Original Research

Predictive Effect of Eco-Anxiety and Climate Change Anxiety towards Mental Health Problems and Psychological Well-Being among Entrepreneurs

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Abstract

Entrepreneurs face massive challenges when attempting to create sustainable businesses in the current era. This juggling act leads to eco-anxiety and climate change anxiety, which mainly affect entrepreneurs by creating concerns and ruining creativity and progress. These issues contribute to individuals' mental health problems (MHP) and severely affect psychological well-being (PWB). With this in mind, the present study investigates the impact of eco-anxiety (EA) and climate change anxiety (CCA) on MHP and PWB among Egyptian entrepreneurs. The study applied quantitatively, gathering cross-sectional data through a survey tool. The researchers collected data using online and offline modes and a convenience sampling strategy to identify Egyptian entrepreneurs. This led to 314 valid cases from which to generate the final results. The researchers applied a structural model (SEM) using analysis of moment structures (AMOS) software to obtain the results. The results of the study unveil a positive effect of EA on MHP ($\beta = 0.539$; $P < 0.01$) but a negative impact on entrepreneurs' PWB ($\beta = -0.005$; $P > 0.01$). Moreover, the study also identifies a positive effect of CCA on MHP

(β = 0.667; P < 0.01) but a negative on entrepreneurs' PWB (β = -0.033; P > 0.01). The study's findings will assist policymakers and mental health professionals in developing policies regarding reducing stress, anxiety, and fears about climate change among entrepreneurs. Moreover, the study results could support entrepreneurs in bringing creativity and vision to coping strategies for EA, strengthening their PWB, and improving their ability to sustain their businesses. Finally, the study would contribute to domain literature by adding an empirical perspective from a developing nation.

Keywords

Eco-anxiety; mental health problems; psychological well-being; climate change anxiety; environmental issues; entrepreneurs

1. Introduction

In the present era, many organizations and entrepreneurs have begun to acknowledge the significant challenges of mental health and well-being. These issues can massively restrict their performance, progress, and innovation towards achieving their goals [1-3]. Mental health problems (MPH) create a lot of emotional and psychological concerns that meaningfully impact an individual's feelings, thoughts, and behaviours, which can lead to difficulty in daily life and routines [4]. These problems appear in the form of symptoms such as feeling constantly under strain, losing sleep due to excessive worry, and an irresistible sense of being incompetent when overcoming particular difficulties [5, 6]. Furthermore, tenacious feelings of discontent and downheartedness are critical enablers of mental health issues [2]. As such, psychological well-being (PWB) development is important as it integrates the capability to highlight activities and enjoy daily life [7].

The concepts of eco-anxiety (EA) and climate change anxiety (CCA) have been found to contribute to individuals' mental health issues and PWB [1, 8, 9]. Specifically, EA is recognized as a chronic fear of environmental fate, characterized by tenacious worry about the planet's future and future generations' well-being [2, 10]. Similarly, CCA is also distressed and associated with concerns regarding climate change and its effects [11, 12]. In the domain literature, numerous factors are confirmed to be substantial enablers of MHP, including environmental pollution, eco-depression, perceived worthlessness, environmental activism, socioeconomic stresses, environmental activism, anger, sadness, pressure, vulnerability, and eco-anger [5, 13-17]. Likewise, stress, pressure, hopelessness, despair, declining self-esteem, and perceived worthlessness and worry affect individuals' mood and PWB [7, 18].

However, based on the above literature, a few gaps have not been explored. For example, there is a lack of an integrated framework in the literature that could combine two key aspects, EA and CCA, in relation to MHP and PWB, particularly in the context of entrepreneurs in Egypt. In Egyptian settings, EA and climate change are identified as the primary determinants of quality of life and psychological status, with entrepreneurs and business people being the primary sufferers of these climatic and mental health issues [19-21]. The potential impact of addressing these gaps could be substantial, leading the researchers to raise the following questions:

RQ1: What is the role of EA in developing MHP and PWB among Egyptian entrepreneurs?

RQ2: What is the role of CCA in developing MHP and PWB among Egyptian entrepreneurs?

The study's findings provide significant insights, particularly in understanding the psychological challenges entrepreneurs face in the context of climate change. By understanding the impact of the EA and CCA on MPH and PWB, policymakers and planners can develop policies that may prevent environmental damage to MPH and PWB. For the broader field of climate change psychology, the study outcomes can provide awareness of the mental health impacts of environmental stressors. Finally, mental health professionals and policymakers can use these visions to improve supportive policies and programs, eventually nurturing a healthier entrepreneurial community that is better prepared to tackle the challenges posed by climate change.

2. Literature Review and Conceptual Framework

2.1 Eco-Anxiety (EA)

EA is a chronic fear of environmental fate, categorized by persistent worry regarding the planet's future and future generations' well-being [2, 10]. It is established as emotional distress, i.e., anger, sadness, and helplessness about climate change and environmental pollution [8, 15]. Physical indications such as muscle tension, poor sleep, and cognitive disturbances (intrusive thoughts, distractions, and strained interpersonal relationships) are common. Individuals experience sensitive anxiety about the impulsiveness of weather and natural disasters, leading to hypervigilance and hindrance with societal and political inaction [9, 11].

In the domain literature, EA predicts MHP and PWB [22-25]. More specifically, in the perception of [17, 22], EA declines the environment, which adversely affects mental health and ultimately leads to stress and anxiety. Numerous scholars of the domain claim that EA is a substantial predictor of mental health concerns in several settings, including children, young people, women, and nursing students [17, 22, 24]. Likewise, this factor adversely impacts individuals' PWB. The empirical assessment of [26] suggests climate change worsens EA, promotes environmental actions, and concurrently declines PWB. The study of [25] shows a negative connection between EA, pro-environmental behavior, and well-being. Daily routine experiences of EA demonstrated an adverse association with overall well-being, meaning that individuals with higher levels of EA tend to have lower PWB [23, 27].

2.2 Climate Change Anxiety (CCA)

CCA is a form of distress unambiguously connected to concerns about climate change and its effects [11, 12]. It can present as difficulty absorbing, trouble sleeping, nightmares, crying, and emotional distress. Individuals may be involved in self-reflection, questioning their ability to cope with climate change and analyzing their reactions [28]. This anxiety can affect social connections, making it hard to enjoy time with family and friends, and can also undermine work performance and productivity [14].

The literature shows an excellent prediction of the relevance of CCA to MHP and PWB [6, 29-32]. More specifically, in the study of [33], climate change negatively affects mental health. Likewise, among medical students, it is expected that mental health is predicted through climate change [15]. However, among children and young individuals, CCA positively affects MHP [14]. A review assessment by [1] found that climate change and mental health are positively connected. Scholars

such as [12, 17] have noted a growing gratitude for CCA about mental health. In the same dimension, [34, 35] confirm the negative impacts of CCA on PWB. CCA and anxiety create vulnerability, where most of the populations are affected by their well-being [18]. According to the investigation of [14], climate anxiety has an unfavorable effect on the mental health of children and youth.

2.3 Mental Health Problems (MHP)

MHP includes a variety of emotional and psychological issues that significantly impact an individual's thoughts, feelings, and behaviors, frequently disrupting daily life [4]. These problems can be apparent through various symptoms, i.e., feeling constantly under strain, losing sleep due to excessive worry, and facing an irresistible inability to overcome personal difficulties [5, 6]. Also, persistent feelings of discontent and depression are critical indicators of mental health issues [2, 22]. In the literature, several factors, such as EA, CCA, socioeconomic stresses, eco-depression, eco-anger, and environmental activism, are the main predictors of MHP [1, 8, 14-17].

2.4 Psychological Well-Being (PWB)

PWB is a multidimensional construct that comprises positive and negative dimensions. It incorporates the ability to enjoy daily life and activities, experiencing a sense of determination and making meaningful contributions. Autonomy and the capacity to make choices are significant, along with resilience in facing problems directly [7]. However, PWB is also affected by feelings of stress, pressure, and worry, which can affect sleep and overall mood [7, 18]—negative aspects such as feelings of hopelessness, sadness, declining self-esteem, and perceived worthlessness. In the study of [36], alexithymia plays a mediating role in the relationship between cyberbullying and psychotic experiences in adolescents, which suggests emotional regulation difficulties may exacerbate the mental health effects of cyberbullying. Alpha/Theta neurofeedback significantly improves attention and working memory in female students with learning disabilities, positioning neurofeedback as a promising intervention [37]. According to [38], the reliability and validity of the Persian version of the PDI-40 ensure its suitability for assessing delusional ideation in Iranian clinical and non-clinical populations. The effectiveness of Interpersonal and Social Rhythm Therapy (IPSRT) in enhancing emotional regulation and reducing addiction severity and cravings has been well demonstrated [39]. Finally, [40]'s study shows that neurofeedback rehabilitation effectively reduces anxiety in methamphetamine abusers, which indicates its potential for treating anxiety disorders in addiction recovery.

In the literature, diverse factors such as CCA, socioeconomic stresses, EA, eco-depression, anger, sadness, pressure, environmental activism, vulnerability, eco-anger, environmental pollution, perceived worthlessness, environmental activism etc., are the main predictors (positive or negative) of MHP and PWB [1, 5, 8, 9, 13-17].

However, the literature still has significant gaps that need to be explored. First, the literature lacks an integrated approach that focuses on EA and CCA's influence on MHP and PWB. Moreover, contextually, this type of exploration still needs to be concentrated on a specific group (e.g., Egyptian entrepreneurs) despite entrepreneurs confronting psychological problems and well-being when tackling complex global issues, including climate change [41]. Climate anxiety across twenty-eight countries of the globe contributes to a worldwide perspective that underscores the need to explore culturally specific factors that influence mental health and well-being [19]. In the Egyptian

context, climate change substantially affects the quality of life and psychological status, making it pertinent to investigate the unique experiences of Egyptian entrepreneurs [19-21]. Hence, based on these existing associations and gaps (knowledge existing and contextual) in the literature, the researchers proposed a conceptual framework that integrates EA, CCA, MHP, and PWB (see Figure 1). The EA construct and CCA are expected to associate positively with MHP and PWB. On the other hand, EA and CCA negatively affect PWB among Egyptian entrepreneurs. The study connects climate change with mental health and the drive for a better future while also underlying the emotional and psychological toll on those at the forefront of innovation and change. These notions combine to justify examining how EA and CCA predict Egyptian entrepreneurs' mental health and well-being.
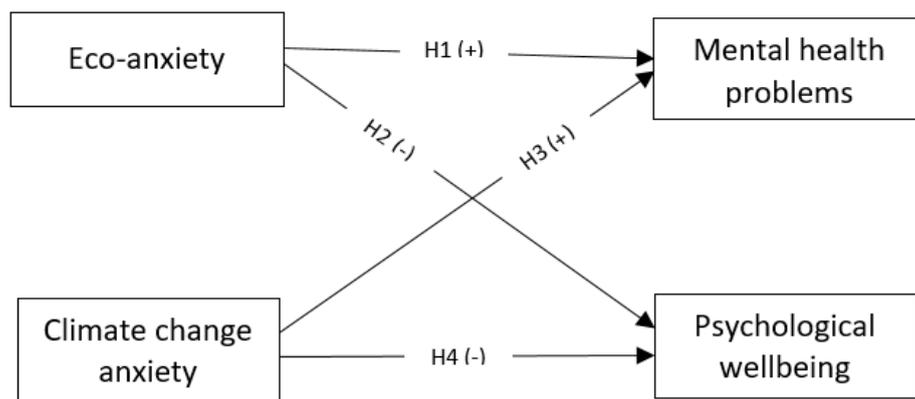

Figure 1 Model of the study. Source: Developed by the researchers.

3. Hypotheses Development

3.1 Eco-Anxiety (EA) and Mental Health Problems (MHP)

EA is a positive enabler of MHP, as confirmed by several domain scholars in different contexts [17, 22, 24]. The term EA underlines the environmental decline that impacts mental health, leading to anxiety and stress [22]. According to [17], the increasing recognition of EA among scientists is a sign that more studies concerning mental health support should be conducted. The meta-analysis of [24] highlights the positive effect of EA on the mental health of specific groups, i.e., young people, women and their children, and nursing students. In the perception of [42], hope and coping mechanisms influence the experiences of EA among young Australian individuals. A qualitative assessment by [3] demonstrates that the experiences of regional Australian youth are positively associated with pre-existing MHP. Scholars such as [16, 43] demonstrate that the socioeconomic pressures of climate change positively affect women and their children, where the positive connection between EA and socioeconomic factors is also confirmed. Besides, EA substantially affects nursing students' mental health. Emotional retorts to climate change, i.e., eco-depression, EA, and eco-anger, are positive predictors of mental health issues and climate action [8]. According to the investigation of [44], climate change affects mental health. Environmental awareness and education for Generation Z positively develop ecological citizenship and mindfulness, encouraging them to take positive actions in managing anxiety [10, 45]. EA substantially predicts mental health services [46, 47].

The above literature demonstrates the massive contribution of EA to creating and exacerbating

MHP. However, it has not been investigated in the presence of other factors, such as CCA and PWB, specifically among Egyptian entrepreneurs. Henceforth:

H1. EA positively enhances MHP among Egyptian entrepreneurs.

3.2 Eco-Anxiety (EA) and Psychological Well-Being (PWB)

EA is a negative forecaster of PWB. Daily experiences of EA are negatively correlated with overall well-being [23]. It is generally agreed that individuals with higher levels of EA tend to have lower PWB. This is supported by [25], who clarified the negative association between EA, well-being, and pro-environmental behavior. As part of a broader spectrum of existential anxieties, EA suggests that fundamental fears about the future and existence significantly drive EA and its adverse psychological effects [27]. [26] demonstrate that media coverage of climate change exacerbates EA and promotes environmental actions while decreasing PWB. Well-known scholars like [16, 24] argue that adolescents and women confronting socioeconomic stressors are particularly vulnerable to the adverse mental health effects of EA. In the same direction, the empirical study of [48] emphasizes that higher levels of EA are positively connected with lower well-being. In contrast, [49] advises that nurturing radical hope and meaning-making can mitigate some negative impacts of EA in youth. [50] also suggests the significant negative effects of EA on the well-being of individuals.

As a result, EA appears to be a negative factor that ruins well-being. However, this investigation needs to be confirmed among entrepreneurs. Therefore:

H2. EA negatively affects PWB among Egyptian entrepreneurs.

3.3 Climate Change Anxiety (CCA) and Mental Health Problems (MHP)

Climate change acts as a significant stressor, leading to various mental health issues such as anxiety and depression [51]. [13] explains the phenomenon of climate anxiety, covering its prevalence, psychological impacts, and potential mechanisms to manage these anxieties. A systematic review by [29] identifies the mental health outcomes linked to climate change, i.e., increased anxiety, depression, and substance abuse. There is a positive connection between anxiety disorders and climate change [30]. According to [6], CCA positively develops mental health among Gen Z Filipinos. Similarly, environmental activism can buffer climate anxiety's adverse mental health effects, showing that active engagement in ecological causes can mitigate anxiety and promote PWB [5]. Scholars such as [52, 53] emphasize the impact of mental health on climate change. Likewise, CCA positively and significantly enhances mental health issues [54, 55]. In the same direction, [33] proposes a causal pathways framework for understanding the mental health impacts of climate change on medical students [15]. Using a global survey on anxiety among children and young people, [14] demonstrates the positive effects of climate anxiety on the mental health of these respondents. [1] provide a scoping review of the literature on climate change and mental health, identifying research gaps and suggesting areas for future study [1]. In this way, there is a growing recognition of CCA towards MHP [12, 17]. [56] unveil the connection between climate distress and generalized anxiety, which demonstrates that climate-related distress contributes to broader anxiety symptoms. The seminal work of [11] claims that interventions targeting death anxiety can reduce climate-related psychotic symptoms, whereas death anxiety also mediates the connection between CCA and psychotic experiences.

Consequently, the domain literature suggests that CCA is positively and significantly connected with MHP. In this way, the connection may be the same among Egyptian entrepreneurs. Thus:

H3. CCA positively enhances MHP among Egyptian entrepreneurs.

3.4 Climate Change Anxiety (CCA) and Psychological Well-Being (PWB)

CCA significantly and negatively affects PWB. Individuals facing CCA exhibit heightened levels of psychological distress, with anxiety and worry [13, 57, 58]. Besides, vulnerable populations, such as those perceiving more significant personal or community susceptibility to climate influences, are predominantly susceptible to raised anxiety levels [18, 54]. Climate anxiety can adversely impact the mental health and developmental trajectories among both children and young people [14]. Different variations, such as cultural and regional, positively influence the manifestation of CCA, with socioeconomic factors and governmental responses playing significant roles [31, 32]. Focusing on predominantly negative impacts, studies by [34, 35] demonstrate that nurturing hope and promoting effective coping strategies can mitigate the psychological toll of climate change anxiety. Consequently, the literature confirms that CCA is complicatedly linked to various forms of psychological distress, underlining its massive impacts on mental health and well-being.

In the above domain literature, it is evident that CCA creates despair and disturbs the PWB of individuals. However, among Egyptian entrepreneurs, this investigation needs further confirmation. Henceforth:

H4. CCA negatively affects PWB among Egyptian entrepreneurs.

4. Methods

4.1 Sample and Instrumental Confirmation

The researchers used the quantitative approach, as it is the best approach to investigate the effect of EA and CCA on MHP and PWB. Previous studies such as [7, 9, 21, 24, 41] mainly applied the same technique to explore the problem of anxiety, stress, MHP, PWB, CCA, etc.

The study's respondents are Egyptian entrepreneurs involved in several entrepreneurial activities. Globally, entrepreneurs confront significant problems related to mental disorders and PWB due to EA and climate change issues [19, 41]. Egyptian entrepreneurs are not free from these climatic and psychological issues, which seriously disturb their entrepreneurial capability, vision, innovation and quality of life [20]. Furthermore, climate change, with mental health and the get-up-and-go for a better future, puts an emotional and psychological toll on those at the forefront of innovation and change [21].

The researchers applied a survey questionnaire to gather data, which was given in English. Before moving to large-scale data collection, we warranted the survey tool by confirming its validity and reliability by conducting a pilot test. In the pilot test, we gathered 22 cases. With regard to the validity of the tool, we confirmed it by getting feedback from the respondents, who noted it as a minor modification with no comment regarding the difficulty of the language due to their proficiency in English. We also sent two survey forms to university professors; one is an expert in SEM analysis, with the latest trends of quantitative research methods, and the other is a professor of psychology with expertise in PWB and mental health-related domains. To improve validity, the

experts suggested a few minor issues, which were rectified accordingly. Concerning the instrument's reliability, we ensured its loadings (association of the items and their respective factors) and Cronbach's alpha (α) to examine the internal consistency of the items. Most items appeared to be greater than the loading score of 0.70 in the loadings, which is considered fair [59]. Overall, Cronabch's alpha appeared at 0.822, with fair scores (>0.70) [59]. Besides, the alpha for each construct is also found to be greater than 0.70, which is acceptable [59]. Therefore, The questionnaire is considered a valid and reliable tool for gathering large-scale data.

4.2 Data Collection Procedures

To accommodate technological accessibility and a physical approach, we utilized both online and offline modes of data collection. We approached Egyptian entrepreneurs through a convenience sampling strategy. Concerning online data collection, we sent the electronic survey link through emails, WhatsApp, Facebook groups, etc. Likewise, we visited different areas/cities where Egyptian entrepreneurs engaged in various entrepreneurship activities and ran their enterprises and ventures.

Concerning the ethical values of the respondents, we correctly followed the ethical guidelines. We received approval for the survey tool from the ethical committee of "The Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia". We also ensured the respondents' privacy and confidentiality of their responses, which can be used only for educational purposes. Moreover, we informed them of their unpaid or voluntary participation and willingness to contribute to the study. We got a signed consent form from them and acknowledged the aim and objective of the study. Initially, 500 survey forms were sent and distributed among the respondents. We received 316 survey forms in raw data with a response rate of 63%. After data screening and cleaning, two cases were found to be unsuitable and containing missing values, so were discarded. Therefore, we ended up with 314 valid cases to proceed with the analysis. This sample size is sufficient for the study's objectives, as it allowed for adequate statistical power to identify trends and correlations relevant to our analysis. However, we acknowledge the limitations of convenience sampling, including the potential for selection bias and reduced generalizability of the findings. Despite this limitation, convenience sampling was appropriate due to the study's exploratory nature and the challenge of accessing a broader, more randomized population of Egyptian entrepreneurs.

4.3 The Full Collinearity Test

Ensuring a full collinearity test is a good initiative for researchers in order to avoid misleading results. As such, we followed the suggestions by [60, 61] to calculate the full collinearity test. In this manner, we used a variance inflation factor (VIF) to gauge the complete collinearity analysis. A VIF greater than 3.3 advises extreme collinearity with standard method bias (CMB), whereas its score equal to or less than 3.3 advocates no presence of CMB. As presented in Table 1, the acquired VIF values for the latent variables accentuate no assumption of CMB, as all the scores due to the presence of the results are less than 3.3.

Table 1 Full collinearity VIF.

Factor	VIF [<3.3]
Eco-anxiety [EA]	2.123
Climate change anxiety [CCA]	2.032
Mental health problems [MHP]	2.777
Psychological wellbeing [PWB]	1.593

Note: Common method bias. Source: The researchers' calculations.

4.4 Measurement Scales

The researchers measured all the factors by adopting all the items from the domain literature. More specifically, we used twenty-two items of [9] to measure EA. Likewise, we assessed PWB on twelve items. These items are derived from the study of [7]. We gauged CCA on twelve items, which were borrowed from [28]. Finally, we applied four items to measure MHP based on two dimensions (anxiety and depression), as measured and recommended by [4] (see details in Table 2). We evaluated all the items with a five-point Likert scale ranging from "strongly agree" to "strongly disagree".

Table 2 Measurements.

Construct	Items details	Source
Eco-anxiety [EA]	EA1: It upsets me to see how animals suffer from environmental pollution. EA2: I worry about the next generation because climate change will drastically affect them. EA3: I am so anxious about climate change that I cry. EA4: It makes me angry that many people fail to do even the most essential things to protect the environment. EA5: I have unusual muscle tension since I've become more aware of climate change. EA6: I feel sorry for those whose health is already negatively affected by climate change. EA7: I am terrified by how many things have changed in just a few years because of climate change. EA8: My loved ones become irritated because I talk about my climate change concerns too often. EA9: I am worried about the increasing number of natural disasters caused by climate change. EA10: Thoughts of climate change often distract me from my current tasks. EA11: It makes me sick to think about how much certain countries are polluting the environment, and there is nothing I can do about it. EA12: It scares me that the weather is becoming more and more unpredictable because of climate change. EA13: I am so anxious about climate change that it affects my performance at school/work.	[9]

	EA14: It is frustrating that we elect decision-makers who do not seriously consider the work of climate scientists/experts	
	AE15: I feel uneasy when I think about the consequences of climate change.	
	EA16: People look at me strangely because I am so passionate about environmental action.	
	EA17: I find it terrifying that the seasons have changed a lot quickly.	
	EA18: I worry that every decision I make will result in something harmful to the environment.	
	EA19: It makes me angry that our environmentally damaging behaviors increase the suffering of people who live in areas that are more impacted by climate change.	
	EA20: I have a very negative perspective on the future of the planet because of climate change.	
	EA21: I am constantly on alert because there could be a climate change-related disaster at any time.	
	EA22: I sleep poorly because I keep thinking about climate change.	
Psychological well-being [PWB]	PWB1: I can pay attention to whatever I am doing lately. PWB2: I have recently had the chance to enjoy the things I do daily. PWB3: I feel like I am always under pressure. PWB4: I haven't slept well lately because of worry. PWB5: I felt like I was making a difference in the world. PWB6: I was able to make choices regarding things. PWB7: I have felt hopeless because of my problems. PWB8: I have dared to face my problems head-on. PWB9: I have become down and miserable lately. PWB10: My self-esteem has been steadily declining PWB11: I have been treated as thinking that I am not worth anything. PWB12: I have been feeling good.	[7]
Climate change anxiety [CCA]	CCA1: Thinking about climate change makes it difficult for me to concentrate. CCA2: Thinking about climate change makes it difficult for me to sleep. CCA3: I have nightmares about climate change. CCA4: I find myself crying because of climate change. CCA5: I think, why can't I handle climate change better? CCA6: I go away by myself and think about why I feel this way about climate change. CCA7: I write down my thoughts about climate change and analyze them. CCA8: I think, "I do react to climate change this way" CCA9: My concerns about climate change make it hard for me to have fun with my family or friends. CCA10: I have problems balancing my concerns about sustainability with the needs of my family. CCA11: My concerns about climate change undermine my ability to work to my potential.	[28]

	CCA12: My friends say I think about climate change too much.	
Mental health problems [MHP]	MHP1: I have recently lost much sleep over worry.	[4]
	MHP2: I have recently felt constantly under strain.	
	MHP3: I have recently felt that I couldn't overcome my difficulties	
	MHP4: I have recently been feeling unhappy and depressed.	

Source: Adopted from the literature.

5. Data Analysis and Results

5.1 Sample Characteristics

We noticed a few core sample characteristics to help understand the tendencies of the population. The gender indicator shows a majority of males (n = 215 or 68.47%) against females (n = 99 or 31.53%). About age, a majority of respondents ranged between 21-30 years (n = 12 or 38.85), whereas a minimum number of respondents were less than 20 years (n = 26 or 8.28). Concerning the types of entrepreneurial ventures, most entrepreneurs were from technology and IT startups (n = 52 or 16.56%). In contrast, a minority of entrepreneurs (n = 22 or 7.01) contributed from agribusiness and agri-tech (see details in Table 3).

Table 3 Sample characteristics (n = 314).

Construct	Category	Frequency and percentage
Gender	Male	215(68.47)
	Female	99(31.53)
Age [years]	<20	26(8.28)
	21-30	122(38.85)
	31-40	88(28.03)
	41-50	46(14.65)
	51 and >	32(10.19)
Type of entrepreneurial venture	Technology and IT startups	52(16.56)
	Agri-business and agri-tech	22(7.01)
	Renewable energy and sustainability	40(12.74)
	Tourism and hospitality	28(8.92)
	Fashion and handicrafts	31(9.87)
	Education and ed-tech	41(13.06)
	Social entrepreneurship	42(13.37)
	Real estate and construction	30(9.55)
	Food and beverages	28(8.92)

Source: Researchers' own questionnaire's calculation.

5.2 Measurement Model

In this study, we applied Structural Equation Modelling (SEM) as the primary statistical technique for data analysis, as it allows for the simultaneous examination of complex relationships between observed and latent variables. It is, therefore, predominantly suited for testing the study's

hypotheses related to the multidimensional nature of psychological and environmental factors such as EA, MHP, CCA, and PWB. This method is appropriate given the study's theoretical framework, which involves multiple constructs and interrelationships [59, 62]. The researchers observed the measurement model, where we confirmed fundamental aspects, i.e., composite reliability (CR), factor loadings (>0.7), and average variance extracted (AVE) in the light of the recommendations of [59]. These aspects are regarded as good contributions to establishing reliability and convergent validity. As a result of these aspects, we found a majority of constructs appeared to be above the recommended threshold values (>0.70) [59]. Contrary to expectations, a few items, such as EA4, EA7, EA10, EA12, EA15, EA18, EA20, EA21, CCA3, CCA5, CCA7, CCA9, PWB4, PWB7, PWB10 and PWB11, were not above the required values (>0.70). Therefore, we decided to delete them permanently to avoid any issues with the analysis (Table 4). Moreover, the values of AVE for all the constructs are noted to be greater than 0.50 (>0.50), and CR's values are above 0.70 (>0.70) of the threshold values. Besides, the values of Cronbach's alpha (α) are also noticed above the suggested values (>0.70) for all the constructs, which is adequate [59].

Table 4 Measurement model.

Construct	Item code	Factor loadings	CR	AVE	α
Eco-anxiety [EA]	EA1	0.899	0.955	0.752	0.873
	EA2	0.882			
	EA3	0.880			
	EA5	0.871			
	EA6	0.862			
	EA8	0.843			
	EA9	0.832			
	EA11	0.829			
	EA13	0.811			
	EA14	0.800			
	EA16	0.792			
	EA17	0.788			
	EA19	0.771			
	EA22	0.763			
Climate change anxiety [CCA]	CCA1	0.867	0.939	0.689	0.832
	CCA2	0.855			
	CCA4	0.842			
	CCA6	0.832			
	CCA8	0.811			
	CCA10	0.802			
	CCA11	0.798			
	CCA12	0.771			
Mental health problems [MHP]	MPH1	0.872	0.920	0.743	0.809
	MPH2	0.869			
	MPH3	0.858			

	MPH4	0.849			
	PWB1	0.891			
	PWB2	0.872			
	PWB3	0.866			
Psychological well-being [PWB]	PWB5	0.841	0.948	0.721	0.855
	PWB6	0.832			
	PWB8	0.822			
	PWB9	0.817			
	PWB12	0.786			

Source: Calculated by the authors.

Note(s): Deleted items: EA4, EA7, EA10, EA12, EA15, EA18, EA20, EA21, CCA3, CCA5, CCA7, CCA9, PWB4, PWB7, PWB10, PWB11 .

AVE = summation of the square of the factor loadings.

CR = square of the summation of the factor loadings.

α = Cronbach's alpha.

In addition, to ensure the square root of the AVE with overall correlations between all constructs, we conducted discriminant validity (DV) through the criterion of [63]. As a result, overall correlations between all variables go from 0.563 to 0.673, less than the square root of AVE approximations, which are 0.603-0.833 (Table 5). These values postulate a strong association of variables with their corresponding indicators and suggest a good DV [62]. Besides, the correlations between exogenous variables appeared to be less than 0.85, which satisfied the DV [64].

Table 5 Discriminant validity.

Constructs	1	2	3	4
1. Eco-anxiety	**0.833**			
2. Climate change anxiety	0.653	**0.808**		
3. Mental health problems	0.563	0.673	**0.715**	
4. Psychological well-being	0.609	0.589	0.586	**0.603**

Source: Calculated by the authors.

Note: "Diagonals represent the square root of the AVE while the other entries represent the correlations."

5.3 Structural Model

5.3.1 Model Fitness

Well-known researchers such as [62, 65] strongly recommend that researchers ensure their model's fitness before assessing the hypotheses. Pursuing the same pattern, we noted the model fitness by ensuring important model fit indices, i.e., CMIN (2.031), GFI (0.917), AGFI (0.923), NFI (0.919), CFI (0.933), and RMSEA (0.029) (see Table 6 and Figure 2), which ensured an absolute fitness/good fitness of the model.

Table 6 Goodness of fit indices.

Model fit indices →	CMIN/*df*	GFI	AGFI	NFI	CFI	RMSEA
Achieved values [Required values]	2.031 [<3]	0.917 [>0.90]	0.923 [>0.90]	0.919 [>0.90]	0.933 [>0.90]	0.029 [<0.05]

Source: Calculated by the authors.

Note: "CMIN = χ^2/chi-square/*df*; *df* = degrees of freedom; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation".
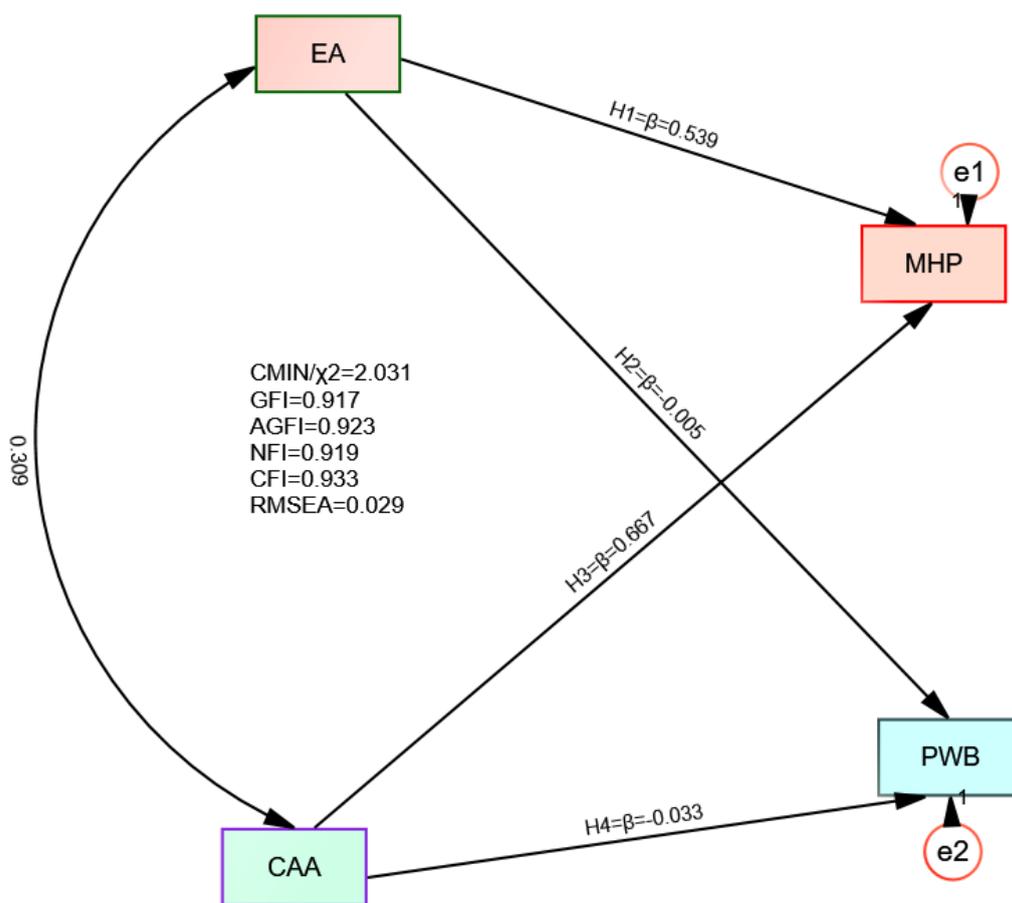

CMIN/χ2=2.031
GFI=0.917
AGFI=0.923
NFI=0.919
CFI=0.933
RMSEA=0.029

Figure 2 Structural path model. Source: Calculated by the authors. Note(s): EA = Eco-anxiety; CAA = Climate change anxiety; MHP = Mental health problems; PWB = Psychological well-being; CMIN = χ^2/chi-square/*df*; *df* = degrees of freedom; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

5.3.2 Hypotheses Assessment

The researchers used a structural equation model (SEM), in which path analysis is a significant tool to assess the hypotheses [59]. The results demonstrate a positive effect of EA on MHP, which supported the H1 (H1 = β = 0.539; P < 0.01). On the other hand, EA is found to be a negative predictor of PWB (H2 = β = -0.005; P > 0.01). As such, H2 is supported. Furthermore, the effect of CCA on MHP

is positive (H3 = β = 0.667; P < 0.01), which means H3 is accepted. Finally, on the positive side expectations, the effect of CCA on PWB appears to be negative, which rejected H4 (H4 = β = -0.033; P > 0.01). Therefore, H4 is also supported (Table 7 and Figure 2).

Table 7 Hypotheses confirmation.

H.No	IVs	Path	DVs	Estimate	SE	CR	P-value	Assessment
H1	Eco-anxiety	→	Mental health problems	0.539	0.133	4.045	0.000	Established
H2	Eco-anxiety	→	Psychological well-being	-0.005	0.004	1.414	0.158	Established
H3	Climate change anxiety	→	Mental health problems	0.667	0.159	4.204	0.000	Established
H4	Climate change anxiety	→	Psychological well-being	-0.033	0.015	2.190	0.029	Established

Source: Authors' own estimation.

Note: "IVs = independent variables; DVs = dependent variables; SE = standard error; CR = critical ratio; *p* = significance level; Significance level = p < 0.05".

6. Discussion

Based on quantitative assessments, this study investigated the impact of factors such as EA and CCA on MHP and PWB among Egyptian entrepreneurs. The findings of the survey underline the positive effect of EA on MHP. These results align with several domain studies, such as [3, 16, 24, 42, 43], which confirm the positive links between EA and MHP. The positive relationship between EA and MHP can be credited to the intense emotional and psychological responses provoked by environmental concerns. Witnessing grief, worrying about future generations, and anxiety about pollution contribute to noteworthy emotional distress. The fear of rapid ecological changes, growing natural disasters, and unpredictable weather generates a persistent sense of insecurity and fear. Frustration with political inaction and others' failure to defend the environment leads to irritation and hopelessness. Social conflicts and isolation due to frequent negotiations about climate concerns further exacerbate anxiety and depression. Physical symptoms, such as muscle tension and poor sleep, along with obsessive thoughts and diminished daily functioning, exemplify the profound impact of EA on mental well-being. These constructs together highlight how EA is established through several emotional, cognitive, and physical symptoms, significantly contributing to mental health problems.

The study's findings confirm the negative effect of EA on entrepreneurs' PWB. Likewise, these negative results align with numerous domain scholars who unveil EA as a massive resistance to the development of PWB [16, 24-27]. According to the results, EA affects Egyptian entrepreneurs' attention regarding their entrepreneurial targets. They cannot enjoy their daily routines and remain under frequent pressure. Due to EA and worry, they have not slept well and do not feel they are making a difference in the world. They are unable to make their own choices regarding their entrepreneurial actions. They think of themselves as hopeless due to their EA problems. They have become down and miserable, and their self-esteem is in steady decline.

Furthermore, the results confirm a positive effect of CCA on MHP. The literature also reinforces these results [5, 52-55]. In light of the findings, Egyptian entrepreneurs' thoughts on climate change makes concentrating problematic. They are discerning about climate change, which makes them anxious and affects their ability to sleep well. Many have negative thoughts and feel they cannot handle climate change better due to their existing negative associations. They leave by themselves and reflect on why they think this way about climate change. They write down their thoughts about climate change and analyze them. Their concerns concerning climate change make it hard for them to have fun with their family or friends. They confront massive problems in balancing their apprehensions about sustainability with the requirements of their family. Moreover, their anxieties regarding climate change destabilize their ability to work with potential.

Finally, CCA appears to be a negative predictor of PWB. These results are in line with existing literature, such as [14, 18, 32, 34, 54]. These negative results suggest that CCA ruins the PWB of entrepreneurs because they are frightened by the dangerous effects of climate change. CCA also raises their worries and tensions regarding completing tasks and projects related to their businesses. Finally, entrepreneurs confront difficulties where their problems, i.e., trouble sleeping and emotional distress, are increasing due to CCA. Ultimately, these issues decrease the PWB of entrepreneurs.

7. Conclusion

The study's overall findings unveil a positive effect of EA on MHP and a negative impact on entrepreneurs' PWB. Moreover, the study confirms a positive effect of CCA on MHP but a negative effect on entrepreneurs' PWB. In the study, the development of MHP can be possible through EA and CCA. However, both EA and CCA are negative predictors of entrepreneurs' PWB. These severely hinder and disturb the quality of life and well-being.

The study's practical implications are that mental health professionals must incorporate EA into their practice, proposing targeted interventions and support tailored to those experiencing growing fears about climate change. This can include healing options to address EA, helping individuals manage their concerns more efficiently. The study's findings support policymakers and mental health practitioners in developing policies regarding reducing stress, anxiety, and fears about climate change among entrepreneurs. Workplace wellness programs and resilience training become crucial for entrepreneurs, who are predominantly vulnerable to the psychological impacts of EA. These options can give entrepreneurs the tools and strategies required to cope with EA, thus improving their PWB and ability to sustain their businesses. Policymakers must consider the mental health implications of EA when developing environmental and economic strategies, confirming that passable support systems are in place. Community support is essential; creating support and allocating resources and groups to local organizations can provide individuals with a platform for communal experiences and mutual support, nurturing a sense of community and resilience. Companies can alleviate EA by espousing and promoting sustainable practices, representing their commitment to tackling climate change. By admitting and addressing the mental health challenges related to EA, these practical measures can help create a more robust and well-supported population that is better fortified to face the challenges posed by climate change.

With regard to the theoretical implications, the study underlines the complex association between EA, MHP, and PWB. These results contribute to the broader understanding of

environmental stressors, i.e., climate change can affect psychological states, strengthening the idea that EA is an impactful MHP. Moreover, the negative impact of EA on entrepreneurs' PWB exerts a need to enlarge existing theories of entrepreneurial psychology and occupational stress to embrace environmental anxieties. These results could lead to more inclusive frameworks that better clarify the external environmental factors that affect individual mental health and occupational performance. Finally, the study's findings will enrich the depth of the literature by adding an empirical assessment from a developing context.

The study contains several limitations, as the conceptual framework needs to have a concerned theory to underprop the model of the study. The study is restricted to cross-sectional data gathered through a survey tool. Also, the study is limited to a few variables, specifically EA, CCA, MHP, and PWB. Besides, the study's respondents only focused on Egyptian entrepreneurs who were engaged in different activities. Hence, there may be issues of generalizability. Finally, the conclusions of the study are based on 314 valid cases.

In the future, more longitudinal studies must be conducted to enrich the validity of the results. Forthcoming studies should apply related theories, such as stress and coping theory and environmental identity theory, which can provide a solid foundation for studying the effects of EA and CCA on entrepreneurs' mental health and psychological well-being and underpin the conceptual framework. Other constructs, such as entrepreneurial culture, environmental pollution, environmental behavior, climate change mitigation, etc., should be investigated in future studies. Other respondents in other fields, such as medicine, education, and health, could also be included. Furthermore, the sample size must be extended in future studies to generalize the results.

Author Contributions

Abdelwahed NAA developed the conceptualization framework, hypotheses of the study, analysed the data and discussed the results in the light of literature. Ramish MS developed the methods and write-up of the manuscript. Both authors accepted the final version after revisions.

Competing Interests

The authors have declared that no competing interests exist.

References

1. Charlson F, Ali S, Benmarhnia T, Pearl M, Massazza A, Augustinavicius J, et al. Climate change and mental health: A scoping review. Int J Environ Res Public Health. 2021; 18: 4486.
2. Abdullah KH, Azizan A. Ecoanxiety and mental health unveiled: A bibliometric analysis. Int J Public Health. 2024; 13: 783-793.
3. Boyd CP, Jamieson J, Gibson K, Duffy M, Williamson M, Parr H. Eco-anxiety among regional Australian youth with mental health problems: A qualitative study. Early Interv Psychiatry. 2024. doi: 10.1111/eip.13549
4. Drissi N, Alhmoudi A, Al Nuaimi H, Alkhyeli M, Alsalami S, Ouhbi S. Investigating the impact of COVID-19 lockdown on the psychological health of university students and their attitudes toward mobile mental health solutions: Two-part questionnaire study. JMIR Form Res. 2020; 4: e19876.
5. Schwartz SE, Benoit L, Clayton S, Parnes MF, Swenson L, Lowe SR. Climate change anxiety and mental health: Environmental activism as buffer. Curr Psychol. 2023; 42: 16708-16721.
6. Reyes ME, Carmen BP, Luminarias ME, Mangulabnan SA, Ogunbode CA. An investigation into the relationship between climate change anxiety and mental health among Gen Z Filipinos. Curr Psychol. 2023; 42: 7448-7456.
7. Madhavi T, Sharma S, Joshi A. Exploring the factors that contribute to psychological wellbeing in successful entrepreneurs. J ReAtt Ther Dev Divers. 2023; 6: 195-203.
8. Stanley SK, Hogg TL, Leviston Z, Walker I. From anger to action: Differential impacts of eco-anxiety, eco-depression, and eco-anger on climate action and wellbeing. J Clim Change Health. 2021; 1: 100003.
9. Ágoston C, Urban R, Nagy B, Csaba B, Kőváry Z, Kovacs K, et al. The psychological consequences of the ecological crisis: Three new questionnaires to assess eco-anxiety, eco-guilt, and ecological grief. Clim Risk Manag. 2022; 37: 100441.
10. Bourban M. Eco-anxiety and the responses of ecological citizenship and mindfulness. In: The Palgrave handbook of environmental politics and theory. Cham: Springer International Publishing; 2023. pp. 65-88.
11. Fekih-Romdhane F, Malaeb D, Postigo A, Sakr F, Dabbous M, Khatib SE, et al. The relationship between climate change anxiety and psychotic experiences is mediated by death anxiety. Int J Soc Psychiatry. 2024; 70: 574-581.
12. Galleto LM, Sagala GB. Role of environmental communication in climate change anxiety and mental health of a select community in the Philippines. J Commun Manag. 2024; 3: 26-35.
13. Clayton S. Climate anxiety: Psychological responses to climate change. J Anxiety Disord. 2020; 74: 102263.
14. Hickman C, Marks E, Pihkala P, Clayton S, Lewandowski RE, Mayall EE, et al. Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. Lancet Planet Health. 2021; 5: e863-e873.
15. Schwaab L, Gebhardt N, Friederich HC, Nikendei C. Climate change related depression, anxiety and stress symptoms perceived by medical students. Int J Environ Res Public Health. 2022; 19: 9142.
16. Rothschild J, Haase E. Women's mental health and climate change Part II: Socioeconomic stresses of climate change and eco-anxiety for women and their children. Int J Gynecol Obstet.

2023; 160: 414-420.

17. Pearson H. The rise of eco-anxiety: Scientists wake up to the mental-health toll of climate change. Nature. 2024; 628: 256-258.

18. Gago T, Sargisson RJ, Milfont TL. A meta-analysis on the relationship between climate anxiety and wellbeing. J Environ Psychol. 2024; 94: 102230.

19. Arnout BA. An epidemiological study of mental health problems related to climate change: A procedural framework for mental health system workers. Work. 2023; 75: 813-835.

20. Hussein MF, Osman SR, Abd El Megied N, Goda SM, Hassan SM. Relation between climate changes, quality of life and psychological status among Assiut population: Online based survey. Assiut Sci Nurs J. 2023; 11: 364-373.

21. Young CH. Spinning out: Climate change, mental health and fighting for a better future. London, UK: Footnote Press; 2023.

22. Usher K, Durkin J, Bhullar N. Eco-anxiety: How thinking about climate change-related environmental decline is affecting our mental health. Int J Ment Health Nurs. 2019; 28: 1233-1234.

23. Lutz PK, Zelenski JM, Newman DB. Eco-anxiety in daily life: Relationships with well-being and pro-environmental behavior. Curr Res Ecol Soc Psychol. 2023; 4: 100110.

24. Mondal S, Kar J, Bagchi E, Mukhopadhyay U. Eco-anxiety in adolescents: A meta-analysis of the impact of climate change on mental health. In: Climate crisis, social responses and sustainability: Socio-ecological study on global perspectives. Cham: Springer Nature Switzerland; 2024. pp. 347-368.

25. Hogg TL, Stanley SK, O'Brien LV, Watsford CR, Walker I. Clarifying the nature of the association between eco-anxiety, wellbeing and pro-environmental behaviour. J Environ Psychol. 2024; 95: 102249.

26. Shao L, Yu G. Media coverage of climate change, eco-anxiety and pro-environmental behavior: Experimental evidence and the resilience paradox. J Environ Psychol. 2023; 91: 102130.

27. Passmore HA, Lutz PK, Howell AJ. Eco-anxiety: A cascade of fundamental existential anxieties. J Constr Psychol. 2023; 36: 138-153.

28. Clayton S, Karazsia BT. Development and validation of a measure of climate change anxiety. J Environ Psychol. 2020; 69: 101434.

29. Cianconi P, Betrò S, Janiri L. The impact of climate change on mental health: A systematic descriptive review. Front Psychiatry. 2020; 11: 490206.

30. Taylor S. Anxiety disorders, climate change, and the challenges ahead: Introduction to the special issue. J Anxiety Disord. 2020; 76: 102313.

31. Newport C, Tiatia-Siau J, Aimiti Ma'ia'i K, Underhill-Sem Y, Woodward A. Anchored in pacific protocols–climate change, mental health and wellbeing. Clim Dev. 2024; 16: 540-550.

32. Haqyar HK, Bayan E, Abdulrashid M. Psychological anxiety responses to climate change in Nangarhar university students. Nangarhar Univ Int J Biosci. 2024; 3: 44-48.

33. Berry HL, Bowen K, Kjellstrom T. Climate change and mental health: A causal pathways framework. Int J Public Health. 2010; 55: 123-132.

34. Fritze JG, Blashki GA, Burke S, Wiseman J. Hope, despair and transformation: Climate change and the promotion of mental health and wellbeing. Int J Ment Health Syst. 2008; 2: 13.

35. Budziszewska M, Jonsson SE. From climate anxiety to climate action: An existential perspective on climate change concerns within psychotherapy. J Humanist Psychol. 2021. doi:

10.1177/0022167821993243.

36. Movahedi N, Hosseinian S, Rezaeian H, Nooripour R. Mediating role of alexithymia in relationship between cyberbullying and psychotic experiences in adolescents. BMC Psychol. 2024; 12: 465.

37. Nooripour R, Viki MG, Ghanbari N, Farmani F, Emadi F. Alpha/theta neurofeedback rehabilitation for improving attention and working memory in female students with learning disabilities. OBM Neurobiol. 2024; 8: 229.

38. Hosseini SR, Nooripour R, Ghanbari N, Firoozabadi A, Peters E. Evaluation of reliability and validity of the Persian version of Peters et al. delusions inventory (PDI-40) in Iranian non-clinical and clinical samples. BMC Psychol. 2023; 11: 294.

39. Ghanbari N, Nooripour R, Shahidi S, Zahedi S, Heydari M, Nejati V. Efficacy of Interpersonal and Social Rhythm Therapy (IPSRT) on emotion regulation, addiction severity, and craving in methamphetamine abusers. Int J High Risk Behav Addict. 2024; 13: e140136.

40. Nooripour R, Sikström S, Ghanbari N, Hosseinian S, Hassani-Abharian P, Ilanloo H. Neurofeedback rehabilitation reduces anxiety in methamphetamine abusers. NeuroRegulation. 2021; 8: 128-128.

41. Lambert L, Warren MA, Sam A, Ghonaem E. Perspectives: Positive psychology tackles "wicked problems" [Internet]. Sharq, Kuwait: Middle East Journal of Positive Psychology; 2021. Available from:
https://www.middleeastjournalofpositivepsychology.org/index.php/mejpp/article/view/131.

42. Gunasiri H, Wang Y, Watkins EM, Capetola T, Henderson-Wilson C, Patrick R. Hope, coping and eco-anxiety: Young people's mental health in a climate-impacted Australia. Int J Environ Res Public Health. 2022; 19: 5528.

43. Er S, Murat M, Ata EE, Köse S, Buzlu S. Nursing students' mental health: How does eco-anxiety effect? Int J Ment Health Nurs. 2024; 33: 1315-1326.

44. Ingle HE, Mikulewicz M. Mental health and climate change: Tackling invisible injustice. Lancet Planet Health. 2020; 4: e128-e130.

45. Lalal N, Mishal S. Eco-Anxiety: Impact on generation Z's mental health and the contemporary significance of environmental awareness and education. Int J Policy Sci Law. 2021; 2: 3313-3331.

46. Christodoulou N, Laaidi K, Geoffroy PA. Eco-anxiety: Towards a medical model and the new framework of ecolalgia. Bipolar Disord. 2024; 26: 532-547.

47. Mulligan D, O'Callaghan AK, Guerandel A. "Don't look up": Eco-anxiety presenting in a community mental health service. Ir J Psychol Med. 2024; 41: 144-147.

48. Ojala M. How do children cope with global climate change? Coping strategies, engagement, and well-being. J Environ Psychol. 2012; 32: 225-233.

49. Malboeuf-Hurtubise C, Léger-Goodes T, Herba CM, Bélanger N, Smith J, Marks E. Meaning making and fostering radical hope: Applying positive psychology to eco-anxiety research in youth. Front Child Adolesc Psychiatry. 2024; 3: 1296446.

50. Takshe AA, Hashi Z, Mohammed M, Astari A. Eco-anxiety: AQ method analysis towards eco-anxiety attitudes in the United Arab Emirates. J Soc Work Pract. 2023; 37: 283-295.

51. Clayton S. Climate change and mental health. Curr Environ Health Rep. 2021; 8: 1-6.

52. Gifford E, Gifford R. The largely unacknowledged impact of climate change on mental health. Bull At Sci. 2016; 72: 292-297.

53. Palinkas LA, Wong M. Global climate change and mental health. Curr Opin Psychol. 2020; 32:

12-16.

54. Asgarizadeh Z, Gifford R, Colborne L. Predicting climate change anxiety. J Environ Psychol. 2023; 90: 102087.

55. Trombley J, Chalupka S, Anderko L. Climate change and mental health. AJN Am J Nurs. 2017; 117: 44-52.

56. Nezlek JB, Cypryańska M. Relationships between climate change distress, generalized anxiety, and climate-related symptoms of mental disorders. Anxiety Stress Coping. 2024; 37: 545-557.

57. Doherty TJ, Clayton S. The psychological impacts of global climate change. Am Psychol. 2011; 66: 265-276.

58. Hrabok M, Delorme A, Agyapong VI. Threats to mental health and well-being associated with climate change. J Anxiety Disord. 2020; 76: 102295.

59. Hair Jr JF, Hult GT, Ringle CM, Sarstedt M. A primero partial least squares structural equation modeling (PLS-SEM). 3rd ed. Thousand Oaks, CA: Sage; 2022.

60. Kock N, Gaskins L. The mediating role of voice and accountability in the relationship between Internet diffusion and government corruption in Latin America and Sub-Saharan Africa. Inf Technol Dev. 2014; 20: 23-43.

61. Kock N, Lynn GS. Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. J Assoc Inf Syst. 2012; 13: 546-580.

62. Hair JF, Hult GT, Ringle C, Sarstedt M. A primer on partial least squares structural equation modeling (PLS-SEM). 2nd ed. Thousand Oaks, CA: Sage; 2017.

63. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. J Mark Res. 1981; 18: 39-50.

64. Awang Z. Structural equation modeling using AMOS. Shah Alam, Malaysia: University Teknologi MARA Publication Center; 2014.

65. Kline RB. Principles and practice of structural equation modeling. 2nd ed. New York, NY: Guild Wood; 2005.