TYPHOON-RELATED ANXIETY AND COPING STRATEGIES AMONG RESIDENTS OF FLOOD-PRONE AREAS

Charles Vincent Chan
Psychology Department
School of Education, Criminology, Arts and Psychology
University of Saint Louis
Tuguegarao City, Philippines

Rochelle Faye Corpuz
Psychology Department
School of Education, Criminology, Arts and Psychology
University of Saint Louis
Tuguegarao City, Philippines

Ma. Carmella Mallabo
Psychology Department
School of Education, Criminology, Arts and Psychology
University of Saint Louis
Tuguegarao City, Philippines

***Abstract*— In our region, the threat of typhoons is an inevitable part that we face, often resulting in widespread devastation of financial losses and the destruction of homes, businesses, or personal belongings. This study aims to assess the typhoon-related anxiety and coping strategies among residents of flood-prone areas. The researchers aim to explore the experiences of the residents in dealing with anxiety related to climate change, assess the nuanced aspects of the mental health of individuals across their demographic profile, and acknowledge their coping strategies and the manifestation of anxiety towards typhoon-related anxiety, specifically during the flood. A total of 60 participants participated in the study and revealed that the respondents demonstrated great differences in climate change anxiety among sex and different income brackets. The results indicate that women showed higher levels of concern towards climate change anxiety. Furthermore, data implies that lower levels of climate change anxiety are associated with cognitive-emotional impairment, functional impairment, and behavioral engagement among respondents with lower income brackets, leaving the respondents in higher income brackets to have higher levels of climate change anxiety. The findings of qualitative data revealed that the coping strategies among the flood-prone residents vary among individuals, which plays a vital role in the healthy management of stress. The other one is negative coping strategies, which may lead to unhealthy ways to cope with the challenges.**

Keywords— ***typhoon-related anxiety, climate change, flood-prone areas, coping mechanisms***

I. INTRODUCTION

Long-term changes in weather patterns and temperatures are referred to as climate change. Climate change stands as one of the most pressing problems today due to its far-reaching impacts that significantly affect people worldwide, due to the contribution of human activities that cause consequences that include intense droughts and heat waves, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms, and declining biodiversity (United Nations, 2013). Not every instance of severe weather in the past can be explicitly connected to climate change; future weather-related natural disasters will likely be increasingly associated with climate change (Masson-Delmotte et al., 2018).

In recent decades, the accelerating effects of climate change have become increasingly evident, imposing a spectrum of challenges on the mental health of an individual (Fountain, 2019). Studies investigating climate anxiety across demographic characteristics reveal variations, with women and younger individuals exhibiting higher levels, and it is associated with impaired daily functioning and hindered adaptation to climate change (Heeren et al., 2022). Moreover, research on environmental degree students underscores their heightened levels of climate anxiety and their inclination towards problem-focused coping strategies, necessitating effective coping strategies and future planning to address climate-related distress (Daeninck et al., 2023). According to Berry et al. (2018), the psychological impact of climate change on all ages in flood-prone areas is a critical aspect that warrants attention, and exposure to repeated environmental stressors during formative years may have lasting effects on mental health, influencing future generations. Investigating this aspect can contribute to a comprehensive understanding of the multi-generational impact of climate change.

Climate change not only poses threats to physical health but also to psychological well-being, with documented harmful impacts on mental health and social relations stemming from exposure to extreme weather events associated with climate change (Clayton, 2020). Recent attention has focused on climate anxiety, recognizing it as a genuine phenomenon deserving clinical attention, although the distinction between adaptive and maladaptive levels of anxiety is crucial (Clayton, 2020). Concurrently, eco-anxiety, distress arising from concerns about the future due to climate change, has been subject to scholarly review, highlighting the need for further research, particularly in non-Western contexts, to understand its impacts on vulnerable groups such as Indigenous peoples and youth (Coffey et al., 2021). The economic strain can further exacerbate mental health issues in vulnerable communities. It also intersects with existing social inequalities, disproportionately impacting marginalized communities. Vulnerable populations, such as those with lower socioeconomic status, may lack the resources to cope with the aftermath of extreme weather events, leading to heightened

stress and mental health challenges (Bullard, 2018). These factors on mental health were linked to climate change anxiety, as the individual experiences changes in the environment, which may have a psychological impact on their lives (Dodds, 2021). The changes of climate change, specifically typhoons, affect the mental health of individuals that contribute to their typhoon-related anxiety. One of the studies showed that across all ages, experiencing climate change anxiety during hazardous events leads to intrusive worrying, fear, depression, and other behavioral impairments (Reyes et al., 2021).

The Climate Change Vulnerability Index 2021 ranks the Philippines as the 17th most affected country globally by extreme weather events, highlighting the nation's susceptibility to the impacts of climate change and that the Philippines is at high risk of experiencing increased frequency of extreme weather events such as heat, intense rain, or the aftermath of a typhoon that causes floods. These factors have been linked to mental health. A study discovered that climate anxiety can vary by region, reflecting the distinct climate change challenges faced by Filipinos. This variation arises from differences in the types, severity, and perceived impacts of climate hazards. For instance, Filipinos living in low-lying areas prone to flooding might experience climate anxiety differently than those in agricultural communities dealing with droughts, regions frequently affected by typhoons, or cities that often endure severe flooding. (Aruta et al., 2022). There is also a notable scarcity of research exploring how family size influences the levels of anxiety experienced during evacuations prompted by typhoons, as well as in the aftermath of such natural disasters (Ashenefe et al., 2017).

Typhoon Yolanda affected 5.9 million people, and most of them were farmers, fishers, and informal sector workers whose livelihoods were destroyed, lost, or disrupted, and their homes (OCHA/UNEP 2014). It exacerbates mental health problems linked to climate change anxiety more frequently reported than physical injuries after typhoon Yolanda (Hugelius et al., 2017). At the present condition of the Philippines, North Luzon, especially the Cagayan Valley Region 2, is one of the landfalls of many typhoons, and it corresponds to the aftermath of flooding due to overflow of Cagayan River main streams. According to Fernando Siringan, a former director of the University of the Philippines Marine Science Institute (UP-MSI) (2020), the region serves as a catch basin of water from surrounding mountain ranges, and both water and sediments from the mountains cause the rivers to overflow, prompting floods along the region.

A prominent affected area in Cagayan is Tuguegarao City. Tuguegarao City is classified as a landfall of typhoons and often experiences heavy rainfall, according to the Tuguegarao City Government 2016. In the study of Donato (2020), Barangay Linao East, Tuguegarao City, being a low-lying area, experienced multiple times of massive floods in recent years, showing that this area serves as a catch basin. The Barangay Linao, in the year 2019, was included in the list of most affected areas by floods because of continuous rains spawned by the Northeast Monsoon or Amihan (Tumab, 2019). According to the report of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) (2020), Cagayan has suffered a triple hit, typhoons Quinta, Rolly, and Ulysses, that caused massive floods that affected the residents in low-lying areas, including the Barangay Linao. In 2020, typhoon Ulysses brought heavy rainfall, causing the rivers to overflow. Barangay Linao East has been submerged for three days (PONSOY/GMA, 2020).

Given the present condition of climate change in Tuguegarao City, which often experiences flooding that exacerbates typhoon-related anxiety, the research study delves into assessing typhoon-related anxiety among the flood-prone residents of Tuguegarao. As typhoon-related events become more frequent and severe, the aftermath of typhoons, specifically flooding, means individuals in vulnerable regions like Barangay Linao face not only the immediate threats posed by flooding but also the long-term, insidious impact on their mental health and way of life.

II. METHODS

This study used a descriptive design to investigate residents' experiences dealing with typhoon-related anxiety from climate change. The study included adult residents who are currently residing in Barangay Linao East and Annafunan West, Tuguegarao City, Cagayan. In selecting the respondents, the researchers utilized a cluster sampling technique to provide in-depth and detailed information about their experiences and evaluate the effects of climate change on the mental health of the residents. This allowed all residents from Linao East and Annafunan West an equal chance to be part of the study. Further, this will ensure that the population will be accurately presented. Furthermore, an inclusion criterion will be used: (1) The respondent must be a bona fide resident of Barangay Linao East and Annafunan West, Tuguegarao City, Cagayan. (2) The respondent must have experienced the recent flooding in the area. (3) The respondent must be between the ages of 18 and above; and (4) The respondent must agree to participate in the study.

The researchers employed the modified Climate Change Anxiety Scale developed by Clayton and Karazsia (2020), a 13-item instrument designed to evaluate climate change anxiety as a psychological reaction to climate-related concerns. The scale is comprised of two subscales: the Cognitive Impairment Subscale, which includes eight items such as "Thinking about climate change makes it difficult for me to sleep," and the Functional Impairment Subscale, which contains five items such as "I have problems balancing my concerns about sustainability with the needs of my family." Participants rated the frequency with which these statements applied to them using a 5-point Likert scale, where 1 represented "never" and 5 indicated "almost always." Scores for each subscale can be computed separately, and an overall score can also be

derived. It is important to note that the tool used is modified to fit in the focus of the study. In the interview part of the study, the researchers formulated 6 questions with follow-up questions that unveiled the experiences of respondents of Barangay Linao East and Annafunan West in the recent flooding. The interview will be conducted using an interview guide composed of questions constructed by the researchers. The interview will allow the researchers to examine viewpoints and gather significant feedback on the respondents' experiences. The questionnaires that are formulated will be instrumental in unveiling the effects of the recent flooding, as well as providing insights into the experiences of the respondents who have experienced the flooding.

The researchers ensured that ethical considerations were strictly employed. An informed consent was given to the respondents prior to the conduct of the data gathering and an assurance that every data pointed collected from this study is kept confidential. The researchers also guaranteed that the concerns and queries of respondents were immediately addressed. The anonymity of the respondents was also preserved. The researchers also informed the respondents about their right to withdraw at any time.

III. RESULTS AND DISCUSSION

Table 1. Demographic Profile of the Respondents

Profile Variables	Frequency	Percentage
Age		
18 years old and below	4	6.70
19-24 years old	6	10.00
25-30 years old	5	8.30
31-36 years old	10	16.70
37-42 years old	15	25.00
43-48 years old	4	6.70
49-57 years old	10	16.70
58 years old and above	6	10.00
Sex		
Male	20	33.30
Female	40	66.70
Family Size		
4 and below	5	8.30
4-6 members	42	70.00
7-10 members	13	21.70
Civil Status		
Single	16	26.70
Solo Parent	8	13.30
Married	28	46.70
Widow	6	10.00
Widower	2	3.30
Occupation		
Unemployed	22	36.70
White Collar Job	8	13.30
Blue Collar Job	30	50.00
Socioeconomic status		
Less than 9,000	30	50.00
9,000-18,000	12	20.00
18,000-36,000	8	13.30
None	10	16.70

The survey encompassed responses from a total of 60 individuals, revealing distinct demographic patterns within the sample. Predominantly, the respondents were female, indicating a higher participation rate among women. The age distribution skewed towards the 37-42 age bracket, suggesting a notable representation of this demographic group. Family size tended towards 4-6 members per household, indicating a commonality in this familial structure among respondents. Additionally, the majority of participants were married, indicating a prevalence of married individuals in the survey pool. Occupationally, blue-collar jobs were most prevalent among respondents, reflecting the composition of the workforce within the surveyed population. Moreover, a significant portion of respondents reported a monthly income below 9,000 units of currency, indicating a predominance of individuals within the lower income bracket.

Table 2. Level of Climate Change Anxiety of the Respondents

Dimensions	Mean	Description
Cognitive Emotional Impairment	3.12	Moderate
Functional Impairment	2.68	Moderate
Personal Experience of Climate Change	4.42	Severe
Behavioral Engagement	4.11	Severe
Overall Mean	3.58	Severe

Table 2 shows the level of climate change anxiety of the respondents. Based on the weighted mean per subscale, respondents showed moderate levels of climate change anxiety in cognitive-emotional impairment and functional impairment, with cognitive-emotional impairment having a mean of 3.12 and functional impairment with a mean of 2.68. Moderate levels of impairment in both cognitive-emotional and functional domains indicate that climate change anxiety is significantly impacting individuals' thoughts, emotions, and behaviors, making it difficult for them to function optimally in their daily lives. Conversely, the table shows the severe level of climate change anxiety of the respondents in terms of personal experience of climate change and behavioral engagement. Personal experience with climate change had a mean of 4.42, and behavioral engagement had a mean of 4.11. Severe levels of personal experience of climate change and behavioral engagement in the CCAS indicate that individuals have been profoundly affected by climate change and are deeply involved in efforts to address it. These individuals may have experienced significant disruptions and challenges due to climate change. But they are also actively working to address the issue

through their actions and engagement with the broader community.

The table shows the level of climate change anxiety of the respondents on the four subscales of the climate change anxiety scale. It shows that they have a moderate level of cognitive-emotional impairment with a mean of 3.12, which is slightly higher than functional impairment. This suggests that individuals are experiencing a notable degree of anxiety and distress related to climate change, specifically flooding, but it may not be severe enough to significantly impair their daily functioning or overall well-being.

The results also presented that the respondents show a moderate level of functional impairment, with a mean of 2.68 being the lowest level of climate change anxiety from the respondents. This implies that climate change anxiety is interfering with the individual's ability to perform daily activities and engage in their usual roles and responsibilities. This might include difficulties in work or school performance, disruptions in relationships or social interactions, or decreased participation in activities they once enjoyed. It indicates that climate change anxiety is having a tangible impact on various aspects of their life functioning.

The severe levels of personal experience of climate change indicate that individuals are profoundly impacted by climate change on an emotional level, with a mean of 4.42. They likely experience intense feelings of fear, sadness, or anger in response to climate change and perceive it as a significant threat to their well-being and the world around them. It may lead to behavioral changes, such as adopting sustainable practices or advocating for action, and can also result in heightened emotional distress, such as stress, anxiety, or depression.

The respondents experience severe levels of behavioral engagement in the climate change The Anxiety Scale implies that individuals are highly active and involved in addressing climate change-related issues with a mean of 4.11. They are likely to be actively participating in efforts to mitigate climate change, such as adopting sustainable behaviors in their daily lives, advocating for policy changes, or participating in environmental activism. This level of behavioral engagement signifies a strong commitment to addressing climate change and taking concrete actions to combat its effects. It indicates that individuals are deeply invested in contributing to positive change and making a meaningful impact in response to climate change concerns.

The overall mean represents the average level of climate change anxiety across all the measured aspects. With a score indicating severity, it suggests that, on average, individuals are experiencing significant levels of anxiety related to climate change across various domains.

Table 3. Significant Difference in the level of Climate Change Anxiety of the respondents when grouped according to Demographic Profiles

Profile Variables	Cognitive Emotional Impairment	Functional Impairment	Personal Experience of Climate	Behavioral Engagement	Overall Mean
Age	.053	.275	.311	.074	.118
Sex	.008*	.248	.493	.154	.060
Family Size	.670	.921	.131	.406	.648
Civil Status	.156	.010	-	.357	.102
Occupation	.339	.114	.086	.056	.294
Income	.005*	.012*	.690	.002*	.012*

significant at .05 level

Table 3 illustrates the significant differences in the levels of climate change anxiety among respondents based on their profiles. The table reveals that there is a notable variation in climate change anxiety, particularly in the cognitive-emotional impairment subscale, when respondents are categorized by sex and income. Meanwhile, a significant difference also exists in the respondents' functional impairment and behavioral engagement when grouped according to income. Finally, as shown in the table above, there is a significant difference in income in the overall mean scores.

The analysis of Table 3 reveals significant variations in climate change anxiety levels among respondents based on demographic variables, notably sex and income. Specifically, differences in cognitive-emotional impairment related to climate change are observed in sex, suggesting varying perspectives or experiences among male and female respondents. Similarly, disparities in climate change anxiety are evident concerning income levels, with higher-income individuals exhibiting different levels of cognitive-emotional and functional impairment compared to their lower-income counterparts. Furthermore, income disparities are linked to differences in behavioral engagement with climate change, indicating that socioeconomic status influences individuals' responses to environmental challenges. The significant variation in overall mean scores across income levels underscores the overarching impact of socioeconomic factors on climate change anxiety perceptions. These findings highlight the nuanced interplay between demographic profiles and climate change anxiety.

These findings contradict the existing literature, which suggests that individuals with higher income levels typically experience lower levels of climate change anxiety (Ann, 2020). This relationship is often mediated by a sense of control, as wealthier households may perceive themselves as having greater capacity

to manage the impacts of climate change, resulting in reduced anxiety (Cornelius, 2023). Additionally, no significant differences were observed in the personal experience of climate change across the different demographic profiles of the respondents. Research suggests that personal experience in the Climate Anxiety Scale (CAS) may not have significant correlations due to the complex nature of climate anxiety and its measurement. Research indicates that personal experience of climate change is often problematically conceptualized and understood, impacting the assessment of climate anxiety (Paweł et al., 2022). Research has shown that the subscales of the Climate Anxiety Scale (CAS)—cognitive and functional impairment—are positively correlated with personal experiences of climate change, behavioral engagement, and environmental motives. In contrast, these subscales exhibit a negative correlation with climate change denial and a sense of safety (Marlis et al., 2021). Additionally, while personal experience of climate-related events can increase eco-anxiety and climate distress, it also leads to psychological adaptation and climate agency among young individuals (Joseph et al., 2020). Fewer studies have investigated whether personal experiences with extreme weather events impact perceptions of climate change. For example, preliminary research in the United Kingdom revealed no significant differences in climate change concern between individuals who had been affected by flooding and those who had not (Mudlo-Glagolska et al., 2022). Respondents frequently viewed flooding as a localized issue, attributing it to factors such as road resurfacing rather than connecting it to broader climate change impacts.

Table 3a. Significant Difference in the Level of Climate Change Anxiety of the Respondents along Cognitive Emotional Impairment when grouped According to Sex

Sex	Mean	df	t-value	p-value	Decision
Male	2.74	58	-2.726	.008	Significant
Female	3.31				

The statistical analysis in Table 3a highlights a significant difference in climate change anxiety and cognitive-emotional impairment between male and female respondents. Female respondents exhibit notably higher levels of cognitive-emotional impairment compared to male respondents. Consequently, the decision is made to deem this difference as this underlines the heightened climate change anxiety experienced by female participants compared to their male counterparts. This insight underscores the importance of gender-sensitive approaches in addressing climate change-related psychological impacts and tailoring interventions to better support individuals based on their sex.

Gender significantly influences cognitive-emotional responses to climate change. Research indicates that female respondents generally report higher levels of concern and negative emotions related to climate change, while male respondents tend to exhibit more optimism and confidence in governmental responses (Clayton et al., 2023; Marks, 2022). Women often show heightened concern about climate change and experience more intense negative emotions and pessimistic views about the future (Reyes et al., 2021). Additionally, studies have demonstrated that women and younger individuals are more susceptible to climate change distress, including feelings of anger, anxiety, and sadness, compared to men and older individuals (Bondell et al., 2018).

Table 3b.Post-Hoc Test Analysis on the Significant Difference in the level of Climate Change Anxiety of the respondents along Cognitive Emotional Impairment when Grouped According to Income

Income	Mean	Below 9,000	9,001.-18,000	18,001-36,000	None
Below 9000	3.25	-			
9001-18000	2.95	.295	-		
18001-36000	3.63	-.0377	-.673	-	
None	2.51	.733*	.438	1.111*	-

significant – higher than t-critical

The income-related data in the table presents mean scores for climate change anxiety among respondents grouped according to income. From the table, we observe varying levels of climate change anxiety along with cognitive-emotional impairment across income brackets. The post-hoc test analysis shows a significant level when comparing the data from respondents whose incomes are below 9,000 with respondents with no income. A significant difference can also be seen between respondents whose income is 18,001-36,000 and respondents with no income. Comparing these income groups, the difference in mean scores suggests that both respondents with higher and lower incomes experience cognitive-emotional impairment more than those with no incomes. Similarly, the comparison between respondents with incomes below 9,000 and those with no reported income (labeled as "None"), who are students, indicates a significant difference in cognitive-emotional impairment, with the latter group exhibiting a lower mean score, indicating that respondents with no incomes experience a lower level of cognitive-emotional impairment.

Research suggests that low socioeconomic status can hinder physiological and social adaptations to health stressors like climate change, potentially impacting how individuals cope with such challenges (Benoit et al., 2022). Respondents with no income may experience lower levels of climate change anxiety and cognitive-emotional impairment compared to those with established incomes for several reasons (Whitmarsh, 2022). Firstly, their focus on immediate concerns such as academic performance and personal development might prioritize other issues over broader existential threats like climate change (Corner et al., 2015). With limited financial responsibilities compared to individuals with established incomes, students may experience less stress, contributing to lower levels of cognitive-emotional impairment (Ryu & Fan, 2022). However, individual experiences within this diverse population may vary

based on factors such as environmental awareness and personal values.

Additionally, individuals living in areas with lower socioeconomic status may be more susceptible to posttraumatic stress symptoms (PTSS) after acute events like cardiovascular issues, which could serve as a mechanism linking climate change to adverse health outcomes (Bercht, 2019). Furthermore, the lack of financial capital and outdated policies are highlighted as structural barriers that impede individuals from translating their climate change concerns into proactive coping actions (Bowles, 2015). Addressing these mental barriers, integrating insights from cognitive psychology and neuroscience, and promoting early interventions to prevent PTSS could help mitigate cognitive-emotional impairment related to climate change among those with low income (Davidson, 2021 & Casey et al., 2023).

Table 3c. Post-Hoc Test Analysis on the Significant Difference in the level of Climate Change Anxiety of the respondents along Functional Impairment when Grouped According to Income

Income	Mean	Below 9,000	9,001.00-18,000.00	18,001-36,000.00	None
Below 9000	2.77	-			
9001-18000	2.27	.496	-		
18001-36000	3.25	-.483	1.979*	-	
None	2.45	.317	-.179	.800	-

significant – higher than t-critical

Analyzing the table, we discern varying levels of climate change anxiety across different income brackets. The post-hoc test analysis shows a significant level when comparing the data from respondents whose income is 9,001-18,000 with respondents with 18,000-36,000. Comparing these income groups, the difference in mean scores suggests that respondents from these income groups show strong significant differences. For instance, respondents with incomes between 9,001 and 18,000 demonstrate a mean score of 2.27, while those earning between 18,001 and 36,000 exhibit a notably higher mean score of 3.25. This disparity indicates that individuals with 18,001-36,000 incomes experience greater levels of functional impairment compared to those who belong to 9,001-18,000 income brackets. This observation underscores the impact of income levels on individuals' perceptions of and responses to climate change anxiety, indicating that respondents with lower incomes experience lower levels of functional impairment.

Research on climate anxiety and functional impairment suggests that individuals from less affluent families may experience higher levels of climate anxiety (Serrano, 2023). Additionally, studies have shown that climate anxiety-related impairment is relatively prevalent in individuals with climate anxiety, with 20.72% experiencing daily life functional consequences like impacts on work or socializing (Dantes, 2023). These findings underscore the importance of addressing climate anxiety across different income levels to support vulnerable groups. These suggest that there is a significant association between income and climate change anxiety, with individuals from higher income brackets being more susceptible to experiencing anxiety related to climate change.

Table 3d.Post-Hoc Test Analysis on the Significant Difference in the level of Climate Change Anxiety of the respondents along Behavioral Engagement when Grouped According to Income

Income	Mean	Below 9,000	9,001.00-18,000.00	18,001-36,000.00	None
Below 9000	4.09	-			
9001-18000	4.47	-.373	-		
18001-36000	4.50	-.4067	-.0333	-	
None	3.40	.693	1.067*	1.100*	-

significant – higher than t-critical

Upon analyzing the data, the variations in climate change anxiety levels across different income brackets regarding behavioral engagement were noted. The post-hoc test analysis shows a significant level of 1.067 when comparing the data from respondents whose incomes are 9,001-18,000 with respondents with no income. A significant difference of 1,100 can also be seen between respondents whose income is 18,001-36,000 and respondents with no income (students). Comparing these income groups, the difference in mean scores suggests that respondents with no incomes experience lower levels of behavioral engagement than respondents with 9,001-18,000 and 18,001-36,000 incomes. This implies that individuals with higher incomes experience comparable levels of climate change anxiety related to their behavioral engagement. Students with no income may experience lower levels of climate change anxiety along with reduced behavioral engagement for several reasons. Recent studies suggest that the financial constraints of students limit their ability to participate in climate change-related activities that may require additional expenses or investments (Whitmarsh, 2022). Moreover, the demanding academic schedules and commitments of students leave them with limited time and energy to focus on climate change activism or engagement, prioritizing academic success and personal development (Miller et al., 2023). Additionally, students from lower-income backgrounds may face barriers such as limited access to resources, networks, and opportunities for involvement in climate change-related initiatives. Perceiving climate change as a distant or abstract issue, particularly amidst immediate concerns, can further reduce the students' motivation to engage behaviorally (McCarthy, 2020). Finally, limited exposure to information and opportunities for education and awareness-raising about climate change may also contribute to their lower levels of behavioral engagement (Banupriya & Esakkimutu, 2023). Addressing these barriers requires targeted efforts to enhance accessibility, education,

and opportunities for engagement among students with no income.

Studies have also shown that individuals from less affluent families are more concerned about climate change (Anderson, 2023). Barriers to climate change activism among those with lower income levels include feeling that others are better at it, lack of training, not being asked to participate, not knowing how to get involved, unappealing activities like letter writing, being too busy, fear of being asked for money, and lack of encouragement to engage (Dubois, 2023). Additionally, low socioeconomic status has been linked to smaller gains in climate change knowledge, concern, and behavior, highlighting the importance of addressing these disparities in educational interventions to promote behavioral change (Ananya et al., 2022). Effective communication of scientific information is crucial in overcoming barriers to behavioral change related to climate action, emphasizing the need for tailored strategies for engaging individuals with low-income levels (Bondell et al., 2018).

Table 3e.Post-Hoc Test Analysis on the Significant Difference in the level of Climate Change Anxiety of the respondents when grouped according to Income

Income	Mean	Below 9,000	9,001.00-18,000.00	18,001-36,000.00	None
Below 9000	3,62	-			
9001-18000	3.56	.0649	-		
18001-36000	4.00	-.377	-.442	-	
None	3.14	.482	.417	.859*	-

significant – higher than t-critical

There are differences with an income of 18,001-36,000; they are more likely to experience a higher level of climate change anxiety compared to those who have no income. Results show that there is a significant difference between respondents whose income is 18,001-36,000 and the respondents with no income. The significant level of .859 implies that respondents with no income show lower levels of climate change anxiety than those respondents with 18,001-36,000.

Students generally exhibit lower levels of climate change anxiety in comparison to individuals with higher incomes, as their immediate concerns, such as academic performance, social relationships, and personal development, often take precedence over broader existential threats like climate change, thereby diminishing the prominence of climate change anxiety in their lives (Smith et al., 2020). Additionally, many students maintain a sense of optimism and hope for the future, believing in the potential for technological advancements, policy changes, and collective action to address climate issues, which can serve as a buffer against feelings of helplessness and anxiety (Bersalau et al., 2024). Additionally, the college setting commonly provides chances for social support and connectivity, helping to alleviate feelings of anxiety and isolation through interactions with peers, faculty members, and available campus resources (Bersalau et al., 2024). Furthermore, access to education and information about climate change empowers students to better understand the issue and take action, thereby reducing uncertainty and anxiety. Lastly, compared to individuals with higher incomes, students often have fewer financial responsibilities, which can alleviate stress and contribute to lower levels of climate change anxiety (Mohammad, 2021).

Coping mechanisms of Respondents Residing on flood-prone areas.

One of the significant themes in this study is the coping mechanism experienced by the residents of flood-prone areas. The results of this study have shown that residents have coping experiences with typhoon events. Having a coping mechanism plays a significant role in managing the stress, disruption, and challenges posed by typhoon events such as flooding in a constructive manner. These mechanisms aim to reduce the negative impact of flooding on mental and physical well-being.

A. Focusing on the present as moving on.

The primary sub-theme identified under positive coping strategies in this study is the act of "focusing on the present and moving forward after a typhoon. This approach empowers individuals to embrace their own lives, encouraging them to acknowledge and confront their current circumstances rather than dwelling on past events and building strong resilience.
The results of this study have shown that residents have a positive coping experience of focusing on the present as moving on. Acknowledging past experiences and planning for the future are important; grounding oneself in the present moment can provide a solid foundation for healing, growth, and adaptation in the aftermath of a typhoon.

> **FP1: *"Mag move on na lang, tutukan yung hinaharap. Kahit mahirap anak, pero kelangan dahil mas nalulungkot lang ako pag anduun lang ako sa situation na yun."*** (Let's move on and focus on the future. It might be difficult, but I feel more miserable just staying in that situation.)
> **FP3: *"Kagaya nga po ng mga napag usapan namin, wala kami magagawa kundi mag move on na lang talaga at mag focus sa hinaharap."*** (Just as we've discussed, all we can do is move forward and focus on what lies ahead.)
> **FP8: *"Mahirap, pero kailangan mag patuloy lalo na kailangan bumangon araw araw. Bagyo lang yan, pilipino tayo."*** (It's tough, but we must continue, especially because we need to rise every day. It's just a storm, and we are resilient Filipinos.)
> **FP10:** *"Pag momove on po, kasi wala na po kami magagawa, kailangan mag tuon ng pansin na sa hinaharap. Ang importante yung hindi kami sumusuko, mabagal yung pag usad pero umuusad pa*

rin." (Moving on is necessary because there's nothing more we can do. We must direct our attention to the future. What's important is that we don't give up; progress may be slow, but we're still moving forward.)

As seen from the responses of the respondents in Barangay Linao, Tuguegarao City, most of them chose to have a positive mindset and move forward from the catastrophic incident they suffered from even though the experiences of typhoons that cause floods can be even more devastating than the financial damage and loss of home, business, or personal property (Wang et al., 2022).

Meanwhile, it shows that the respondents obtained positive advantages from their coping approaches, which enabled them to move forward in life and face challenges head-on. This is particularly applicable when a typhoon or flood is about to hit their area of residence. Since the typhoon, the respondents' coping strategies have evolved because they can focus on current events and experience fewer emotional episodes. It serves to show that Filipino people are steadfast in the field of life (Gary et al., 2014).

B. Developing a sense of security

Developing a sense of security is important for promoting physical safety, emotional well-being, stability, and resilience among affected individuals and communities. In addressing both the immediate and long-term needs of those impacted by typhoons, individuals and communities can cope with future typhoons and the aftermath, such as flooding.

FP2: "*Nag pagawa kami ng 2 storey na na bahay kaya sa mga sumunod na bagyo hindi na kami masyado nag aalala kasi safe naman na kami sa aming bahay. Kaso yung baha yung aming inaalala dahil nakakasira siya sa aminh unang palapag."* (We built a two-storey house, so we are not too worried about upcoming storms because we will be safe in our home. However, we are concerned about the flooding, which can damage our ground floor.)

FP5: "*Mga nasira sa bahay eh mas inaayos ko, kasi ayaw ko naman balikan na maalala ko lang yung nangyari sa bagyo kasi nalulungkot ako*." (I usually fix the things that get broken around the house because I don't want to be reminded of the typhoon and feel sad whenever I come back.)

FP12: "*Dahil wala naman kaming kakayanan na pigilan ang bagyo, mas mabuti nalang namin na gumawa ng paraan para sa kaligtasan namin, gaya ng pagpapaayos ng bahay namin, nagpa gawa kami ng second floor para kung sakali pero wag naman sana, ready kami."* (Since we can't prevent the typhoon, it's better for us to take safety measures, like renovating our house. We had a second floor built so that, if necessary—though hopefully it won't be—we are prepared.)

The Philippines experiences 20 typhoons on average every year; therefore, Filipinos must equip themselves with knowledge and resources to protect their lives, families, and also their properties (Holden et al., 2018). Due to this, respondents of Barangay Linao, Tuguegarao City, demonstrate significant resilience in disaster response and recovery from extreme storm events.

Nowadays, climate change causes substantial damage and destruction, including loss of life, injury, and disruption to livelihoods. It also leads to substantial emotional and psychological trauma. Disasters result in severe damage, loss of life, injuries, and disruptions to livelihoods, causing significant trauma. However, the efforts of residents to rebuild, establish, and repair their homes after a disaster have had a positive and noteworthy impact. This demonstrates that the responders understand the importance of preparing for future challenges.
The respondents have developed a strong sense of security despite their area being geographically vulnerable to floods. They are prepared and have strategies in place to handle similar situations. However, urban governance and community-based disaster management guidelines and policies could be enhanced by integrating action plans derived from community assessments and perceived resilience results (Guo et al., 2020).

C. Spiritual Connectedness

Spiritual connectedness plays a crucial role in providing individuals and communities with the emotional, psychological, and social support needed to navigate the challenges of a typhoon and its aftermath. The response of respondents fosters a positive coping mechanism that helps them to improve their lives amidst the challenges of climate change, especially the typhoons.

FP4: "*Dasal at buo yung pamilya" (Prayers and having the family complete.)*

FP6: "*Kailangan kong lakasan loob ko para sa aking mga anak, yun mga anak ko lang din pinag kukuhanan ko ng lakas at dasal sa dyos."* (I need to be strong for my children; they are my source of strength, along with my prayers to God.)

FP11: "*Sa tulong ng pagdadasal at paniniwala ko kay God, natulungan ako na maging matatag at malagpasan ang problema na dulot ng bagyo."* (With the help of my prayers and faith in God, I was able to stay strong and overcome the problems caused by the typhoon.)

FP15: "*Nagdadasal ako, kasama ang pamilya ko na gabayan kami para na din maka usad kami sa nangyari na dala ng bagyo samin."* (I pray with my family for guidance so that we can move forward from what the typhoon brought upon us.)

Studies show that many people sense a deeper connection to God after a calamity (Joakim et al., 2017). Individuals who have strong faith often find that it aids them in coping with

the trauma and stress associated with disasters or calamities (Abdullah et al., 2015).It has been a belief and practice that has proven to have a positive effect on managing stress (Bhozek et al., 2020). It can provide people with solace and a sense of hope during challenging times. It offers calamity victims a sense of belonging and empowers them to know that someone is listening to them.

Additionally, numerous studies have underscored that faith, beliefs, and spirituality play crucial roles in shaping how individuals respond to and recover from disasters. These studies also emphasize that survivors' faith can help them make sense of and interpret the events surrounding a calamity (Alshehri et al., 2013). Prayer can help the victims find meaning in the disaster and accept what they cannot control. According to Deng et al. (2018), in the face of disaster, individuals can find crucial spiritual support through their faith in God and can also access and rely on essential support and resources.

D. Alcohol Use

Alcohol is frequently used as a coping method since it relieves tension, anxiety, and other negative feelings. It provides a temporary escape from difficult emotions or situations.

> **FP9: "***Alak ang nag bigay tulong sa akin para maging masaya, kasi syempre nalulungkot kami at hindi makatulog dahil sa mga karanasan noon."* (Alcohol helped me to be happy because, of course, we were depressed and unable to sleep due to our past experiences.)
> **FP13***: "(..)isa din sa nag bigay lunas sa aming nakaraan ay yung pag inom sa alak, kasi eto naging paraan ko para kahit sandali makalimot."* (One of the ways I coped with our past was by drinking alcohol, as it became a means for me to temporarily forget.)

E. Avoidance from the negative experience.

Avoidance involves deliberately steering clear of situations, thoughts, feelings, or memories that are perceived as unpleasant or stressful. While avoidance can serve as a temporary coping mechanism, allowing individuals to calm down, reflect, and regulate their emotions before confronting a difficult situation, it can also help prevent impulsive reactions.

> **FP7:** *"(..)ay kinakalimutan ko na lang para hindi ko na maisip, parang mahirap kasi para sa akin kung maalala at maala ko yung nangyari, wala din naman mangyayari kung maiisip ko."* (I just try to forget it so I don't have to dwell on it. It's hard for me because remembering and dwelling on what happened won't change anything anyway.)

One approach to coping with the aftermath of disasters is functional avoidance, where survivors temporarily sidestep distressing experiences to secure their basic needs and begin rebuilding (Many M. et al., 2012). This strategy not only shields individuals from immediate harm but also reduces their perceived risk of further distress (Ferrer et al., 2015). However, it's relevant to note that while avoidance can offer short-term relief, critics argue that prolonged avoidance may hinder long-term recovery and personal growth (Mason et al., 2010).

Persistent avoidance of negative experiences can lead to emotional suppression, difficulties in relationships, and stunted personal development (Schell et al., 2022). Nevertheless, when employed intentionally and with the awareness that confronting challenges is necessary for eventual healing, avoidance can serve as a valuable temporary coping mechanism (Ferrer et al., 2015). This approach allows individuals to regain emotional stability, reflect on their experiences, and maintain important social connections during times of hardship.

To effectively manage avoidance, individuals should approach it as a transitional strategy rather than a permanent solution. It should provide emotional respite and clarity, enabling individuals to make informed decisions about their recovery (Many M. et al., 2012). By fostering resilience and emotional well-being, avoidance can facilitate a smoother transition towards addressing and processing traumatic events (Ferrer et al., 2015).

In general, while avoidance can yield positive outcomes in managing immediate distress, its long-term effectiveness hinges on its temporary and purposeful application. By balancing emotional relief with the eventual need to confront challenging experiences, individuals can navigate adversity with greater resilience and pave the way for personal growth and recovery (Schell et al., 2022).

IV. CONCLUSION AND RECOMMENDATIONS

Typhoon-related anxiety is a significant concern, particularly for individuals living in flood-prone areas. The quantitative data reveals great differences in climate change anxiety among sex and different income brackets. The results indicate that women showed higher levels of concern towards climate change anxiety. Furthermore, data implies that lower levels of climate change anxiety are associated with cognitive-emotional impairment, functional impairment, and behavioral engagement among respondents with lower income brackets, leaving the respondents in higher income brackets to have higher levels of climate change anxiety. The results of qualitative data revealed that the coping strategies among the flood-prone residents vary among individuals, which included focusing on the present as moving on, developing a sense of security, spiritual connectedness, alcohol use, and avoidance from negative experiences, which plays a vital role in the healthy management of stress in response to the residents of Barangay Linao.

REFERENCES

Abdelkarim, Filali-Maltouf. (2023). Eco-emotions and Psychoterratic Syndromes: Reshaping Mental Health Assessment Under Climate Change. *Yale Journal of Biology and Medicine*, 96(2):211-226. https://doi: 10.59249/earx2427

About Tropical Cyclones. (2022). *Philippine Atmospheric, Geophysical, and Astronomical Services Administration*. https://www.pagasa.dost.gov.ph/information/about-tropical-cyclone

Alcala, AS., Alecha, MR., De Castro, AA., Guioguio, K., Takahashi, PB. (2022). Flood Exposure of Tuguegarao City. *The Regional Center of Cagayan Valley*. https://storymaps.arcgis.com/stories/d43f961b4d9b40fc8fc4eed172129a6d

Alcayna-Stevens, T., Bollettino, V., Dy, P., Sharma, M., Pham, P., Vinck, P., (2020).

Public perception of climate change and disaster preparedness: evidence from the Philippines.

Clim Risk Manag, Article 100250, https://doi.org10.1016/j.crm.2020.100250

Alibudbud, R. (2022). Climate change and mental health in the Philippines. *BJPsych International*, 20(2), 44–46. https://doi.org/10.1192/bji.2022.31

Algo, JL., (2023). Love in the time of Climate Anxiety. *Rappler*. https://www.rappler.com/voices/imho/opinion-love-in-time-climate-anxiety/#:~:text=A%20recent%20survey%20found%20that,anger%20related%20to%20said%20cri sis

Allen, J., Bourque, F., Drossos, A., Elgarøy, S., Kral, M.J., Mauro, I., Moses, J., MacDonald, J.P., Pearce, T., Stephenson, E., Willox, A.C. (2015). Examining relationships between climate change and mental health in the Circumpolar North. Reg Environ Change. https://doi.org/10.1007/s10113- 014-0630-z

American Psychological Association (A)A. Mental Health and our Changing Climate: Impacts, Implications and Guidance. APA, 2017. (https://www.apa.org/news/press/releases/2017/03/mental- health-climate.pdf)

Anderson, JM. (2023). Climate anxiety is associated with self-efficacy and behavioural engagement amongst adolescents: a cross sectional analysis. doi: 10.21203/rs.3.rs-2720187/v1

Ananya, B., Carl, A., Haley, B., Latkin L., Latshaw, MW., Lauren, D.,Ross, J., Pugel , R., (2022). Perceived Barriers to Climate Change Activism Behaviors in the United States Among Individuals Highly Concerned about Climate Change. Journal of prevention, doi: 10.1007/s10935-022-00704- 0

Aruta, JJB., Guinto, R., (2022). Climate anxiety in the Philippines: Current situation, potential pathways, and ways forward. Science Direct. https://doi.org/10.1016/j.joclim.2022.100138

Asuncion, R.V. (2022). Underscoring the mental health agenda in the Philippines. Congressional policy and budget research departmenthouse of representatives. https://cpbrd.congress.gov.ph/images/PDF%20Attachments/CPBRD%20Policy%20Brief/PB2023-02_Underscoring_the_Mental_Health_Agenda_in_the_Phlippines.pdf

Atala, C., Kagoya, E., Kibuuka, R., Kirabira, J., Muhwezi, M., Namaganda, A., Ndamanywa, K., Nsubuga, A., Okello, F., Philemon, E., Waako, P.(2023). Coping mechanisms of students with mental disorders at Busitema University, an exploratory qualitative study at Mbale and Busia campuses. MedRxiv, doi: 10.1101/2023.06.12.23290962

Banupriya, S., & Esakkimuthu, K., (2023). Awareness about Climate Change among Students: A Sustainable Future. ComFin Research, 11(4), 1–6. https://doi.org/10.34293/commerce.v11i4.6677

Barnett, M., Curran, M., Craig, Z., Helms, S., Pollitt, A., (2018). Differentiating environmental concern in the context of psychological adaptation to climate change. *Global Environmental Change*, 48, 158–167. https://doi.org/10.1016/j.gloenvcha.2017.11.012

Barsalou, L., Hill-Harding, C. K. V., & Papies, E. K. (2024). Students' emotional experiences with climate change and how universities can help. https://doi.org/10.31234/osf.io/nu76j

Baustista, D. M. (2019, June 14). (PDF) evaluation of a resilience intervention for Filipino displaced survivors of Super Typhoon Haiyan ResearchGate. https://www.researchgate.net/publication/325571399_Evaluation_of_a_resilience_intervention_for_Filipino_displaced_survivors_of_Super_Typhoon_Haiyan

Beery, K., Galway, T., Lindsay, P. (2022). Exploring Climate Emotions in Canada's Provincial North. Frontiers in Psychology, doi: 10.3389/fpsyg.2022.920313

Bei B, Bryant C, Gilson KM, Koh J, Gibson P, Komiti A, et al. A prospective study of the impact of floods on the mental and physical health of older adults. *Aging Ment Health* (2013) 17:992–1002. https://doi: 10.1080/13607863.2013.799119

Benoit, L., Clayton, S., Parnes, M. F., Schwartz, S. E. O.,Swenson, L. P., & Lowe, S. R. (2022). Climate change anxiety and mental health: Environmental activism as buffer. *Current Psychology*, 42(20), 16708–16721. https://doi.org/10.1007/s12144-022-02735-6

Bercht, A., (2019). Sleepwalking into Disaster? Understanding Coping in the Broader Field of Mental Barriers. Examples from the Norwegian Arctic in the Face of Climate Change. doi: 10.1007/978- 3-030-04691-0_7

Betro, S., Cianconi, P., Janiri, L. (2020). The Impact of Climate Change on Mental Health: A Systematic Descriptive Review. *Institute of Psychology, Rome, Italy*. https://doi:org/10.3389/fpsyt.2020.00074

Black, J., Black, D., Fernandez, A., Jones, M., Salvador-Carulla, L., Wilson, L. (2015). Flooding and Mental Health: A Systematic Mapping Review. *Journals Plos One*. https://doi:org/10.1371/journal.pone.0119929

Blomstedt, Y., Kandarina, I., Kinsman, J., Nahar, N., Trisnantoro, L., Wu, B., (2014). Increasing the provision of mental health care for vulnerable, disaster-affected people in Bangladesh. *BMC Public Health* 14:1–9. https://doi: 10.1186/1471-2458-14-708

Bondell, H,. Peterson, N., Stevenson, M. (2018). Developing a model of climate change behavior among adolescents. Climatic Change, doi: 10.1007/S10584-018-2313-0

Bose-O'Reilly , S., Elbel, J., Hieronimi, A., Nowak, D., Schneider, M., Schulte-Körne, G., Wermuth, I., (2022). A Qualitative Study to Explain the Factors Influencing Mental Health after a Flooding. International Journal of Environmental Research and Public Health, 20(1):134-134. https://doi:10.3390/ijerph20010134

Bowles, DC. (2015). Climate Change and Health Adaptation: Consequences for Indigenous Physical and Mental Health.. Annals of global health, doi: 10.1016/J.AOGH.2015.06.004

Callery, S., (2023). What is Climate Change? *National Aeronautics and Space Administration* What Is Climate Change? | Facts – Climate Change: Vital Signs of the Planet (nasa.gov)

Carmen, B. P. B., Luminarias, M. E. P., Mangulabnan, S. A. N. B., Reyes, M. E. S., Ogunbode, C. A., (2021.). An investigation into the relationship between climate change anxiety and mental health among gen Z Filipinos. *Current psychology (New Brunswick, N.J.)*. https://pubmed.ncbi.nlm.nih.gov/34305362/

Casey, A., (2023). Temperature and socioeconomic vulnerability: associations with cardiac event-induced posttraumatic stress symptoms. Frontiers in Psychology, doi: 10.3389/fpsyg.2023.1092106

Cazenave, A., Howell, S., Huss, M., Isensee, K., Palmer, M. D., Trewin, B., & Vermeulen, A. (2021). Headline indicators for global climate monitoring. Bulletin of the American Meteorological Society, 102, 20-37. https://doi.org/10.1175/BAMS-D-19-0196.1

Charlson, F., Ali, S., Benmarhnia, T., Pearl, M., Massazza, A., Augustinavicius, J., & Scott, J. G. (2021). Climate Change and Mental Health: A Scoping Review. *International Journal of Environmental* Research and Public Health, 18(9), 4486. http://dx.doi.org/10.3390/ijerph18094486

Chiari, S, Corner, A., Mandl, S., Mayrhuber, E., Monson, K., Roberts, O., S., Völler,(2015). How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators. Wiley Interdisciplinary Reviews. Climate Change, 6(5), 523–534. https://doi.org/10.1002/wcc.353

Chiu, P. 2021 Aug 11. The other surge: Mental health hotlines getting busier. *Philippine Daily Inquirer*. https://newsinfo. inquirer.net/1471969/the-other-surge-mental-health-hotlines-getting-busier.

Cissé, G., R. McLeman, H. Adams, P. Aldunce, K. Bowen, D. Campbell-Lendrum, S. Clayton, K.L. Ebi, J. Hess, C. Huang, Q. Liu, G. McGregor, J. Semenza, and M.C. Tirado, 2022: Health, Wellbeing, and the Changing Structure of Communities. In: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.- O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K.

Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem,B. Rama (eds.)]. *Cambridge University Press. In Press*.

Clark, T., & Zolnikov, T. R., (2021). Climate change and mental health. *In Springer eBooks* (pp. 1201– 1226). https://doi.org/10.1007/978-3-030-42462-6_2

Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. *Journal of Anxiety Disorders*, 74, 102263. https://doi.org/10.1016/j.janxdis.2020.102263

Clayton, S., Hickman, C., Lewandowski, R. E., Marks, E., Mayall, E., Pihkala, P., Wray, B., Mellor, C., & Van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. The Lancet Planetary Health, 5(12), e863– e873. https://doi.org/10.1016/s2542-5196(21)00278-3

Climate change anxiety scale – *EMERGE*. (n.d.). https://emerge.ucsd.edu/r_1otfxsqqgiayc80/

Clemens, V., Gerlinger, G., Heinz, A., Meyer-Lindenberg, A., Sander, J., Walinski, A. (2023). The Effects of Climate Change on Mental Health.. Deutsches Arzteblatt International, Forthcoming https://doi: 10.3238/arztebl.m2022.0403

Contreras, A., Heeren, C., Mouguiama, D. (2022). On climate anxiety and the threat it may pose to daily life functioning and adaptation: a study among European and African French-speaking participants. Climatic Change, doi: 10.1007/s10584-022-03402-2

Costa, A.C., Goyal, S., Islam, Z., Jain, S., Mohanan, P., (2021). Typhoons during the COVID-19 pandemic in the Philippines: impact of a double crisis on mental health. *Disaster Med Public Health Prep*.1-4. https://doi:10.1017/dmp.2021.140

Coffey, Y., Bhullar, N., Durkin, J., Islam, M. S., & Usher, K. (2021). Understanding Eco-anxiety: A Systematic Scoping Review of Current Literature and Identified Knowledge Gaps. *The Journal of Climate Change and Health*, 3, 100047. https://doi.org/10.1016/j.joclim.2021.100047.

Cramer, P. (2015). Understanding defense mechanisms. *Psychodynamic Psychiatry*, 43(4), 523-552. doi: 10.1521/pdps.2015.43.4.523

Crane, K., Jianghong, L., Li, L., Rovit, E., Subramanian, P. (2022). Climate Change and Mental Health: A Review of Empirical Evidence, Mechanisms and Implications. Atmosphere, 13(12):2096-2096. https://doi:10.3390/atmos13122096

Cuevas, FP. 2021. Mental Health in the Philippines: Status and Challenges. www.mhlw.go.jp/content/10500000/000914594.

Dantes, B. (2023). Climate anxiety: Impairment in everyday life and perceived need for psychological support. doi: 10.31234/osf.io/wmhsn

Davison, C., Sharpe, I. (2021). Climate change, climate-related disasters and mental disorder in low- and middle-income countries: a scoping review.. BMJ Open, doi: 10.1136/BMJOPEN-2021-051908

Dubois, N. (2023). Anger about climate inaction: The content of eco-anger shapes emotional and behavioral engagement with climate change. doi: 10.31234/osf.io/juc67

Fan, L., & Ryu, S. (2023). The Relationship Between Financial Worries and Psychological Distress Among U.S. Adults. *Journal of family and economic* issues, 44(1), 16–33. https://doi.org/10.1007/s10834-022-09820-9

Garcia, T., & Leung, C. W. Wolfson, J. A. (2021). Food Insecurity Is Associated with Depression, Anxiety, and Stress: Evidence from the Early Days of the COVID-19 Pandemic in the United States. Health equity, 5(1), 64–71. https://doi.org/10.1089/heq.2020.0059

Gifford, M., Hugelius, K., Örtenwall, P., (2017).. Health among disaster survivors and health professionals after the Haiyan Typhoon: a self-selected Internet-based web survey. Int J Emerg Med 10, 13

Guo, K., & Yu, D. (2021, May 27). (PDF) urban surface water flood modelling – a comprehensive review of current models and future challenges ResearchGate. https://www.researchgate.net/publication/347659470_Urban_surface_water_flood_modelling_-_a_comprehensive_review_of_current_models_and_future_challenges

Gutierrez, J., (2020). Within Seconds Everything Was Gone': Devastating Floods Submerge the Philippines. The New York Times. https://www.nytimes.com/2020/11/18/world/asia/philippines- floods-photos.html

Haase, E., (2023). Climate Change and Mental Health Connections . *American Psychiatric Association.* https://www.psychiatry.org/patients-families/climate-change-and-mental-health-connections

Heeren, A., Mouguiama-Daouda, C., & Contreras, A. (2022). On climate anxiety and the threat it may pose to daily life functioning and adaptation: A study among European and African French-speaking participants. *Climate Change*, *173*(1-2), 15. https://doi.org/10.1007/s10584-022-03402-2

Hofmann SG, Hay AC. Rethinking avoidance: Toward a balanced approach to avoidance in treating anxiety disorders. J Anxiety Disord. 2018 Apr;55:14-21. doi: 10.1016/j.janxdis.2018.03.004. Epub 2018 Mar 9. PMID: 29550689; PMCID: PMC5879019.

Holden, W. N. (2018, May 30). Typhoons, climate change, and climate injustice in the Philippines. Advances in Southeast Asian Studies. https://aseas.univie.ac.at/index.php/aseas/article/view/2686

Idris, M., Japil, A., & Madian, L. (2019, November 4). (PDF) the development of the flood victim-psychospiritual.ResearchGate. https://www.researchgate.net/publication/333971326_The_Development_of_the_Flood_Victim- PsychoSpiritual_Module_Spiritual-Religious_Strategies

Inglis, G. & Knifton, L. (2020). Poverty and mental health: policy, practice and research implications. BJPsych bulletin, 44(5), 193–196. https://doi.org/10.1192/bjb.2020.78

Irfan, AR., Syed, HA., Zainab, Khalid., Zahid, Irshad, Younas., Saad, Saleem, Bhatti., Junaid, K., Ahmad. (2023). The impact of psychological distance to climate change and urban informality on adaptation planning. urban climate, doi: 10.1016/j.uclim.2023.101460

James, M., Jiongco, A., Kennedy-Williams, P., Marks, E., Player, L., & Whitmarsh, L.,(2022). Climate anxiety: What predicts it and how is it related to climate action? Journal of Environmental Psychology, 83, 101866.https://doi.org/10.1016/j.jenvp.2022.101866

Joakim, E. P., & White, R. S. (2015). Exploring the Impact of Religious Beliefs, Leadership, and Networks on Response and Recovery of Disaster-affected Populations: A Case Study from Indonesia. Journal of Contemporary Religion, 30(2), 193–212. https://doi.org/10.1080/13537903.2015.1025538

Калашников, Д. Б., Portnova, A. A., & Шпорт, С. В. (2023). Mental disorders associated with flooding. Nevrologičeskij Vestnik, L(1), 61–63. https://doi.org/10.17816/nb119899

Keyes, C. L. M., (2014) Mental health as a complete state: how the salutogenic perspective completes the picture. In: Bauer GF, Hämmig O, editors. Bridging occupational, organizational and public health. Dordrecht: Springer.

Kim, J. E., Saarloos, D., & Timmermans, H. (2009). The Built Environment and Health: Introducing Individual Space-Time behavior. *International Journal of Environmental Research and Public Health*, 6(6), 1724–1743. https://doi.org/10.3390/ijerph6061724

Ku, R., (2020). Typhoon Ulysses: Weather updates, latest news in the Philippines. *Rappler*. https://rappler.com/nation/weather/updates-news-typhoon-ulysses-philippines-2020/

Lazo, L.S. (2019). The Gaps in Fostering Mental Health and Wellbeing, in Theory of Change of the Philippine Mental Health Strategic Plan 2013-2019. *Consultant's Technical Report*.

Leiserowitz, A., (2023). Yale Experts Explain Climate Anxiety.*YaleSustainability*. https://sustainability.yale.edu/explainers/yale-experts-explain-climate-anxiety

Lertzman, R., (2015). Environmental Melancholia: Psychoanalytic Dimensions of Engagement. *Routledge*. https://scholar.google.com/scholar_lookup?title=Environmental+Melancholia:+Psychoanalytic+Dimensions+of+Engagement&publication_year=2015&

Lowe, S., (2023). Yale Experts Explain Climate Anxiety. *Yale Sustainability*. https://sustainability.yale.edu/explainers/yale-experts-explain-climate-anxiety

Lavizzari A., Portos, M., Uba, K. (2022). Experience of economic hardship and right-wing political orientation hinder climate concern, among European young people. Journal of Contemporary European Studies, doi: 10.1080/14782804.2022.2061433

Magdalena, G., (2021). Climate change and mental health: a review of current literature. *Psychiatria Polska*, 1-13. https://doi: 10.12740/PP/ONLINEFIRST/131991

Makwana, N., (2019). Disaster and its impact on mental health: A narrative review. *National Library of Medicine*. doi: 10.4103/jfmpc.jfmpc_893_19

Many, M., Hansel, T., Moore, M., Rosenburg, Z., & Osofsky, H. (2012). The Function of Avoidance in Improving the Understanding of Disaster Recovery. Journal of Human Behavior in the Social Environment, 22(4), 436–450. https://doi.org/10.1080/10911359.2012.664974

Marks, E., (2022). Psychological and emotional responses to climate change among young people worldwide: Differences associated with gender, age, and country. doi: 10.21203/rs.3.rs-2256929/v1 Masson- Delmotte, V. (2018, December 18). Global warming of 1.5°C. Cambridge Core.https://www.cambridge.org/core/books/global-warming-of-15c/D7455D42B4C820E706A03A169B1893FA

Massive flooding hits Cagayan Valley, Philippines, CARE and partners ready to respond. (2020). *Reliefweb*. https://reliefweb.int/report/philippines/massive-flooding-hits-cagayan-valley- philippines-care-and-partners-ready-respond

McCarthy, J. (2020, February 19). Why Climate Change and Poverty Are Inextricably Linked. Global Citizen. https://www.globalcitizen.org/en/content/climate-change-is-connected-to-poverty/

Mercado, N. A. (2020, November 16). BY THE NUMBERS: The impact of Typhoon Ulysses in Cagayan Valley | *Inquirer News. INQUIRER.net*. https://newsinfo.inquirer.net/1361318/by-the-numbers-the- impact-of-typhoon-ulysses-in-cagayan-valley?fbclid=IwAR1n5gE1deRtSrgHEPwMGtgs4bSCCUEPKEEBBrVxGCOmUHxB06M1OwK UXkc#ixzz8MsDA7zNn

Miller, S. A., K. B., Newsome, D., & Newsome, K. B (2023). Teaching, Learning, and Climate Change: Anticipated Impacts and Mitigation Strategies for Educators. Behavior and Social Issues, 32(2), 494– 516. https://doi.org/10.1007/s42822-023-00129-2

Mudlo-Glagolska, K., Powel, L., Soltys, M., (2022). Climate Change Anxiety Assessment: The Psychometric Properties of the Polish Version of the Climate Anxiety Scale. DOI:10.3389/fpsyg.2022.870392

Nagelhout, R.. (2024, March 1). A Global View of Education and Climate Change Harvard Graduate School of Education. https://www.gse.harvard.edu/ideas/news/24/03/global-view-education-and-climate-change

Nepomuceno, P., (2020). Seven consecutive typhoons caused Cagayan flooding. *Philippine News Agency*. https://www.pna.gov.ph/articles/1121856

Nordløkken, A., Pape, H., Wentzel-Larsen, T. et al. Changes in alcohol consumption after a natural disaster: a study of Norwegian survivors after the 2004 Southeast Asia tsunami. BMC Public Health 13, 58 (2013). https://doi.org/10.1186/1471-2458-13-58

Priya, J., (2023). The deadly diseases that are spiking because of Climate Change. *Vaccines Work*. https://www.gavi.org/vaccineswork/deadly-diseases-are-spiking-because-climate-change?gclid=CjwKCAiAkp6tBhB5EiwANTCx1FWRC3VS2dcmoVMap7DgcDPaAdWklU7x-YrcBfMzRNN7jI6qm2m8vxoCvdAQAvD_BwE

Randall, R., (2009). Loss and climate change: the cost of parallel narratives. *Ecopsychology*. https://scholar.google.com/scholar_lookup?journal=Ecopsychology&title=Loss+and+climate+change:+the+cost+of+parallel+narratives&volume=1&issue=3 &publication_year=2009&

Serrano, I. (2023). Climate anxiety is associated with self-efficacy and behavioral engagement amongst adolescents: a cross sectional analysis. doi: 10.21203/rs.3.rs-2720187/v1

Smith, J. A. (2020, January 18). Qualitative psychology: A practical guide to research methods. Google scholar. https://scholar.google.com/

Stanislawski, K., (2019). The Coping Circumplex Model: An Integrative Model of the Structure of Coping With Stress. *National Library of Medicine.* https://doi: 10.3389/fpsyg.2019.00694

Some areas in Tuguegarao still flooded. (2020). *GMA News*. https://www.gmanetwork.com/news/topstories/regions/769075/someareas-in-tuguegarao-still- flooded

Subagyo, W., Wahyuningsi, D. (2022). Stressors and coping mechanisms of people with mental disorders in the community. Frontiers of Nursing, 9(3):335-342. doi: 10.2478/fon-2022-0043

Takyun, CJ., Ogwo, AO. (2020). Psychological Defense Mechanisms And Coping Behavior: Parenting Of Young Children With Psychological Developmental Disorders.

Veenema TG, Thornton CP, Lavin RP, Bender AK, Seal S, Corley A. Climate Change–Related Water Disasters' Impact on Population Health. *J Nurs Scholarship* (2017) 49:625–34. https://doi: 10.1111/jnu.12328

Walinski, A., Sander, J., Gerlinger, G., Clemens, V., Meyer–Lindenberg, A., & Heinz, A. (2023). The effects of climate change on mental health. *Deutsches Arzteblatt International*. https://doi.org/10.3238/arztebl.m2022.0403

What is Climate Change?. National Integrated Climate Change Database Information and Exchange System. https://niccdies.climate.gov.ph/

Whitlock, J., (2023). Climate change anxiety in young people. International Journal of Environmental Research and Public Health 1(5):297-298. https://doi: 10.1038/s44220-023-00059-3