



TRANSLATION AND PSYCHOMETRIC VALIDATION OF THE CLIMATE CHANGE ANXIETY SCALE (CCAS) IN A CLIMATE-AFFECTED POPULATION OF PAKISTAN

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ABSTRACT

Background: Anxiety related to climate change has become a big psychological issue, especially for people who are exposed to environmental risks and Unpredictable outcomes. A self-report tool called the Climate Change Anxiety Scale (CCAS) is used to evaluate cognitive, emotional, and functional impairment associated with climate change anxiety. The availability of an Urdu version of CCAS will support research and clinical assessment in Pakistan.

Aim: The main goal of this study was to translate the Climate Change Anxiety Scale (CCAS) into Urdu and check its preliminary psychometric qualities in a Pakistani population.

Materials and Method: The study was done here in Pakistan. The 22-item CCAS was translated into Urdu using basic translation techniques. A sample of 50 bilingual subjects was used to measure cross-language concordance, and a different sample of 50 subjects was used to calculate test-retest reliability. A wider community sample, resulting in a total sample size of 265 participants, was used to assess internal consistency. The age range of the participants was early adulthood to late middle age.

Statistical Analysis: Means and standard deviations were found out as descriptive statistics. The reliability of the Urdu version of CCAS was determined by calculating cross-language concordance, test-retest reliability, and internal consistency (Cronbach's alpha).

Results: The English and Urdu versions of CCAS showed a high degree of cross-linguistic equivalency. The Urdu version displayed good to exceptional internal consistency, and test-retest reliability coefficients indicated really good positive correlations.

Conclusion: The results confirm that the Climate Change Anxiety Scale in Urdu is a helpful and useful tool for evaluating climate change anxiety in Pakistan.

Keywords

Climate Change Anxiety, Urdu Version, Psychometric Validation, Pakistan

Introduction

With huge effects on both the natural environment and human psychological health (Javaid & Ramzan, 2026; Ramzan et al., 2023, 2025), climate change is becoming much more acknowledged as one of the most important global issues of the modern time. Higher global temperatures, an increase in the frequency of heat waves, droughts, floods, and Nature getting damaged have all made people more Unsafe to climate-related risks. This has contributed to increased mental distress, fear, uncertainty, Constant worry (Clayton, 2020; Pihkala, 2020). Research on climate change anxiety, a disorder described as by ongoing stress and emotional reactions to perceived environmental instability and potential ecological risks, has increased as a result of these psychological reactions.

Anxiety associated to climate change has been characterized as a complex psychological construct with behavioral, and cognitive components (Karazsia and Clayton, 2020) proposed a comprehensive model of climate anxiety that includes both functional issues (such trouble concentrating, sleep disturbances, and reduced daily functioning) and subjective distress (like fear, helplessness, and grief).



From a stress-appraisal standpoint, climate change can be seen as an ongoing, uncontrollable stressor that exceeds people's perceived coping skills, making them more likely to experience anxiety and psychological distress (Lazarus & Folkman, 1984). People who are at risk may feel sadness, loss, and existential unease when they are aware of serious environmental risks, according to eco-psychological and existential theories (Pihkala, 2020). Increased stress, depressive symptoms, emotional exhaustion, and a lower quality of life are just a few of the negative mental health consequences that empirical research has linked to increased climate anxiety (Hickman et al., 2021; Clayton, 2020).

People who suffer from high levels of climate anxiety often describe feeling powerless, obsessing over environmental catastrophes, and struggling in social, professional, and academic contexts. In developing nations like Pakistan, where psychological risk is increased by environmental instability, scarce resources, and frequent exposure to climate-related calamities, these impacts might be more noticeable (Li & Akram, 2023, 2024). Even though climate anxiety is becoming more widely acknowledged as a serious mental health issue, there aren't many reliable measurement tool accessible in Urdu. Systematic research and clinical evaluation within Pakistani populations are hampered by the lack of culturally and linguistically proper instruments. Therefore, in order to measure climate-related anxiety accurately and support research, evaluation, and intervention activities in Pakistan, the Climate Change Anxiety Scale (CCAS) must be translated and validated into Urdu.

An expanding amount of global research has shown a strong correlation between psychological distress and concerns about climate change. Studies conducted in Western populations have shown that higher levels of climate anxiety are often linked to higher levels of stress, anxiety, and depression (Clayton & Karazsia, 2020; Pihkala, 2020). Clayton and Karazsia (2020) discovered that functional impairment, such as trouble focusing, sleep difficulties, and decreased job or academic performance, was strongly predicted by climate anxiety using the Climate Change Anxiety Scale Survey.

Stress and coping theory, which suggests that ongoing exposure to uncontrollable stressors causes emotional dysregulation (Akram & Oteir, 2025) and psychological pain, can be used to theoretically explain climate anxiety (Lazarus & Folkman, 1984). Uncertainty, a sense of helplessness, and a threat to the future are features of climate change, a distinct type of chronic tension that can exacerbate anxiety and rumination.

Furthermore, according to conservation of resources theory, emotional discomfort and anxiety associated with climate concerns may be exacerbated by perceived or actual loss of natural, economic, and social resources (Hobfoll, 1989). According to cross-cultural research, people who reside in areas with high levels of climate-related risks report feeling more anxious, emotionally drained, and weak (Hickman et al., 2021). Additionally, studies have indicated that climate anxiety may have a negative effect on students' and young adults' academic engagement, professional functioning, and general psychological health (Ojala, 2016; Hickman et al., 2021). However, there are questions regarding the findings' cultural relevance because a large portion of the research until now has been done in Western, developed nations. Environmental challenges like heat waves, air pollution, water shortage, and frequent flooding are severe and long-lasting in Pakistan. These challenges put daily income, community stability, and physical safety at serious risk, which may make individuals more likely to mental stress brought on by climate change. There is currently a lack of real-world research on climate anxiety, despite Pakistan's high level of environmental vulnerability. The lack of validated Urdu-language tools for checking climate concern is a big challenge.



By offering a culturally suitable tool for evaluating climate-related anxiety in Pakistan, the translation and validation of the Climate Change Anxiety Scale into Urdu will solve this problem. Researchers will be able to study the commonness, connections, and psychological effects of climate anxiety with the use of this tool. Additionally, it will help doctors spot identify patients who are at risk and create specific mental health treatments.

Objectives of the Study

- To translate the Climate Change Anxiety Scale (CCAS) from English into Urdu.
- To evaluate the cross-linguistic concordance between the English and Urdu versions of CCAS
- To evaluate the Urdu version of CCAS's test-retest reliability.
- To assess the Urdu version of CCAS's internal consistency.

Hypotheses of the Study

H1: The Climate Change Anxiety Scale's English and Urdu versions will be substantially

H2: Test-retest scores of the Urdu version of CCAS will show significant positive correlations.

H3: The Urdu version of CCAS will demonstrate good internal consistency.

Materials and Methods

Measure

Climate Change Anxiety Scale (CCAS; Clayton & Karazsia, 2020):

The Climate Change Anxiety Scale is a 22-item self-report instrument designed to assess emotional, cognitive, and functional impairment related to climate change anxiety. Items are rated on a Likert-type scale indicating the frequency or level of climate-related anxiety experiences. The original scale has demonstrated strong reliability and validity in past research. Climate disaster exposure included both direct and indirect experiences of environmental stressors such as floods, heatwaves, pollution, financial loss, and climate-related community disturbances.

Translation Process of CCAS into the Urdu Language

Before translating the CCAS into the Urdu language, permission was obtained from original authors (Susan Clayton, 2020). The translation procedure was carried out in accordance with standardized guidelines recommended by MAPI Research (Acquadro et al., 2012). Initially, two bilingual mental health professionals independently translated the 22 items of the Climate Change Anxiety Scale (CCAS) from English into Urdu, with an emphasis on achieving conceptual equivalence rather than a word-for-word translation. Both translated versions were subsequently reviewed by experts with extensive experience in psychological assessment and scale adaptation. A preliminary Urdu draft was completed after the essential changes were implemented in accordance with their suggestions.

The early Urdu edition was then back-translated into English by two independent bilingual experts who were unfamiliar with the scale's initial English version. To find any inconsistencies or differences in meaning, the original instrument and the back-translated versions were carefully compared. Revisions were done as needed to ensure conceptual correctness and improve linguistic clarity.

A sample of thirty Urdu-speaking individuals between the ages of 18 and 45 Took part in Feedback session pilot testing after the translation and back-translation process. The pilot study's Goal was to look at the translated items' language Suitability, How easy it is to understand, and clarity.

In the Urdu version of the Climate Change Anxiety Scale (CCAS), participants were asked to highlight any terms that were Difficult, unclear, or Confusing According to participant responses, the items were typically simple and suitable in terms of wording. Before the Urdu



version of the scale was finalized, a number of linguistic changes were made based on participant comments to enhance readability and flow. The final Urdu version of the CCAS was authorized for further psychometric testing after these changes.

Participants and Procedure

Test-retest reliability, internal consistency, and cross-language concordance were evaluated for the final Urdu translation of the Climate Change Anxiety Scale (CCAS). Targeted sampling was used to enroll 250 participants in total. By ensuring that everyone has encountered stresses related to climate change, this approach improved the contextual accuracy of the anxiety scale's validation. This largely affects those who are exposed to such tragedies, even though it targets a particular demographic. This clearly demonstrates how vulnerable their area is to the environment. Due to accessibility and sampling availability during data collection, the majority of participants were from rural locations. A bilingual sample of 50 participants who were familiar with both Urdu and English was chosen for the assessment of cross-language equivalency.

A crossover design was used in which half of the participants completed the English version first, while the remaining participants completed the Urdu version first. Two weeks later, the alternate language version was administered to the same participants. To assess test-retest reliability, the Urdu version of the scale was administered twice to an additional sample of 50 participants with a time interval between the two administrations. The obtained scores were compared to determine the consistency of the Urdu version of the scale.

Statistical Analysis

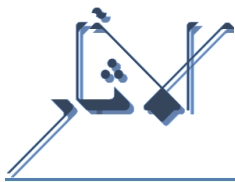
Data were analyzed using IBM SPSS Statistics version 23. Means and standard deviations were calculated for continuous variables, whereas frequencies and percentages were computed for categorical variables. Cross-language concordance between the English and Urdu versions of the scale was examined using Pearson product-moment correlation coefficient and Intraclass Correlation Coefficient (ICC). Test-retest reliability of the Urdu version was also assessed using Pearson correlation coefficient, paired sample t-test, and ICC analysis. Cronbach's alpha coefficient was computed to determine the internal consistency reliability of the Urdu version of the scale.

RESULTS

The participants were recruited from the climate-affected communities for the validation of the Urdu version of the Climate Change Anxiety Scale (CCAS). The demographic and study-related characteristics of the sample are summarized in Table 1 and Table 2, respectively.

Table 1: Basic Demographics Characteristics of the Sample (N = 250)

Variable	Groups	F	%
Age group	18-25	34	13.6
	26-35	78	31.2
	36-45	70	28.0
	46-55	68	27.2
	Total	250	100.0
Gender	Male	171	66.1
	Female	89	33.9
	Total	250	100.0
Residence	Urban	19	7.6
	Rural	231	92.4
	Total	250	100.0
Education	No Formal Education	53	21.2
	Matric	63	25.2



Marital Status	Intermediate	85	34.0
	BS	37	14.8
	MS/Mphil	12	4.8
	Total	250	100.0
	Single	64	25.6
Economic Status	Married	127	50.8
	Divorced	30	12.0
	Widowed	29	11.6
	Total	250	100.0
	Low	82	32.8
	Middle	137	54.8
	High	31	12.4
	Total	250	100.0

Note: The demographic characteristics of the sample, including age group, gender, residence, education, marital status and economic status are presented in Table 1.

Table 2: Study –Related Characteristics of the sample (N=250)

Variable	Groups	f	%
Occupation	Student	32	12.8
	Employed	118	47.2
	Unemployed	100	40.0
	Total	250	100.0
Climate Disaster Exposure	Yes	249	99.6
	No	1	.4
	Total	250	100.0
Types of Loss	Displacement	26	10.4
	Loss of life	42	16.8
	Financial	131	52.4
	Property Damage	51	20.4
	Total	250	100.0
Climate News Exposure	High	109	43.6
	Moderate	84	33.6
	Low	57	22.8
	Total	250	100.0

Note : The study-related characteristics of the sample ,including occupation ,climate disaster exposure ,types of loss and climate news exposure are presented in Table 2

Following the descriptive analysis, the obtained data were analyzed to determine the cross-language concordance, test-retest reliability, and internal consistency of the translated scale.

Cross-Language Concordance

Results indicated that both the English and Urdu versions of CCAS demonstrated good reliability. A statistically significant positive correlation was found between the English and Urdu versions of the scale ($r = .961$, $p < .001$). Furthermore, the intra-class correlation coefficient demonstrated excellent agreement between both versions of the measure ($ICC = .979$, $95\% \text{ CI } [.962, .988]$), indicating strong cross-language equivalence of the Urdu-translated scale (Table 3)



Table 3: Cross Language Concordance between English and Urdu versions of CCAS (N =50).

Measure	Eng.M(SD)	Urdu.M(SD)	R	ICC(95% CI)
CCAS Total Score	71.30(10.66)	72.56(11.45)	.961**	.979[.962-.988]

Note : CCAS=Climate change anxiety Scale $p < .001$

Test–Retest Reliability

The Urdu version of CCAS was administered twice to assess temporal stability of the scale. Results demonstrated a very strong positive association between test and retest administrations ($r = .988^{***}$, $p < .001$). The paired sample t-test showed no significant difference between both administrations, $t(49) = 1.35$, $p = .182$. However, the intra-class correlation coefficient revealed excellent agreement between the two administrations (ICC=.986, 95%CI [.976-.997]) supporting strong test-retest reliability of the Urdu version of CCAS (Table 4).

Table 4: Test re-test reliability of Urdu versions of the of CCAS (N =50)

Variable		T1 M (SD)	T2 M (SD)	r	T(df)	P	ICC (95% CI)
CCAS Score	Total	64.30 (13.62)	63.88 (12.93)	.988***	1.35 (49)	.182	.986[.976-.992]

Note: CCAS=Climate Change Anxiety Scale T1=Time 1 ; T2= Time 2; M=Mean; SD=Standard Deviation; r=Pearson Correlation Coefficient ;t=Paired Samples t –test ; df = degrees of freedom; ICC=Interclass Correlation Coefficient

Internal Consistency

The internal consistency of the Urdu version of CCAS was assessed using the responses of 250 participants. Cronbach's alpha coefficient for the Urdu version was .802, indicating good internal consistency reliability of the scale. The findings suggest that the items of the Urdu CCAS are sufficiently interrelated and reliably measure the construct of climate change anxiety.(Table 5).

Table 5: Internal consistency of the urdu version of CCAS (N = 250)

Scale	No. of items	Cronbach's alpha
Urdu CCAS	22	.802

Note : CCAS = Climate Change Anxiety Scale. Cronbach's alpha = .802 indicates good internal consistency reliability

Discussion

The main goal of the present study was to translate and validate the Climate Change Anxiety Scale (CCAS) into Urdu language and to examine its psychometric properties among the Pakistani population. To the best of the researchers' knowledge, there is limited availability of Urdu translated instruments for assessing climate change anxiety in Pakistan. Therefore, the current study aimed to provide a linguistically appropriate and culturally suitable Urdu version of the CCAS for Urdu-speaking populations. Excellent test-retest reliability, significant cross-linguistic concordance, and satisfactory internal consistency were all demonstrated by the translated version. These findings are consistent with previous assessments of the original Climate Change Anxiety Scale (Clayton & Karazsia, 2020). Standard forward translation and reverse translation approaches were employed during the translation process to maintain conceptual comparability between the English and Urdu versions of the scale.

Throughout the translation process, the items' conceptual clarity, cultural appropriateness, and comprehensibility were taken into account rather than relying solely on literal translation



.Additionally, the translated contents underwent iterative refinement to guarantee that the language remained clear, uncomplicated, and suitable for the target audience.

This findings indicated a statistically significant positive connection between the English and Urdu versions of the Climate Change Anxiety Scale, suggesting strong cross-language equivalence between both forms of the measure. The significant Pearson correlation coefficient and Intra Class Correlation Coefficient (ICC) demonstrated that both versions consistently assess the same psychological concept. These findings indicate that the Urdu-translated version successfully retained the conceptual meaning and measurement properties of the original scale. In addition, the Urdu version of the CCAS demonstrated excellent test retest reliability across the two administrations. The high Pearson correlation coefficient, non-significant paired sample t-test, and excellent ICC values indicated strong stability of the scale over time. These findings suggest that the Urdu version yields stable and consistent scores. The internal consistency of the Urdu version was assessed using Cronbach's alpha coefficient. The calculated alpha value (.802) indicated good internal consistency, suggesting that the items of the scale measure a common underlying factor. The obtained findings are comparable with the reliability estimates reported in the original version of the Climate Change Anxiety Scale (Clayton & Karazsia, 2020).

In summary, the study's findings show that the Climate Change Anxiety Scale in Urdu has excellent test-retest reliability, substantial cross-language concordance, and good internal consistency. The results corroborate earlier research highlighting the value of translated psychological tools for evaluating psychological distress associated with climate change in a variety of populations. Therefore, in future research and therapeutic settings, the CCAS's Urdu translation can be used to gauge climate change anxiety in Pakistanis.

Conclusion

The Climate Change Anxiety Scale (CCAS) was translated from English into Urdu using Standard translation process, both forward and backward. The First psychometric characteristics of the final Urdu version that were Measured included internal consistency, test-retest reliability, and cross-language concordance. The results of the study showed that the CCAS in Urdu and English have excellent cross-linguistic equivalence. The Urdu version showed good test-retest reliability and sufficient internal consistency, placing it in the "good" category.

Limitations and Suggestions

The current study explored the first psychometric properties of the Climate Change Anxiety Scale (CCAS) in Urdu; however, it is recommended to validate the same with advanced statistical techniques such as confirmatory factor analysis (CFA) in future studies. Another limitation of the study is the use of a very small sample size taken from a specific demographic that could limit the generalizability of the findings to the larger Pakistani population characterized by diverse cultural and regional backgrounds. In addition, the present study used a community based sample exposed to environmental stressors. Therefore, future research is recommended to include clinical or high risk groups to further confirm the reliability and applicability of the scale across different populations.

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