

The Psychometric Properties of the Environmental Worry Index

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Abstract

Introduction: Environmental-related hazards are a global problem; consequently, an Environmental Worry Index (EWI) was developed; however, the psychometric properties of this scale in the Spanish population are unavailable.

Purpose: The objective of this study was to adapt and examine the psychometric properties of an Environmental Worry Inventory (EWI) in a Spanish-speaking student population.

Methodology: This study adopted a cross-sectional design. It used a snowball sampling technique to collect data using the compact questionnaire comprise of EWI, Climate Anxiety Scale (CAS), and Big Five Inventory (BFI-15) from 251 participants in 2023 among students of Autonomous University of Ciudad Juarez (UACJ), Juarez, Mexico.

Results: Results of exploratory factor analysis (EFA), the Kaiser-Meyer-Olkin (KMO=0.891) and Bartlett's Test of Sphericity ($p < 0.001$) showed adequate data. Confirmatory factor analysis (CFA; $\chi^2 (5) = 78,595$, CFI = 0.94, and RMSEA=0.078) demonstrated adequate goodness of fit. EWI was associated with CAS, and neuroticism dimension of BFI-15. It has an acceptable overall Cronbach Alpha coefficient ($\alpha = 0.890$); the two subscale factors' reliability coefficients ranged from .80 to .89.

Conclusion: The study concluded that EWI is reliable, valid and recommended for use among Mexicans especially the Spanish speaking students.

Keywords

Mental health, eco-anxiety, environmental worry, EWI, climate change

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Introduction

Environmental hazards, such as pollution, climate change, and resource depletion, have become global challenges with profound psychological and social implications. Environmental hazards or climate change pose an existential threat to the human condition and its continued existence (American Psychological Association (APA), 2017). However, these challenges manifest differently across cultures and regions (Ramrez-Lypez et al., 2023; Thompson et al., 2023; Centre for Research on the Epidemiology of Disasters (CRED), 2018). Spanish and Mexican university students represent a unique demographic with distinct cultural, environmental, and sociopolitical contexts. This existential threat to the human condition and its continued existence become one of the focuses of mental health professionals recently (American Psychological Association (APA) 2017; Clayton & Manning, 2018; Clayton & Karazsia, 2020; Zafa, 2022). Environmental crises have been identified as pervasive and imminent in certain regions of America while Mexico is inclusive or probably one of those mostly affected (Global Forest Watch, 2022; Instituto Nacional de Ecología y Cambio Climático (INECC), 2018; McCutchen et al. 2021; Ramrez-Lypez et al., 2023).

The Environmental Worry Index (EWI) was initially developed, validated, and used in sub-Saharan African population, where it has begun to acquire recognition as a unique measure of the worries associated with environmental degradations from past to present experience and anticipated future effects on individuals (Oguntayo et al., 2023). In contrast to similar scale studies within and outside Latin American populations (Hogg et al., 2021; Gymez et al., 2022; Matera, 2026; Ramrez-Lypez et al., 2023), the initial study of the current study went further by incorporating eco-anxiety and other environmental-related factors into measuring environmental worry (Oguntayo et al., 2023). This makes EWI more encompassing it covers eco-anxiety and other concerns related to natural or man-made environmental depletion (Hickman et al., 2020). It consists of "climate change anxiety" (anxiety specifically associated with human-caused climate change, such as global warming, rising sea levels, and more natural disasters and extreme weather events) and anxiety about a number of environmental disasters that may or may not be directly associated with climate change, such as the extinction of entire

ecosystems and plant and animal species (Clayton et al., 2020; Pihkala, 2020). Given the interconnectedness of environmental issues in our global ecosystem and the evidence that people express concern over other types of environmental problems (Haaland, 2019; Helm et al., 2018; Hickman, 2020; Kelly, 2017). It is reasonable to assume that people are concerned about other environmental issues.

Environmental worry encompasses a spectrum of affective and behavioral responses to environmental problems, such as feelings of fear, unease, and apprehension about the immediate and future effects of environmental issues on individuals (Clayton et al., 2017; Oguntayo et al., 2023). It is broader than eco-anxiety (a type of emotional response that lies under environmental concern); not all-environmental concern is inherently eco-anxiety, but all eco-anxiety is embedded in environmental concern (Clayton et al., 2017; Haaland 2019; Helm et al., 2018; Thompson et al., 2023). Environmental worry encompasses a broader spectrum, including pollution, extreme weather conditions (heat, excessive rainfall, drought, etc.), extinction of species, food scarcity, factors that aid an unconducive physical environment, and cognitive and behavioral responses that accompany it with immediate and future anxiety (Clayton et al., 2017; Oguntayo et al., 2023).

According to a study, the EWI reflects individuals' evaluations of the immediate, severe, and future effects of environmental problems (Oguntayo et al., 2023). When a person's perspective, attitudes, subjective norms, and perceived behavioral control in a given situation are perceived to be under threat, it may trigger emotional reactions such as anxiety, dread, and concerns (Si et al. 2019; Thompson et al., 2023). Moreover, the existing eco- or climate change anxiety measures (Ogunbode et al., 2022; Helm et al., 2018; Kelly, 2017) capture the negative emotions that individuals experience when considering climate change; however, they do not account for concerns about other environmental hazards such as EWI.

EWI concentrates on the environmental damage anxiety as opposed to anxiety over generic, societal, or global causes (Clayton et al., 2020; Van der Linden 2014). More so, some existing assessments of environmental worry are typically available in English, German, Polish, and French (Clayton et al., 2020; Larionow et al., 2022; Mouguiama-Daouda et al., 2022; Rethage et al., 2008; Stewart, 2021). Considering these, the study chose to adapt

and ascertain the validity and reliability of this scale, believing that its Spanish version will be especially useful for researchers and clinicians working with this population.

In certain months (June and July), the prevalence of mental illness increases in Northern Mexico and other Latin American countries due to unfavorable weather such as high temperatures, environmental degradation and pollution (CRED, 2018; INECC, 2018; McCutchen et al., 2016; Ramirez-Lopez et al., 2023). All of the aforementioned factors demonstrate the connection between environmental hazards and emotional distress (worry) that serves as a mental health challenge; also, the gaps identified in the previous studies demonstrate and justify the necessity of this study. The focus of this study is on the adaptation and assessment of the psychometrics of an Environmental Worry Index among a multicultural university student population in the Mexican border city context of Juarez, which has far-reaching consequences for international interest and policy.

Juarez's unique socio-environmental characteristics, as well as its location on the US-Mexico border, provide interesting insights into the interaction of environmental issues, cultural diversity, and mental health. Therefore, it is believed that this study has the ability to provide insight on how ecological difficulties affect the mental health of a varied student population, functioning as a microcosm of bigger global issues by doing research in this context. The findings have the potential to pique international attention by offering a nuanced understanding of the signs and prevalence of environmental deterioration in multicultural contexts, informing more comprehensive mental health policy worldwide. It has the potential to contribute to the international discussion on the mental health consequences of environmental problems, as well as to assist evidence-based policy creation for global well-being. As a result, the authors believe that this work makes an important addition to literature, Spanish-speaking society, and international policy by guiding the assessment, prevention, and management of environmental hazard psychosocial impacts that provoke mental health. As a result, the authors of this study made a deliberate decision to fill identified gaps in the past literature and add more values to mental health research and practice in conducting this study.

Purpose

The primary objective of this study was to examine the psychometric properties of an adapted Environmental Worry Inventory (EWI) in a Spanish-speaking student population.

Methodology

Study design, Setting and Target Population

This study adopted a cross-sectional design; the study's population consisted of students from the UACJ, Juarez, Mexico. This public university has more than 28,000 students from diverse races, ethnicities, and cultures, and it is located in a city bordering the US and Mexico with extreme weather (UACJ, 2022). These factors contributed to the selection of this location.

Instruments

The battery of tests was comprised of participants' demographic information, EWI (Oguntayo et al., 2023), Big Five Personality Inventory (BFI-15; Gerlitz & Schupp, 2005) and Climate Anxiety Scale (CAS; Clayton et al., 2020), the details are as follows:

The EWI-11 is a measure of environmental worry with two subscales: (i) personal experience of poor environmental conditions that resulted in worry and (ii) proximal worry about climate change and environmental degradation (Oguntayo et al., 2023). Construct validity (KMO of 0.892) was found adequate. The reliability of the subscales is dependable (proximal worry = .801; personal experience of poor environmental worry = .855), with an overall Cronbach's alpha of 0.890. The mean score was 44.10 and the standard deviation was 11.47 for the general Nigerian population (Oguntayo et al., 2023).

The CAS is a 13-item instrument designed to measure anxiety associated with concerns about climate change's effects (Clayton et al., 2020). It examines the following two aspects: Cognitive-emotional and functional impairments, ("I have been directly affected by climate change"), behavioral engagement factors ("I recycle" and "Thinking about climate change makes it difficult to concentrate"), and functional impairments ("My concerns about climate change make it difficult for me to have fun with my family or friends") are examples of the items included. CAS has been validated in the following languages: English, German, Polish, and French (Clayton et al., 2020; Wullenkord et al., 2021; Larionow et al., 2022; Mougouama-Daouda et al., 2022). Similarly, reliability coefficients in Mexican populations ranged

from 0.89 to 0.92, with the cognitive-emotional impairments subscale scoring 0.81, the functional impairments subscale scoring 0.83, and the experience of climate change and behavioral engagement scoring 0.71 (Ramírez-López et al., 2023). The greater a person's score, the greater their concern for climate change.

The BFI-15 is a scale for assessing five personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Gerlitz et al., 2005). The scale uses a 5-point Likert response (1 =Strongly disagree to 5=Strongly agree); here are the sample of the items; 'Prefers to be alone', 'Seeks quiet', 'Is assertive and takes charge'; 'Can talk others into doing things', 'Enjoys being part of a group', and 'Holds back from expressing my opinions'. The Kaiser-Meyer-Olkin (KMO) index for the matrix of correlations was acceptable (.717), and the statistically significant Bartlett's sphericity test was significant among Spanish speakers. This suggests that the Big Five Inventory is valid and relevant for use with the Mexican population (Zamorano et al., 2014).

Procedure

The researchers began translating the EWl from English to Spanish using native speakers who are psychologists with masters and doctoral degrees (the selection of these experts was necessary to preserve the EWl's original psychological meaning and adhere to psychometric rules); the face validity of the tool was evaluated by groups of doctoral students in Social and Health psychology units, and all 11-item of the EWl were retained during this phase. In addition, once the Spanish version of the EWl was adapted and structured, a Google Form webpage containing the EWl, CAS, and BFI-15 questionnaire was created, and participants were shared the URLs.

The participants' freedom of participation, privacy, anonymity, and exit during the research were ensured, and informed consent was obtained by limiting access to the survey to those who clicked the "next" button as an indication of their assent and willingness to participate. The authors distributed the link to students via WhatsApp class groups or individual posts, as applicable, and those who volunteered to participate completed the survey and shared the link with their colleagues. This procedure was repeated until sufficient responses were received. In the survey's final sections, respondents were provided with a debriefing statement.

Data Analysis

The data from the hosted questionnaire (Google Forms) were downloaded and cleaned, and then descriptive statistics, normal distribution proportion, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), and correlation analyses were analyzed using the statistical Package for the Social Sciences (SPSS version 27) and the AMOS (version 27) software.

Ethical considerations

This study was approved by the authors' institution ethical committee (Approval number: CEI-2023-1-63). The study was carried out in full compliance with the ethical protocol, which includes informed consent, participants protection, confidentiality, and other basic considerations.

Results

The sample used in the EFA and CFA was composed of 251 participants respectively. There were no statistically significant differences between the two samples in socio-demographics and in levels on the EWl.

Descriptive Information of Participants

The study participants were 251 individuals (47.0% male; 51.0% female), with a mean age of 22.57 years (SD = 7.14). The participants who were between the ages of 18-30 were 132 (51.6%), those aged 31-45 was 67 (26.7%), and those between ages 46 and above were 52 (20.7%); for gender, males were 118 (47.0%) and females were 128 (51.0%), while 4 (2.0%) participants declared not their sex. For their sexual orientation, participants who are heterosexual were 195 (77.7%), and those with sexual diversities were 50 (22.3%). For the participants religions, 158 (62.9%) were Christians, 6 (2.4%) were Muslims, and 46 (18.3%) declared themselves as free-thinkers while others who did not mention their religions were 41 (16.4%). The married participants were 41(16.3%), the participants that are either in a free union or in romantic relationships were 74 (29.5%), and the single participants were 136 (54.2%); undergraduate students were 151 (60.2%), those in master's programs were 43 (17.1%), the doctorate participants were 38 (15.1%), and 19 (7.6%) disclose not their program in the university.

Exploratory factor analysis (EFA)

The study used the responses of 251 participants to analyze 11 items of the EWl using the EFA, using the principal axis factors method recommended when data are not normally distributed, as previously checked

through QQ-plots (not shown) (Costello & Osborne, 2019). The Kaiser-Meyer-Olkin (KMO) showed .904 and the Bartlett’s sphericity test ($p > .001$) which indicated appropriateness of the sample to conduct factor analyses (Oguntayo et al., 2020; Sarmiento et al., 2017). If the highest factor loading of an item was lower than .30, the item was eliminated, and if an item had a shared factor loading (factor loadings difference less than .20), the item was removed. The final scale had 9 items with unique factor loadings ranging from .51 to .84 (see Table I). Table I shows factors loadings for the EFA of the EWI and the communalities ranging from .53 to .70. The first factor explained 48.05% of the total variance and it is composed of five items (items 3, 5, 6, 7 and 11) with factor loadings ranging from .51 to .84.

According to the theme of these items this factor was labelled “Proximal worry symptoms”. The second factor explained

10.5% of the total variance and it is composed of four items (items 2, 8, 9, and 10) with factor loadings ranging from .53 to .57. According to the theme of these items this factor was labelled “Personal-Experience worry”. These decision and procedures were based on recommendation of past literature (Brown, 2015; DeVellis, 2017; Sarmiento et al., 2017). More so, this combined approach could probably increase the rigor, effectiveness, and efficiency of a scale in a new population.

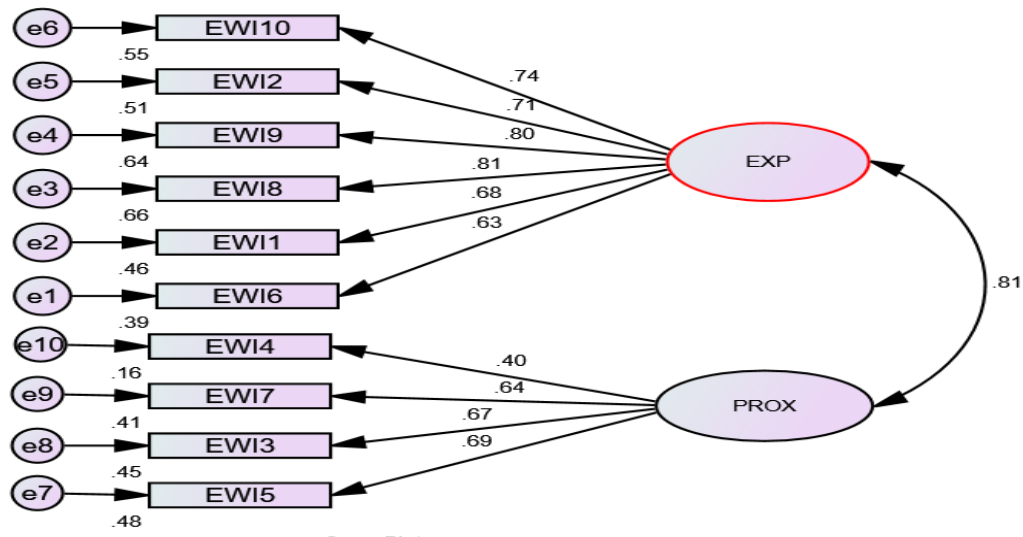
Figure 1 (scree plot) presented the two-dimensionality result found in this study and Table I showed the extracted data, and variance rotation with the scale components to demonstrate the relationship between the data. The findings attained acceptability and it help in the data visualization and comprehending the factors that drive the observed patterns, resulting in a simpler and more intuitive data representation.

Table I. Rotated Component Matrix with Principal Component Analysis as Extraction Method and Varimax for the Spanish EWI

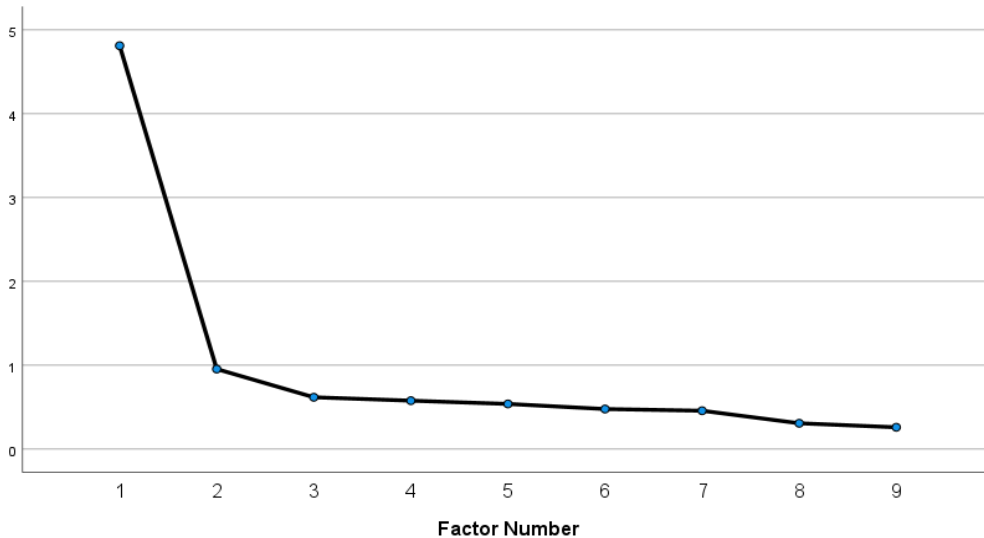
Items		Factors		
		PROX	EXP	Communalities
Spanish and English				
Nº	Items Retained			
2	Me preocupan los desastres por inundaciones en mi entorno (I worry about flood disasters in my environment).		.789	.633
3	Me preocupa la basura en el ambiente y la defecación al aire libre (I feel concerned about the littering of the environment and open defecation).	.625		.560
5	La preocupación por los desastres naturales y el deterioro de los recursos de la tierra me preocupa (Concern on natural disasters and deterioration of earth's resources worry me).	.605		.535
6	Me siguen preocupando los pensamientos sobre la extinción de algunas especies animales (Thoughts about the extinction of some animal species keep worrying me).	.588		.558
7	Tiendo a preocuparme cuando escucho sobre la escasez de alimentos y agua en mi ubicación (I tend to worry when I hear about food and water scarcity in my location).	.678		.538
8	Me preocupa oponerme a los informes de lluvias escasas y excesivas a nivel mundial (I feel concerned about opposing low rainfall and excessive rainfall reports globally).		.772	.680
9	Me preocupan los terremotos, los tornados y otros peligros ambientales (I feel concerned about earthquakes, tornados, and other environmental hazards).		.787	.687
10	Cada vez que escucho sobre la debilidad de las capas de ozono, mi corazón late más rápido (Whenever I hear about the weakness of ozone layers my heart beats faster)		.806	.666
11	Quema de arbustos y exposición al carbono El dióxido me preocupa (Bush burning and exposure to carbon dióxido give me concerns).	.556		.602
	Eigenvalues (%)	48.05	10.5	
	Explained variance (%)	48.05	10.5	
	Cumulative variance (%)	48.05	58.5	

*Note: PROX= Proximal Worry; EXP.=Personal Experience of Environmental Worry.

Figure 1, Screen Plot Showing the Sedimentation of Two-Factor Structure of the EWI.



Scree Plot



Confirmatory Factor Analysis

A sample of 251 participants performed the cross-validation and finally, the confirmatory factor structure. This factor structure was verified through structural equation modelling (SEM) using AMOS version 27. Testing whether measures of this construct were consistent with respondents' understanding of environmental worry index in a selected Mexican university sample, also known as confirmatory factor analysis (CFA), revealed two factors with the corresponding items in the exploratory factor analysis (see Table 1). Confirmatory factor analysis (CFA; $\chi^2(24) = 43.666; p < .005$) with the measure of fit between the hypothesized model and the observed covariance matrix, also known as the goodness of fit index (GFI) = .977, the SRMR standardized root mean squared residual fit index (SRMR) = .04, the discrepancy between the data and the

hypothesized model measure for model fit, also known as comparative fit index (CFI) = .974, the Tucker-Lewis index a conventional cutoff value under maximum likelihood (TLI) = .956 and NFI, RFI, and IFI are ranging from 0.911 to 0.977 which indicate that the model fits the data well. These values are close to 1, which is a goodness of fit criteria; more so, the root mean square error of approximation (RMSEA) = 0.062. This indicates that the model fits the data reasonably well, as considered by Shi et al. (2018) that an $RMSEA \leq .06$ could be considered. In this case the fit indices such as RMSEA and SRMR suggest the model has an acceptable fit.

The model of fit indexes concerning the chi-square had the following results; the PRATIO, PNFI, and PCFI measures assess the balance between model fit and complexity

with the PRATIO of 0.556, which is below 1, suggesting that the model is relatively parsimonious, achieving good fit with reasonable simplicity. The χ^2 with 24 degrees freedom was equal to 43.67 ($p < .005$). Other Indexes value was AGFI = .91. The obtained index reports an adequate model fit. Item loadings for this model ranged from .60 to .99 (Figure I). Items 1, and 4 did not conform to the resulting two factor structure found through EFA and they were deleted (Cleff, 2019). It was observed that when those items were deleted and consideration of second order analysis, the χ^2 (24) = 45.766; $p < .005$ decrease to χ^2 (24) = 43.666; $p < .005$ and the lower the chi-square score the more adequate the data is fit and adequate (Ballouet al., 2020), while other goodness of fit consideration scores were increase showing more appropriateness of the data items retained. The diagram presented in Figure II illustrates the postulated

associations between the latent variables and the observable variables. The analysis of the relative route coefficients reveals that the proximal worry domain has a stronger association with the latent trait compared to the personal experience of worry. To establish the validity of each subscale, an analysis was conducted to investigate the factor loadings of each item on its respective subscale. The statistical analysis revealed substantial connections among the latent variables depicted in the path map, specifically proximal worry (0.93) and personal worry (0.83), when considering the correlations among the subscales. Correlations are indicated by the curved lines between the observed variables as indicted in Figure II (Norhayati & Nawati, 2021)

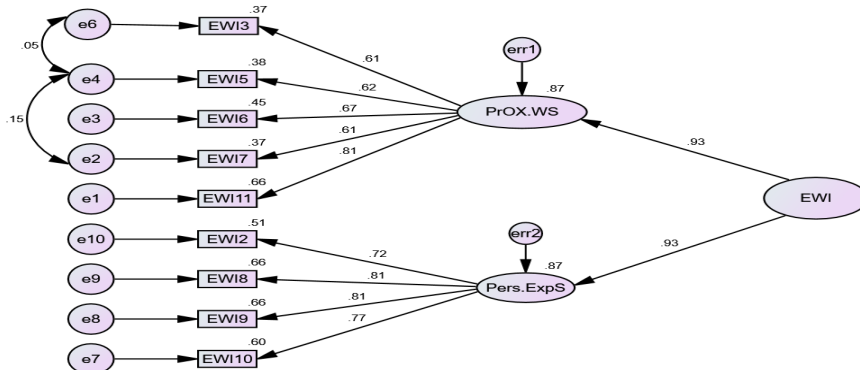
Table II, Showing the Intercorrelations among studied scales

Variables	1	2	3	4	5	6	7	\bar{x}	S.D	
Agreeableness	-							4.40	1.56	
Extraversion	.695**	-						5.14	2.05	
Openness to Exp.	.551**	-.002	-					3.56	2.33	
Neuroticism	.484**	.367**	.039	-				3.74	1.70	
Conscientiousness	-	.513**	.393**	.223	-			5.08	1.72	
CAS		.035	.074	-	-.092	.356**	-	11.3	13.1	
EWI		.210	.212	.212	.422**	.144	.647**	-	38.1	6.68

** Correlation is significant at the 0.01 level (1-tailed)

* Correlation is significant at the 0.05 level (2-tailed).

Figure II, showing the path coefficients, squared multiple correlations, and error variance of the Factor Structure of the EWI with Item 1 and 4 Deleted.



*Note: PROX= Proximal Worry; EXP.= Personal Experience of Environmental Worry

Internal reliability

The internal reliability of each factor was ascertained by means of the Cronbach's alpha index (α). The EWI Cronbach's alpha values for each of the two factors ranged from .80 to .89 (see Table II). Most of the values are adequate in cross-validation for both exploratory and confirmatory groups. The reliability for the complete scale was $\alpha = .890$.

Convergent and divergent validity

Evidence of convergent (and divergent) validity of the validated EWI was corroborated through bivariate analyses resulting in statistically significant correlations with measures of Climate Anxiety Scale ($r=.647$, $p=.001$), and the BFI-15 subscale such as neuroticism ($r=.422$, $p=.001$). However, there was no statistically significant relationship between the EWI and other subscales of BFI-15 (Agreeableness, Conscientiousness, openness to experience and extraversion). The positive correlation between neuroticism, CAS, and EWI demonstrated statistically significant convergent validity; while the non-association between other four dimensions of BFI-15 indicated discriminant validity of EWI with non-anxious traits. Also, the mean score according to this study was 38.1, $SD=6.68$ (see Table II).

Discussion

The objective of this study was to adapt and validate the Environmental Worry Index among Mexican students. This is owing to the fact that Mexico is one of the most afflicted countries as a result of both man-made hazards, natural and adverse environmental circumstances, as well as climate change, all of which have produced both mental and physical health difficulties for many people in this region (Global Forest Watch, 2022; INECC, 2018; Intergovernmental Panel on Climate Change, 2014). This study accomplished its primary objective, which was to adapt and evaluate the psychometric properties of the Spanish version of the EWI. The EFA, CFA and correctional analyses were utilized to determine the EWI's validity and reliability. In this way, this study was carried out, and the measure was validated in a university population during the winter and summer that display more harsh weather conditions in Juarez over the previous six months or longer. This scale has never been validated in the Spanish community; hence, this study with Mexican students is required.

In effectively validating this two-dimensional measure of environmental worry,

the study makes several noteworthy contributions to the existing literature. This is the first time EWI will be validated in another population. The 1st and 4th items of the scale was eliminated, these are items that measure seems to assess some constructs peculiar to sub-Saharan African contexts such flood littering and open defecation (Belay et al., 2022; Opayemi et al., 2020) were not loading well of either EFA or CFA and were deleted; this may not be a common adverse environmental behavior in Juarez where the study took place. The outcomes of the study have been good; the EWI demonstrated statistically significant convergent validity with CAS, neuroticism and consciousness while having divergent validity agreeableness. The results were consistent and in agreement with previous research (Clayton et al., 2020; Fornell – Larcker, 1981; Ogunbode et al., 2022; Materia 2016; Oguntayo et al., 2023). Studies have shown that people with neurotic traits have often exhibits worrying related symptoms (APA, 2017; Opayemi et al., 2020), this implies that people with existing fears of environmental degradation might display increasingly emotional instability that is peculiar to both CAS, EWI and neuroticism. Also, having a high score on this trait causes anxiety and preoccupation with apprehensions of negative side effects when confronted climate change hazards (Opayemi et al., 2020; Yıldız et al., 2021). The results suggested that EWI consistently assess patterns of emotional distress (worry).

Also, the results showed the high reliability of EWI among the selected sample; the procedure utilized fulfilled criteria that are recommended for any reliable scale (Sarmiento et al., 2017; Clayton et al., 2017). This implies that the index is a reliable measure of environmental crises worry. Also, the mean score according to this study was 38.1, $SD=6.68$ as against the English version of EWI (44.10, $SD=11.47$) (Oguntayo et al., 2023). Several factors could contribute to the differences between the mean score and standard deviation of EWI in this study. The population where EWI was initially developed had a greater proportion of participants (925) than the population of the current study (251 participants); therefore, it is anticipated that the mean score for the higher participants could be different (McCutchen et al., 2016). Additionally, contextual-cultural, language, socioeconomic, and demographic differences may contribute to this disparity in mean scores (McCutchen et al., 2016), therefore, the disparity was anticipated.

Similar to initial study of EWI, this research found two-factor components. Consistent with previous research, the EWI identified affective and behavioral symptoms, as well as present and prospective anxiety, as key characteristics of environmental worry. Aspects of Clayton et al. (2020)'s cognitive-emotional impairment included negative emotions, cognitive disturbances, and physical symptoms such as weeping and sleeplessness. Nonetheless, these symptoms are found in the two distinct EWI factors. Our research contributes novel findings to the literature on climate change anxiety and eco-anxiety by demonstrating that worry as a personal consequence of past experience and potential future impacts is a distinct dimension of environmental worry with distinct correlates.

Limitations and Strengths of the Study

Limitations of the study

Despite the usefulness of this study, certain limitations needed to be observed. The index is not intended for diagnostic purposes but as an assessment tool. In addition, this survey may be susceptible to respondent bias. Focusing solely on a university student population in a border city like Juarez may limit the generalizability of the findings to broader demographics. It may not fully represent the experiences of other age groups or cultural contexts of the city as whole. In addition, the study may still inadvertently carry some cultural bias, as cultural diversity is complex and challenging to capture comprehensively. Though, the study's cross-sectional design offers a snapshot of eco-anxiety at a particular moment, but it may not capture the dynamic nature of these concerns over time. Consequently, readers should be cognizant of these, and future research could investigate the applicability of EWI to other populations.

Strengths of the study

The study's focus on a multicultural population like UACJ in a Mexican border city adds cultural relevance and specificity, offering insights into how environmental worry varies across different cultural contexts. Also, the study's emphasis on adapting and assessing the psychometrics of the Environmental Worry Index demonstrates a commitment to methodological rigor, ensuring the reliability and validity of the assessment tool. The research has the

potential to influence international policy by providing data-driven insights into eco-anxiety and its impact on mental health, contributing to the development of targeted policies and interventions to address this issue globally. This study opens avenues for future research into the intersection of environmental concerns and mental health in multicultural contexts, encouraging further exploration and policy development in this important area of social, environmental, and psychological interplay.

Conclusions

The Environmental Worry Index has been successfully adapted, standardized, and validated among a selected university students who are Spanish-speaking individuals. This instrument is capable of assessing environmental hazard related worry and facilitating the use of evidence-based interventions to manage environmental induced worry and distress. Similar to EWI's initial study, a distinctive two-dimensional structure was found with acceptable reliability and validity coefficients, but only retained 9 out of the 11 items. This scale is recommended for use among researchers and clinicians who are interested in conducting a comprehensive assessment of the range of immediate human experiences regarding ecological concerns and future ecological anxiety.

Conflict of interest

The authors declare that they have no conflicts of interest.

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