat did not significantly contribute to the prediction model. These results suggest that emotional reactions, rather than cognitive threat assessments alone, play a more prominent role in shaping individuals' psychological responses to environmental degradation. In essence, the emotional toll of anticipated or ongoing ecological change appears to be a stronger determinant of solastalgia than the simple recognition of environmental risk. These findings contribute to the growing literature on environmental psychology by highlighting the interdependent roles of emotional and cognitive factors in shaping ecological distress. While previous research has often associated solastalgia with direct physical displacement or visible environmental destruction, the current study illustrates that psychological displacement especially through climate anxiety can evoke similar experiences of grief and loss, even without direct exposure to environmental disasters. This insight is particularly relevant in academic settings where students are increasingly aware of global ecological issues and may experience emotional distress from anticipated future disruptions. Given these results, it becomes essential to view climate-related psychological distress as more than a personal experience it is a public mental health concern. Universities and educational institutions should acknowledge the emotional toll of climate change on students and consider providing targeted psychological support programs. These may include eco anxiety coping workshops, mindfulness-based interventions, and opportunities for climate-conscious group discussions. Such initiatives can foster emotional resilience, validate students' experiences, and transform feelings of helplessness into meaningful engagement.

## Conclusion

The present study offers important insights into the psychological effects of climate change by demonstrating that climate anxiety significantly predicts solastalgia among university students. The weak correlation between perceived environmental threat and solastalgia highlights the importance of emotional, rather than purely cognitive, responses in shaping ecological distress. These findings emphasize the urgency of addressing climate-related mental health issues within educational, psychological, and policy-making domains. As students grapple with the emotional burden of environmental uncertainty, it becomes imperative to integrate psychological support into broader climate action strategies. The study contributes to the growing understanding of eco-psychological responses and calls for a more compassionate, emotionally informed approach to climate change discourse.

The findings of this research carry several practical implications across educational, mental health, and policy sectors. In university settings, where students are frequently exposed to climate-related information through curricula and media, emotional reactions such as anxiety and solastalgia

should not be overlooked. Institutions should implement support programs that address the emotional dimensions of environmental concern, including eco-anxiety support groups, climate education that fosters hope and action, and access to counseling services. From a mental health perspective, practitioners must be trained to recognize eco-psychological symptoms as valid manifestations of distress. Just as anxiety from academic or relational stressors is acknowledged, emotional reactions to environmental concerns should also be validated and treated with appropriate interventions such as cognitive-behavioral therapy, mindfulness, or narrative therapy approaches tailored to ecological grief. Policy makers must also incorporate psychological well-being into climate policies. Current climate discourse heavily emphasizes economic and environmental metrics, often neglecting the mental health dimension. Public awareness campaigns, school-based mental health curricula, and community-level resilience programs should aim to normalize discussions around eco-anxiety and solastalgia, particularly in countries like Pakistan, where environmental challenges are becoming increasingly severe. Emotional well-being must be seen as integral to sustainable development.

### **Recommendations**

The findings of this study highlight the need for multi-level interventions to address climate anxiety and solastalgia among university students in Pakistan. Universities should take proactive steps by integrating environmental education into the curriculum and promoting sustainability practices on campus. These efforts can empower students with the knowledge and coping strategies necessary to process environmental changes constructively. According to Clayton et al. (2017), environmental education is a key factor in reducing eco anxiety by increasing both awareness and agency. Mental health services at universities must also be equipped to handle climate-related distress. Counseling centers should train staff to recognize symptoms of climate anxiety and solastalgia and provide targeted support such as eco-therapy or group discussions centered on ecological grief. The American Psychological Association (2020) emphasizes the role of mental health professionals in addressing emotional reactions to climate change, recommending interventions that build emotional resilience and foster community connection. Policymakers and environmental agencies should consider the psychological impact of climate change when designing climate action plans. Addressing emotional and psychological dimensions is critical for community adaptation, as noted by Cunsolo and Ellis (2018), who argue that solastalgia must be treated as a legitimate mental health concern in areas undergoing rapid environmental transformation. Communication campaigns can normalize these emotional experiences and offer resources to help individuals cope. Students should be encouraged to engage in climate action, as participation in environmental movements has been linked to reduced anxiety and a sense of empowerment (Ojala, 2012). Creating university-based environmental clubs and supporting youth-led initiatives can help channel concern into constructive behavior. Moreover, culturally appropriate coping strategies such as spiritual engagement, community storytelling, or traditional ecological knowledge should be explored and validated within mental health interventions (Albrecht et al., 2007). A collaborative approach involving educators, mental health professionals, policymakers, and students is essential to address the growing burden of climate-related psychological distress. Proactive engagement at institutional and policy levels can transform climate anxiety and solastalgia from sources of helplessness into catalysts for sustainable change and emotional growth.

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