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Research article

Eco-anxiety, climate concern, and fatalistic outlooks: Insights from U.S. crisis text conversations on climate distress

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ABSTRACT

Introduction: Ecologic anxiety and climate distress describe psychological and emotional responses to the uncertain future of our planet amid climate change. Crisis hotlines and text-based counseling services may address mental health concerns linked to climate anxiety, yet limited research explores these responses through digital crisis text lines. This study presents results from a qualitative thematic analysis of U.S. crisis text conversations mentioning climate change by exploring emotional responses and coping resources commonly discussed.

Methods: We analyzed anonymized text data from Crisis Text Line (CTL), a free, U.S.-based digital crisis platform with over nine million conversations since 2017, focusing on a sample of texts mentioning "climate change." A comprehensive codebook was developed, incorporating predetermined and emergent codes for climate change exposures, crisis flags, emotional responses, and special topics. Using a structured, iterative thematic analysis approach that combined deductive and inductive methods, the study identified and categorized emerging themes.

Results: A total of 337 text transcripts were analyzed. Texters displayed significant emotional responses to climate change, grouped into three categories: Eco-anxious, General Climate Concern, and Fatalistic Future Outlook. Findings reveal the tangible impacts of extreme weather, the exacerbating role of media coverage, and the interaction between climate change and other life stressors. Texters used various coping strategies for climate-related distress, including social support, creative and nature-based activities, positive information, and professional resources like CTL. Counselor-recommended techniques, such as grounding exercises and journaling, also helped manage emotional well-being.

Conclusions: Themes underscore the complex nature of texters' emotional and psychological responses, varied coping mechanisms, and how climate concerns can inspire proactive environmental actions. The analysis highlights the urgent need for targeted support interventions, particularly for those with a fatalistic outlook, to address mental health challenges related intensifying climate events.

1. Introduction

Ecologic grief, climate anxiety, and climate worry are terms that have emerged in the past decade to describe the psychological and emotional response to the climate crisis, reflecting a shift in how these emotional experiences are understood and studied in the context of intensifying climate events [1]. A global survey of 10,000 children and adolescents across ten countries revealed that 6 out of 10 young people were very or extremely worried about climate change, with 75 % of respondents feeling that the future is frightening [2]. The most recent Intergovernmental Panel on Climate Change (IPCC) projects a continued escalation in both the frequency and intensity of extreme weather events such as heat waves, droughts, wildfires, and extreme precipitation [3]. While the current generation bears the responsibility of climate crisis exacerbations, young people today and future generations will endure more severe consequences, impacting their quality of life and well-being for years to come [4]. The increasing frequency and severity of extreme weather events directly contribute to mental health challenges, exposing individuals to trauma, loss of livelihoods and homes, and social network disruption [5]. These combined factors underscore the urgent need for proactive approaches to address the psychological, social, economic, and

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Table 1
Range of terms currently used in the literature to operationalize emotional responses to intensifying climate events.

Term	Definition	Review
Eco-Anxiety	Distress caused by climate change where people are becoming anxious about their future	Coffey et al., 2021
Climate Change Anxiety	Describes how humans perceive, fear, and dread the impacts of climate change	Crandon et al., 2022
Climate Worry	The worry and accompanying stress associated with current and predicted damage, loss, and destruction from climate change	Ojala et al., 2021
Solastalgia	Distress caused by the transformation and degradation of one's home environment	Galway et al., 2019

environmental impacts of climate change, as some populations and younger generations are disproportionately impacted [5,6].

Limited research in the U.S. shows that people of all ages experience climate change anxiety [7–10] impacting cognitive, emotional, and functional well-being, though collective climate activism may attenuate these effects [8]. Terms like eco-anxiety, climate change anxiety, climate worry, and solastalgia describe related but distinct experiences, ranging from distress about ecological crises and fears of climate impacts to grief over environmental degradation (Table 1). Scholars like Pihkala have identified gaps in understanding these emotions, noting that feelings such as guilt, shame, and numbness are not well-captured by basic emotion theories, necessitating expanded frameworks [11]. Climate emotions encompass feelings deeply connected to the climate crisis, shaped by factors like culture, personal circumstances, social dynamics, and environmental impacts. Further research on the prevalence and intensity of these emotions can inform pro-environmental behaviors, therapeutic interventions, and public health strategies to better address their impact on well-being and resilience.

Eco-anxiety refers to distress and anxiety stemming from climate change, characterized by concerns about future uncertainties and the broader ecological crisis [12]. Additionally, women are often more likely to experience eco-anxiety, potentially due to their stronger environmental values and greater perceived vulnerability to climate impacts [13]. Climate change anxiety focuses more specifically on the fear and dread related to climate impacts and personal perceived longevity [2,8,14–16]. Studies indicate that this form of anxiety disproportionately affects individuals in low-income communities and those residing in regions facing direct and severe climate hazards, such as coastal flooding or extreme heat, due to heightened exposure and fewer resources for adaptation [17–19]. Climate worry, related but distinct, emphasizes stress and concern about both current and predicted damage due to climate change, often associated with depression and poorer well-being [20–22]. It is particularly prevalent among girls and young women, with some studies finding them more likely than boys to engage in sustained worry and emotional rumination about climate change [23–25]. Solastalgia describes the emotional loss that arises when familiar environments undergo degradation and transformation due to climate change, resulting in a sense of disconnection and distress [1,26]. This experience is more commonly reported in communities that are heavily reliant on natural resources or have strong cultural ties to the land, such as Indigenous populations or rural communities affected by deforestation, drought, or industrialization [27,28].

Qualitative and quantitative studies indicate that climate worry or eco-anxiety significantly impacts emerging adults, with those in the Global South experiencing more severe effects on psychosocial functioning compared to their peers in high-income countries [2]. Few studies address the harmful effects of climate change and eco-anxiety in youth [29,30]. Recent research (2019–2023) linking climate change to anxiety in young people is limited to cross-sectional surveys [2,14,15,20,31], likely influenced by COVID-19-related disruptions and heightened anxiety due to social distancing measures [31–33], and has largely taken place outside of the U.S [7,14,15,20,22,31,34].

As climate change poses an uncertain threat to our future, crisis hotlines and other text-based counseling services offer effective, low-cost means of addressing climate anxiety and related mental health concerns. Empirical support exists for using data from digital crisis platforms to study mental health consequences of extreme weather and climate-induced disasters [35–38]. However, limited research has used digital crisis text lines to understand mental and emotional responses to intensifying climate events. This paper presents a qualitative thematic analysis of crisis text conversations mentioning climate change in a sample of U.S. texters. We addressed the following research questions: (1) what was the general emotional response of crisis conversations on climate change; (2) how did texter response vary across age groups (children, adolescents, young adults, adults), racial, gender, and sexual identities, and across geographic regions; and (3) what types of coping resources were most commonly discussed?

2. Methods

2.1. Crisis text line conversation data

Crisis Text Line (CTL) is a U.S.-based digital crisis platform offering anonymous, 24/7 access to crisis counselors at no cost. To-date, over nine million crisis conversations have been logged in the U.S., addressing crisis concerns like depression and suicidal thoughts [39]. Initial inclusion criteria for the analysis included anonymized CTL conversations mentioning "climate change" from 2017 to 2021. Each texter's area code was used to assign their geographic state location, allowing for an analysis of geographical data by state. As this study was a pilot exploratory analysis, we initially focused on the general sentiment of text transcripts specifically mentioning 'climate change.' This allowed us to capture baseline emotional responses to the concept itself before introducing additional terms or specific climate events (e.g., 'Hurricane Harvey') into our methodology. The research team identified texts mentioning climate change by using a keyword search algorithm provided by the Crisis Text Line (CTL) team. This algorithm filtered conversations by searching for specific terms related to 'climate change,' allowing us to efficiently isolate relevant text transcripts from the broader dataset of millions of conversations. After conversations, texters could complete a brief demographic survey on self-reported age, race/ethnicity, sexual orientation and gender identity. Finally, crisis counselors assign issue tags to each text conversation at the close of the conversation that include the following binary crisis concerns: depression, hopelessness, loss of interest in activities, excessive worry, feeling in control, hopefulness, loneliness, feeling overwhelmed, emotional distress, and suicidal ideation.

Volunteer crisis counselors complete 30 h of training in reflective listening, collaborative problem-solving, and crisis management, with a commitment to volunteer 200 h. They offer evidence-based coping mechanisms, including grounded breathing, positive affirmations, distraction techniques, emotional regulation, and safety plans. Texters at risk for suicide are prioritized to receive support from a licensed mental health provider or CTL Supervisor.

Table 2
Demographics of texters across three identified emotional response groups.

Characteristics	Total n (%)	Eco-Anxiety N = 205 n (%)	General Climate Concern N = 83 n (%)	Fatalistic Future Outlook N = 105 n (%)	P-value
Age					0.5489
13 or younger	13 (5.3)	7 (4.0)	5 (7.4)	4 (4.8)	
14–24	159 (64.6)	110 (63.2)	45 (66.2)	55 (66.3)	
25–44	64 (26.0)	50 (28.7)	14 (20.6)	22 (26.5)	
45+	10 (4.1)	7 (4.0)	4 (5.9)	2 (2.4)	
Missing	48				
Ethnicity					0.0005
White	140 (61.4)	107 (67.3)	36 (53.7)	46 (61.3)	
Black or African American	15 (6.6)	8 (5.0)	7 (10.5)	2 (2.7)	
Hispanic	21 (9.2)	8 (5.0)	8 (11.9)	9 (12.0)	
Other[a]	52 (22.8)	36 (22.6)	16 (23.9)	18 (24.0)	
Missing	66				
Gender					0.0062
Boy/Man	57 (23.4)	38 (22.2)	18 (25.7)	20 (25.0)	
Girl/Woman	118 (48.4)	90 (52.6)	30 (42.9)	35 (43.8)	
Transgender	10 (4.1)	3 (1.8)	7 (10.0)	4 (5.0)	
Gender Nonconforming	59 (24.2)	40 (23.4)	15 (21.4)	21 (26.3)	
Missing	50				
Sexual Identity					0.6362
Heterosexual	74 (35.1)	54 (36.7)	23 (37.1)	26 (37.1)	
Gay or Lesbian	22 (10.4)	18 (12.2)	4 (6.5)	9 (12.9)	
Bisexual or Pansexual	57 (27.0)	39 (26.5)	16 (25.8)	16 (22.9)	
Other Sexual Orientation[b]	58 (27.5)	36 (24.5)	19 (30.7)	19 (27.1)	
Missing	83				
Region					0.3187
West	82 (29.8)	54 (28.4)	25 (30.9)	27 (26.7)	
Southwest	24 (8.7)	14 (7.4)	9 (11.1)	9 (8.9)	
Midwest	63 (22.9)	43 (22.6)	18 (22.2)	27 (26.7)	
Northeast	61 (22.2)	48 (25.3)	18 (22.2)	22 (21.8)	
Southeast	45 (16.4)	31 (16.3)	11 (13.6)	16 (15.8)	
Missing	19				
Texter Severity[c]					0.0035
General Risk	63 (21.4)	53 (25.9)	13 (15.7)	16 (15.2)	
Moderate Risk	100 (34.0)	71 (34.6)	28 (33.7)	35 (33.3)	
Suicidal Without a Plan	89 (30.3)	60 (29.3)	26 (31.3)	35 (33.3)	
Suicidal with a Plan	42 (14.3)	21 (10.2)	16 (19.3)	19 (18.1)	

[a] Other ethnicity includes American Indian/Alaskan Native, Asian, Middle Eastern, Northern African, or Arab, or other mixed race.
[b] Other sexual orientation includes asexual, queer, or questioning.
[c] General Risk: feelings of stress, depression, etc., seemingly within the texter's norm, without thoughts of self-harm or suicidal ideation; Moderate Risk: mentions of self-harm or fleeting, non-specific suicidal thoughts; Suicidal without a plan: expresses suicidal ideation without a specific plan of action; Suicidal with a Plan: expresses suicidal ideations with a specific plan of action.

2.2. Statistical analysis

Descriptive statistics including frequencies and counts of text conversations were generated using Pearson's chi-square test in SAS v9.4 [40] and figures were generated in Flourish Studio [41].

The study was approved by the NC State University institutional review board (approval number: 23563).

2.3. Thematic analysis

Reflexive thematic analysis, a qualitative research method used to identify, analyze, and report patterns within qualitative data, uniquely emphasizes the researcher's active role in interpreting data [42–44]. Initially, a comprehensive codebook was developed with predetermined codes aligning with research questions, including: climate change exposures, coder-derived crisis flags, emotional responses as broadly outlined in Supplemental Table 1, and special topics (Supp Table 2). Based on the literature, we included a broader list of potential emotional responses that might best capture the range of emotional responses exhibited by texters. The codebook was developed through an iterative process, undergoing three rounds of refinement. Initial codes were generated inductively by researchers during the first phase of transcript review. Emerging themes were continuously identified, and new codes were added as necessary. To ensure comprehensive theme capture, earlier transcripts were recoded to incorporate these updates. Recurring team meetings facilitated discussions about initial codes, coding consistency, and the development of candidate themes, with collective decision-making employed to resolve ambiguities and refine thematic categories.

The research team, organized into coding pairs, followed a structured approach: (1) data immersion; (2) assign preliminary codes; (3) generate candidate themes; (4) organize, aggregate, and refine themes; (5) naming and describing themes; and (6) reporting findings [42–46]. Intercoder reliability was not formally assessed. Instead a rigorous collaborative approach was employed to ensure consistency. Each transcript was independently coded by seven researchers, after which subgroups convened weekly to review the coding decisions in detail. Discrepancies were resolved through thorough discussion, and consensus was reached on final codes and thematic representations. This transcript-by-transcript review process ensured coherence, mutual agreement, and depth in the coding framework. Both deductive and inductive approaches were employed to capture emerging codes and new themes, necessitating structured, iterative, and intensive immersion into the data [42–46]. Patterns were identified by analyzing the coded data to uncover shared meanings and semantic connections. This step involved synthesizing related codes into candidate themes that captured the core narratives within the data. Through iterative discussions among team members, these

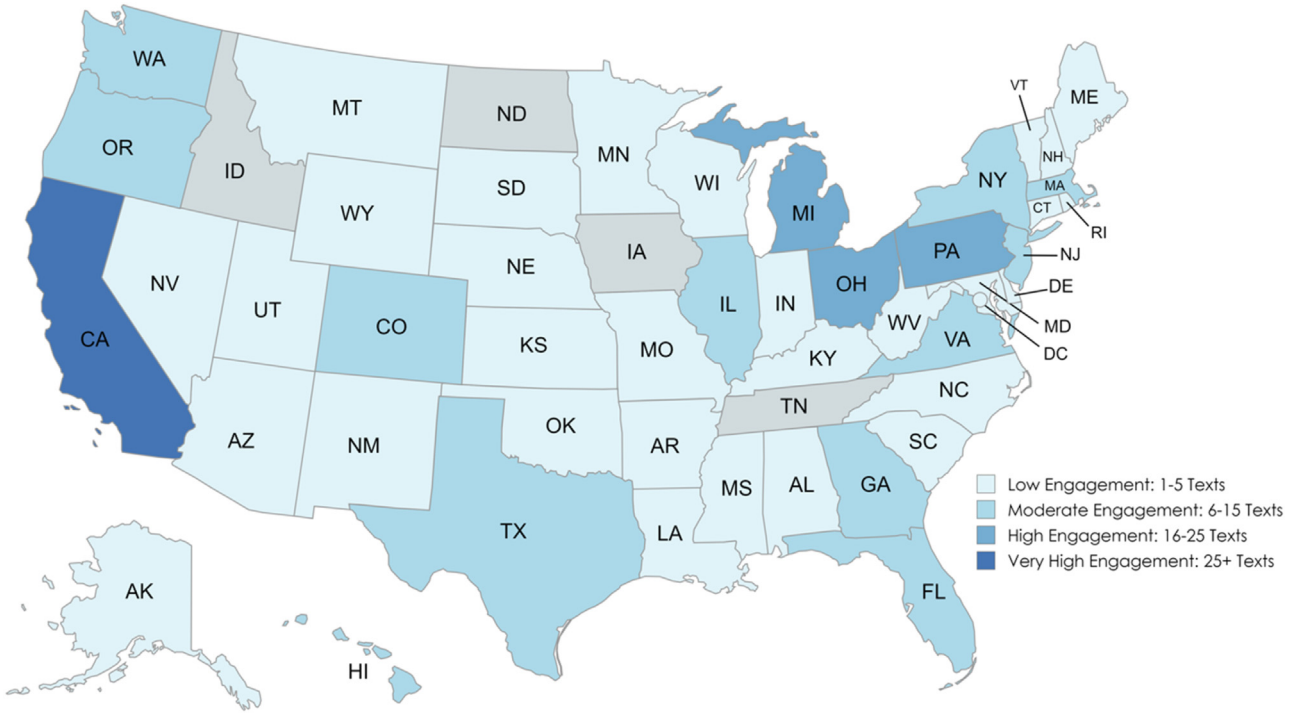

Fig. 1. Geographic distribution of Crisis Text Line conversations mentioning climate change across the contiguous United States.

themes were carefully refined to ensure they accurately reflected the underlying patterns and aligned with research objectives.

Texter severity classifications identified in this analysis were developed to assess the level of distress and risk expressed by texters, ranging from general distress to acute suicidal ideation. Severity levels were categorized as "General Risk," "Moderate Risk," "Suicidal Without a Plan," and "Suicidal with a Plan." These classifications were based on the presence and intensity of emotional, behavioral, and contextual markers within the conversations. Emotional cues (e.g., expressions of hopelessness, anxiety, or fear) were combined with behavioral indicators (e.g., references to self-harm or suicidal ideation) and contextual factors (e.g., the relationship between climate-related concerns and other stressors such as political unrest or personal crises) were used to evaluate the severity of distress and risk. "General Risk" texters demonstrated signs of distress or concern without acute or immediate risk, while "Moderate Risk" texters showed more pronounced emotional distress, often linked to mental health struggles like depression or anxiety. Texters classified as "Suicidal Without a Plan" expressed suicidal thoughts, but did not describe a specific course of action, indicating a serious risk level but without immediate intent. Texters identified as "Suicidal with a Plan" demonstrated clear suicidal ideation and an outlined specific and actionable plan, representing the highest level of severity. These classifications were derived through a collaborative, iterative process involving multiple researchers who reviewed each conversation transcript, ensuring that the severity levels were consistently applied based on established thresholds for mental health risk, as outlined in the literature [47,48].

3. Results

Of the 337 text transcripts mentioning climate change, 294 transcripts from unique CTL users were included in the final analysis. We excluded 43 conversations that did not meet our inclusion criteria. Specifically, we excluded conversations where climate change was mentioned casually or in unrelated contexts (e.g., geographic relocation), but was ultimately unrelated to the texter's reason for seeking help. Conversely, conversations were included if climate change was identified as a contributing factor to the texter's distress or as interconnected with other social issues affecting mental health (e.g., political unrest, the COVID-19 pandemic), even if it was mentioned only briefly. This approach ensured inclusion of conversations reflecting genuine climate-related concerns while excluding incidental or irrelevant mentions..

Most texters were 14–24 years (64.6 %), White (61.4 %), self-identified as a girl/woman (48.4 %), heterosexual (35.1 %), resided in the Western U.S. (29.8 %) and were characterized by moderate risks (34.0 %) (Table 2). The geographical distribution of texters revealed a notable concentration in California, as illustrated in Fig. 1.

Through our combined deductive and inductive coding approach, three distinct emotional response groups were identified: (1) Eco-anxiety, (2) General Climate Awareness, and (3) Fatalistic Future Outlook. Original codes for emotional responses like climate worry, solastalgia, climate aggravation, and eco-grief were absorbed into the larger emotional response of eco-anxiety due to their overlapping nature (see Supp. Figure 1). These distinct emotions were often reported together, leading to the broader term eco-anxiety. Some conversations were tagged with more than one emotional response. This overlap reflects the complex nature of crisis communication, where multiple emotional states may coexist within a single transcript.

Eco-anxious texters were typically aged 14–24 (63.2 %), predominantly White (67.3 %), female (52.6 %), heterosexual (36.7 %) or bisexual/pansexual (26.5 %), and resided in the West (28.4 %). Among generally climate concerned texters, a larger proportion were aged 14–24 (66.2 %), primarily White (53.7 %), identified as female (42.9 %), "Other sexual orientation" (30.7 %), heterosexual (37.1 %), and resided in the West (30.9 %). Most fatalistic future texters were 14–24 (66.3 %), White (61.3 %) or "Other ethnicity" (24.0 %), female (43.8 %), heterosexual (37.1 %) or "Other sexual orientation" (27.1 %), and resided in the Midwest (26.7 %) or the West (26.7 %). A small proportion of texters had a plan to complete suicide (14.3 %), the majority of which were in the general climate concern (19.3 %) or fatalistic future outlook (18.1 %) groups.

Table 3
Key characteristics of emotional response groups.

Emotional Response Group	Climate Change as a Leading Stressor	Emotional Responses	Existential Fear/Fatalistic Outlook	Productive Action
Eco-Anxiety	Climate change is often identified as a primary source of distress, though other stressors like politics and COVID-19 may also be mentioned.	Strong emotional reactions, including panic/anxiety, depression, and feelings of hopelessness or helplessness.	Anxious undertone with existential fear about the future, but no suicidal ideation.	Texters are often open to taking productive climate actions and may already be engaged in pro-environmental activities.
General Climate Concern	Climate change is mentioned alongside other stressors (e.g., politics, societal impacts), but not as the primary source of distress.	General negative sentiment with some stress, but not climate-specific	No existential fear; the sentiment is more about general concerns rather than climate change alone.	Some texters, particularly younger individuals (14–24), view climate change as motivating, expressing hope and a positive outlook on pro-environmental actions. Relationship issues are also frequently discussed.
Fatalistic Outlook Towards the Future	Climate crisis is cited as the primary or sole reason for distress and suicidal thoughts.	Mention of suicidal ideation, self-harm, isolation, loneliness, helplessness, and hopelessness.	Strong fatalistic outlook with a belief that climate change will lead to inevitable negative outcomes. Existential questions about life's purpose and societal responses.	Limited productive action, with focus on distress and existential questioning rather than positive engagement.

Chi-square tests revealed no significant differences in emotional responses by age (p = 0.5489), sexual identity (p = 0.6362), or geographic region (p = 0.3187). However, significant differences were observed by race and ethnicity (p = 0.0005), gender (0.0062), and texter risk severity (p = 0.0035). For example, White texters were more likely to report eco-anxiety (67.3 %), while Black texters were more represented in fatalistic future outlook (10.5 %) compared to other emotional responses. Hispanic texters showed a more balanced distribution across emotional response categories. Girls/women had the highest proportion of texters experiencing eco-anxiety (52.6 %) compared to boys/men (22.2 %), while transgender texters were most likely to report general climate concern (10.0 %) than eco-anxiety or fatalistic future outlook.

3.1. Emotional responses to climate change

The following findings reveal several key themes related to texters' emotional and psychological responses to climate change, their coping mechanisms, and actions motivated by climate concerns (Table 3).

3.1.1. Eco-Anxiety

Texters experiencing "eco-anxiety" identify climate change as a significant stressor impacting their mental health. They exhibit strong emotional responses tied to the climate crisis, including fear (42.9 %), depression (39.0 %), and feelings of helplessness (22.0 %) or hopelessness (47.3 %) (Fig. 2).

The quotations provided here and in the following sections are representative examples from individual texters.

> "I'm terrified of the irreversible climate change problem and I feel very helpless and hopeless about life right now."

> ". . .I have all these anxious and depressed thoughts about climate change that are making my stomach hurt."

> "They're just like 'huh that's weird, it's almost 60 in December' and then I feel like a crazy person for feeling impending doom about it."

3.1.2. General climate concern

Texters with "general" climate awareness perceive climate stress as productive and/or secondary to other dominant stressors. Climate change may appear as an intrusive thought or a background concern rather than the primary reason for seeking support. Climate change is often mentioned alongside other significant stressors, indicating it is part of a broader context of worry (Fig. 2). Depression (57.8 %) and anxiety (39.8 %) were more frequently reported among individuals in the climate concern group.

> "Everything seems so awful right now. Covid. . . climate change. . . the guy I love doesn't love me back."

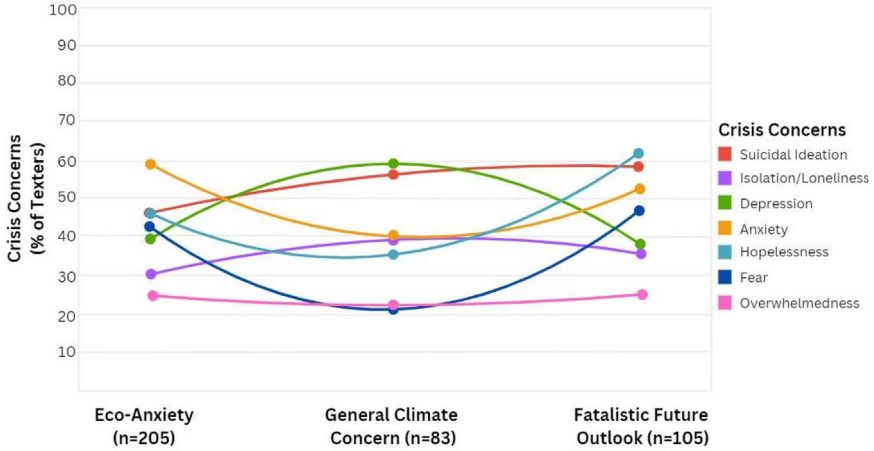

Fig. 2. The prevalence of crisis concerns for texters identified in the eco-anxiety, general climate concern, or fatalistic future outlook groups.

"But hopeless all around. The state of this country, the world, climate change, BLM [Black Lives Matter], people, the virus [COVID-19], it's all so much & in the grand scheme of it all I feel nothing matters."

Many texters were generally concerned about the climate change crisis, which often intertwines with other life stressors, creating a snowball effect, compounding their overall mental health and well-being.

"...world events/things like climate change have been intruding my thoughts and whenever they do I just go 'no I can't think about that' and just kind of turn off."

"Sometimes I feel like I need to take personal responsibility for things like Covid or climate change or Ukraine or abortion rights... I just feel so insignificant and scared."

3.1.3. Fatalistic future outlook

Texters in this category perceive the climate crisis as a compelling reason for contacting CTL, often expressing a lack of productive thinking or "good stress." Instead, their interactions revealed a deep-seated desire to cease existing, due to fear of the future or a belief that their absence could mitigate climate impact. They express trepidation regarding the planet's longevity and sustainability, and concern for future quality of life, underscoring the existential anxiety associated with climate change (Fig. 2). For this group, hopelessness (61.0 %) and suicidal ideation (59.1 %) were the most prevalent crisis concerns.

"The most effective way I can fight climate change is by not being alive."

"Nothing can help me, I just want my life to be over. Climate change will slowly kill us anyway. What's the point in living on a planet that's dying?"

"It's not just the planet it's all these kids being born today are gonna have to see the end of the world... Maybe even I might not see it."

"It's hard for me to find meaning when I might be dead in 40 years because of global warming or natural disasters."

3.2. Cross-cutting themes

Beyond the three primary emotional responses identified, our analysis uncovered several cross-cutting themes that further illuminate the experiences of texters. Many texters expressed feelings of overwhelm and helplessness, grappling with not only climate-related stressors but also external pressures stemming from societal and structural factors, such as media coverage and political dynamics. Texters frequently felt overwhelmed by climate stressors and other life stressors. Many texters felt immense pressure to contribute to solving climate change, but often questioned the impact of their efforts to address climate change. Text conversations highlighted how climate concerns were intertwined with broader stressors, amplifying their overall stress.

"The injustices of this world are depressing... From climate change, wars, homelessness, social economic environmental inequities.

"Everything from mass shootings, to ...a potential ban on TikTok, to LGBTQ+ rights being stripped from people, to women's rights being taken away, to extreme weather caused by climate change. It just honestly feels hopeless to be here."

The overwhelming nature of the climate crisis, coupled with other stressors, frequently led to feelings of helplessness and despair among texters. Younger texters often exhibited higher levels of stress, overwhelm, and a deep sense of responsibility and urgency to address climate change. Some texters, despite their positive intentions and active engagement in climate activism, felt that their individual efforts were insufficient against the global crisis.

"It just makes me so sad that we are ruining this beautiful earth... I feel extremely pressured to come up with a solution because no one else seems to be taking action and it's just a lot of pressure to have on me."

"I do what I can, but there's so much that needs to change that I can't do alone. It feels like there's no point in doing anything."

"I want to be a part of a revolution but I'm scared... I don't feel like I will be happy unless a renewable future is secured ... I have emailed numerous restaurants and supermarkets locally to encourage plastic alternatives to no avail (republican state)."

"All i can do right now is try to cut down plastic intake but my family doesn't cut down... The planet is dying because i couldn't do enough."

"I can organize protests and meetings and education sessions but I dont know if I will be able to help stop the crisis."

"But either way I feel very insignificant and small in fighting this no matter how many people I get to come along with me."

Additionally, the conversations revealed various coping strategies and a strong desire for pro-environmental action, highlighting the interconnectedness of emotional responses and the broader context in which these concerns manifest. Texters employed interpersonal support methods and adaptive diversion strategies to constructively redirect attention away from stressors, helping them to manage their anxiety and maintain psychological well-being. CTL counselors are trained to recommend coping strategies that align with texters' unique needs, strengths, and interests. These strategies often involve evidence-based techniques such as grounding exercises, mindfulness practices, and reframing negative thoughts. Counselors work collaboratively with texters, tailoring their suggestions based on the texter's feedback and engagement during the chat. This interaction allows texters to explore and adapt strategies in real time, often leading to deeper discussions about how these techniques can be integrated into their daily lives. The dynamic and personalized nature of these exchanges helps foster a sense of agency and resilience in texters. Crisis counselors also play a pivotal role in mitigating feelings of isolation by reflective listening and validating texters' emotions and normalizing their concerns as understandable responses to the challenges posed by climate change. Fig. 3 shows common coping strategies identified by texters and crisis counselors.

3.3. Pro-Environmental action

Texters demonstrate how their climate change concerns can motivate pro-environmental action, serving as good stress and creating opportunities for proactive approaches to addressing climate change.

"I am part of a global network for teens fighting climate change."

"I do organize mothers around climate change and work at an environmental org so I'm of the mindset that people can change things and I have seen that happen..."

Fig. 3. Common texter- and counselor-identified coping mechanisms for distress management.

3.4. External and social-structural stressors

Youth across the three groups experience heightened emotions triggered by external stressors intersecting with socio-political, economic, and personal factors, contributing to significant climate distress (Table 4).

Texters interacted with climate change coverage, whether intentionally or incidentally, via various media platforms, such as news channels and social media networks. The pervasive nature of climate news contributes to their anxiety and feelings of being overwhelmed, reflecting its dual role in shaping individual perceptions and broader societal narratives

Table 4
External stressors contributing to climate distress.

Political and Governmental Factors	Social and Identity-Related Stressors	Media and Technology Influences	Environmental and Economic Stressors
Politics/presidential election	Racism and discrimination	News/media reports	Extreme weather events
Government inaction	Sexual identity	Social media	Economic stressors
	Anti-LGBTQ legislation	Technology (e.g., artificial intelligence)	COVID-19 pandemic

"I have read some terrible articles about how climate change will ruin humanity soon and I am spiraling horribly."

"It doesn't help seeing all of the news coverage about this terrible heat, warming oceans, etc. I try to avoid news and social media but it feels like I can't escape it."

"I just saw a bunch of posts on Instagram about how climate change is going to cause the world to end and everything. . ."

Texters discussed extreme weather events as tangible manifestations of climate change in their daily lives, experienced both locally and globally.

"The world state has me triggered. Famines. Droughts. Crazy weather. . ."

"There are so many terrible things happening like climate change and hurricanes. . ."

"It's really hot out where I am. . . and hot weather at this time of year is really scary."

4. Discussion

In our thematic analysis of Crisis Text Line conversations, texters expressed significant emotional responses to climate change, revealing three distinct groups: Eco-anxious, General Climate Concern, and Fatalistic Future Outlook. Themes highlighted the tangible impacts felt by extreme weather, the exacerbating role of media coverage, and the interplay between climate change and other life stressors. Texters used various coping strategies for climate-related distress, including social support, creative and nature-based activities, positive information consumption, and professional resources like CTL. Counselor-recommended techniques, such as grounding exercises and journaling, also helped manage emotional well-being. Understanding these themes can inform targeted support strategies and interventions, especially for those expressing fatalistic views or deep despair related to intensifying climate events.

Findings revealed differences in climate-related emotional responses and may reflect how lived experiences, societal influences, and identity shape reactions to climate stressors. While eco-anxiety, general climate concern, and fatalistic future outlook were experienced similarly across age, sexual identity, and geographic regions, variations by race, ethnicity, gender, and risk severity may underscore systemic inequities influencing emotional wellbeing. These observed patterns suggest that demographic groups may experience and report climate-related emotional responses differently, potentially reflecting varied vulnerabilities, coping mechanisms, and lived experiences. More research is needed to fully understand these disparities and their implications for mental health.

A systematic review of crisis hotlines found that suicidality and depression are among the most common reasons for seeking these services [49], consistent with prior research showing that texters to CTL at risk for suicide frequently report depression [50]. Our findings align with these trends, revealing a high prevalence of depression, particularly within the General Climate Concern group. Suicidality was also prevalent across all groups, with the highest proportion observed in the Fatalistic Future Outlook group, highlighting the profound psychological distress associated with feelings of hopelessness about climate change. These patterns emphasize the need for targeted support strategies addressing both depressive symptoms and suicidal ideation in climate-related contexts.

Feelings of climate anxiety and distress are argued to be healthy responses to the existential threat of climate change [51] and are linked to increased civic engagement, pro-environmental activism, and community resilience [52,53]. Prior research has cited anger, sadness, guilt, and helplessness as common emotions in response to climate change anxiety [7,32]. These emotions can motivate adaptive responses and collective action, demonstrating that activism can be a constructive outlet for channeling positive stress [31–34,54,55]. Pro-environmental behavior has been an effective mental health promotion tool in adults and youth [56].

Emerging research warns that maladaptive eco-anxiety can involve excessive worry, hopelessness, fear, and overwhelm [55,57]. Young people need resources to manage climate-related distress effectively for both mental and planetary health. A recent review found limited, but positive evidence for local interventions combining mental health promotion with disaster preparedness, resilience building, and community cohesion [58]. While texters identified coping strategies such as engaging with global youth networks, organizing locally, and spending time outdoors, persistent research gaps remain in understanding the resources needed to support youth mental health and climate resilience.

Children and adolescents may be particularly vulnerable to climate anxiety due to rapid cognitive development, greater exposure to climate threats, negative repeated media portrayals, and limited influence on policies, with factors like socioeconomic status and geography also affecting resilience [21]. In this sample of texters, politics, especially government inaction, were frequently cited as contributing to climate distress among eco-anxious and fatalistic texters [2].

The majority of texters in our sample were aged 14 - 24, reflecting broader findings that young people are more likely to use text-based crisis services due to their accessibility, perceived anonymity, and alignment with digital communication preferences. Our findings also underscore the need for age-appropriate resources and spaces where young people can explore climate-related distress in constructive ways. We recommend developing additional resources that, where possible, are co-designed by youth and that integrate crisis response tools with structured opportunities for peer connection that may include virtual discussion groups moderated by mental health professionals, school-based programs, and digital apps focused on fostering emotional resilience and community engagement.

4.1. Somatic connection to climate change

Stress responses can both aid and hinder climate adaptation, with the nervous system shifting between "fight" (defeat the threat), "flight" (escape the threat), and "freeze" (inability to defend oneself or outrun the threat) modes. In our analysis, productive climate action represented the "fight" response, while a fatalistic outlook embodied "flight" and "freeze" responses. Extended periods in the "freeze" state can numb individuals to stress, impeding wellbeing and action. Mindfulness practices, already used in Crisis Text Line, plays a crucial role in managing eco-anxiety, building resilience, and fostering proactive engagement [59,60]. These practices empower

individuals to navigate eco-anxiety and other forms of climate-related distress by grounding them in the present moment and fostering a sense of agency [61,62]. Recent research supports the role of mindfulness in addressing the psychological impacts of climate change. For instance, contemplative practices help mitigate rumination and promote adaptive coping mechanisms, which are particularly beneficial for managing chronic stressors such as climate worry [63,64]. Mindfulness-based interventions have also been linked to increased resilience by enhancing self-compassion, reducing distress, and fostering hope, even in the face of overwhelming environmental challenges [65,66]. Enhanced training for crisis counselors in mindfulness techniques could better support texters dealing with climate-related emotional challenges and suicidal ideation. These techniques could reduce the intensity of overwhelming emotions and promote cognitive flexibility by reducing the rigidity of a fatalistic mindset and reframing negative thoughts. By integrating mindfulness into crisis interventions, counselors can better equip texters with skills to navigate climate anxiety while reducing the risk of escalation to severe emotional distress.

Given the high levels of distress identified in our study, tailored mental health interventions are essential. For individuals at severe risk, such as those who have considered or planned suicide, immediate crisis interventions like suicide prevention hotlines, access to trained counselors, and emergency mental health services are critical. These interventions should prioritize safety, and stabilization, leveraging trauma-informed approaches through digital or in-person platforms [67,68]. In contrast, texters at "general risk" may benefit from preventive strategies, including psychoeducation, mindfulness, and community support, to build resilience and mitigate eco-anxiety [63]. CTL employs a stepped-care model, where texters are triaged based on their level of distress. This model helps to ensure that those at severe risk receive the most immediate care, while those at lower risk are supported through preventive strategies. Additionally, interventions must be culturally competent, accessible, and address intersectional challenges like race, socioeconomic status, and geographic disparities [69].

4.2. Strengths and limitations

Most studies on eco-anxiety have used structured surveys with standardized response options (e.g., climate worry scale [7], climate change anxiety scale [14,15]). While these methods are useful for quantifying trends, reflexive thematic analysis provides a qualitative, flexible approach for exploring in depth, context-rich insights into how individuals experience and articulate their climate concerns. Texters included in this study represent a convenience sample who self-selected into digital crisis support, which may not represent the broader population. Findings should be understood as reflective of this group's experiences and not generalizable to all texters. Additionally, a limitation of this study is that we focused solely on the keyword 'climate change,' which may have resulted in missed texts that used related terms such as extreme weather, heat waves, storms, and other climate-related issues. Furthermore, there is the potential for age bias, as older individuals may be less likely to utilize a text-based medium for crisis support compared to younger generations, which could influence the representativeness of our sample.

4.3. Future research

Digital platforms can play a critical role in understanding the impact of climate change on mental health among young people. Future studies employing natural language processing can categorize themes like eco-anxiety and coping strategies by focusing on specific climate hazards or events. Real-time surveys through digital platforms can gather data on young people's reactions to extreme weather and target specific demographics or locations. Additionally, Artificial Intelligence and machine learning can analyze sentiment in text-based conversations to identify emotional patterns and identify urgent intervention areas. These platforms can provide resilience-building resources like mindfulness and coping strategies, to better manage climate-induced stressors and maintain well-being amidst environmental and societal uncertainties.

5. Conclusion

This study highlights the pervasive impact of climate change on mental health, particularly among young people using a digital crisis text line. Findings reveal a range of responses from eco-anxiety to adaptive coping strategies and pro-environmental engagement. The prevalence of climate-related stressors underscores the need for targeted interventions and support systems to mitigate the psychological harm brought on by intensifying climate events. Integrating mindfulness practices and enhancing crisis counselor training to address eco-anxiety and fatalistic outlooks can improve support for those facing climate-related distress.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Jennifer D. Runkle: Writing – review & editing, Writing – original draft, Supervision, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Kelsey Herbst:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Conceptualization. **Sophie Ryan:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis. **Kelly Sewell:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis. **Ashley Mallare:** Writing – review & editing, Writing – original draft, Formal analysis. **Ian Berry:** Writing – review & editing, Writing – original draft, Formal analysis. **Emma Getz:** Writing – review & editing, Writing – original draft, Formal analysis. **Arden McKee:** Formal analysis. **Martie P. Thompson:** Writing – review & editing, Writing – original draft. **Margaret M. Sugg:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Funding acquisition.

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Supplementary materials

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