Research

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Turkish Adaptation of the Climate Change Perceptual Awareness Scale: Validity and Reliability Study

İklim Değişikliği Algısal Farkındalık Ölçeği Türkçe Uyarlaması: Geçerlik ve Güvenirlik Çalışması

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ABSTRACT

Objective: This study aimed to adapt the Climate Change Perceptual Awareness Scale into Turkish and to evaluate the scale's validity and reliability.

Method: The study was conducted with 202 adult participants recruited online from various regions of Turkey. During the adaptation process, one item from the original scale was removed. Consequently, a 14-item structure comprising four subscales-emotional awareness, awareness of temperature change, awareness of drought/water scarcity, and media (news) awareness was obtained. The scale's construct validity was assessed using confirmatory factor analysis; internal consistency was examined using Cronbach's alpha and McDonald's omega coefficients.

Results: The analyses demonstrated that the scale's four-factor structure was validated in the Turkish sample. Item factor loadings ranged from 0.53 to 0.91, and the model fit indices were determined to be at an acceptable level. The Cronbach's alpha coefficient for the total scale score was found to be 0.891, and the McDonald's omega coefficient was 0.885. The internal consistency coefficients for the subscales were found to be adequate and high.

Conclusion: Turkish version of the Climate Change Perceptual Awareness Scale is a valid and reliable measurement tool.

Keywords: Climate change, coping, scale, reliability and validity, young adults

ÖZ

Amaç: Bu çalışma, İklim Değişikliği Algısal Farkındalık Ölçeği'nin Türkçeye uyarlanmasını ve ölçeğin geçerlik ile güvenirlik özelliklerinin değerlendirilmesini amaçlamıştır.

Yöntem: Araştırma, Türkiye'nin farklı bölgelerinden çevrimiçi yöntemle ulaşılan 202 yetişkin katılımcı ile gerçekleştirilmiştir. Uyarlama sürecinde özgün ölçekte yer alan bir madde çıkarılmıştır. Böylece duyguların farkındalığı, sıcaklık değişiminin farkındalığı, kuraklık/su kıtlığı farkındalığı ve medya (haberler) farkındalığı olmak üzere dört alt boyuttan oluşan 14 maddelik bir yapı elde edilmiştir. Ölçeğin yapı geçerliği doğrulayıcı faktör analizi ile değerlendirilmiş; iç tutarlılık düzeyi Cronbach alfa ve McDonald omega katsayıları ile incelenmiştir.

Bulgular: Analizler, ölçeğin dört boyutlu yapısının Türk örnekleminde doğrulandığını göstermiştir. Madde faktör yükleri 0,53 ile 0,91 arasında değişmiş ve model uyum indekslerinin kabul edilebilir düzeyde olduğu belirlenmiştir. Ölçeğin toplam puanı için Cronbach alfa katsayısı 0,891, McDonald omega katsayısı ise 0,885 olarak bulunmuştur. Alt boyutların iç tutarlılık katsayıları yeterli ve yüksek düzeyde bulunmuştur.

Sonuç: Bulgular, İklim Değişikliği Algısal Farkındalık Ölçeği'nin Türkçe formunun geçerli ve güvenilir bir ölçme aracı olduğunu ortaya koymuştur.

Anahtar sözcükler: İklim değişikliği, başa çıkma, ölçek, güvenilirlik ve geçerlilik, genç yetişkinler

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Introduction

The increasing frequency of extreme weather events, temperature fluctuations, droughts, and ecosystem degradation in recent years demonstrates that climate change has become a concrete reality that can be directly observed in daily life and experienced by society (Wei et al. 2024, Rüttenauer 2024). These developments necessitate that climate change be addressed not merely as an environmental threat, but as a multidimensional phenomenon that affects individuals' daily lives, risk perceptions, and psychosocial responses (Cipriani et al. 2024a). Individuals' perceptions of climate change are shaped not only by their level of knowledge but also by personal experiences, emotional responses, and the ways in which environmental cues are interpreted (Xia et al. 2022, Karlsson et al. 2023). How climate change is perceived by society plays a critical role in the adoption, feasibility, and effectiveness of climate change mitigation measures and influences the process of climate awareness formation (Cipriani et al. 2024b). Studies have shown that personal experiences both reinforce perceptions (Xia et al. 2022) and increase participation in climate-related actions (Wei et al. 2024). However, it is also noted that increased awareness does not always translate into action (Hochachka 2024). These findings indicate that, in addition to the cognitive dimension of climate change, its emotional and perceptual aspects must also be taken into account.

Perceptual processes play a fundamental role in explaining how environmental changes are perceived and interpreted. Perceptions of climate change are guided by attention, mental imagery, cognitive flexibility, and motivational processes, which can lead to the selective evaluation of environmental cues (Luo and Zhao 2019, Luo and Zhao 2021, Medrano et al. 2025). It has been reported that emotionally charged perceptions intensify the experience of risk and increase the level of awareness (Karlsson et al. 2023). Additionally, the discrepancy between anticipated and actual perceptions of climate change indicates that judgments regarding climate are based to a significant extent on subjective evaluations (Tohidi et al. 2025).

Awareness of climate change is not merely a knowledge-based construct; it is a multidimensional process that encompasses how environmental changes are perceived in daily life, the emotional responses to these changes, and how climate-related content presented through the media is interpreted (Cipriani et al. 2024a). It has been noted that media-based climate change news influences perceptions of climate change risks and emotional responses, and is associated with vicarious trauma and climate anxiety (Ediz et al. 2025, Tohidi et al. 2025). Furthermore, it has been reported that an increase in the level of information regarding climate change can heighten not only awareness but also emotional burden (Ediz and Yanık 2023).

It has been demonstrated that levels of climate change awareness and adaptation tendencies can vary across different sociocultural contexts (Alkaabi et al. 2025, Ökde 2025). Studies conducted in Turkey also reveal that awareness levels differ across age groups. Scales developed for middle and high school students have demonstrated that awareness can be measured in younger age groups (Gönen et al. 2023, Satmaz et al. 2025). However, there appears to be a limited number of measurement tools that comprehensively assess the perceptual dimensions in adult samples (Ökde 2025, Şahin Bayram et al. 2025).

Climate change perception and climate change awareness scales developed in the international literature may exhibit limitations in terms of measurement validity when used directly without consideration of cultural context (van Valkengoed et al. 2021, Hanedar et al. 2024). Therefore, these scales must be adapted to different cultures, and their psychometric properties must be reevaluated. Furthermore, existing tools in Turkey focus largely on knowledge or attitudes rather than perceptual awareness of climate change, which represents a significant shortcoming in multidimensional assessment. Due to its geographic location, climatic characteristics, and socioeconomic structure, Turkey is considered one of the countries vulnerable to the effects of climate change (Şen and Bozkurt 2019, IPCC 2023). In recent years, increasing heat waves, droughts, wildfires, declining water resources, and extreme weather events have been distinctly felt in various regions of the country. In addition, socioeconomic inequalities, disparities between rural and urban areas, and the presence of climate-sensitive economic sectors can further amplify the impacts of climate change on individuals and society (Republic of Türkiye Ministry of Environment, Urbanization, and Climate Change 2024). For this reason, in countries like Türkiye that are intensely experiencing the effects of climate change, there is a need for valid and reliable measurement

tools that reveal how individuals perceive environmental changes and the dimensions that shape these perceptions.

Accordingly, the aim of this study is to adapt the Climate Change Perceptual Awareness Scale, developed by Cipriani et al. (2024), into Turkish and to examine its validity and reliability properties. The study aims to contribute to the literature by providing a culturally adapted measurement tool capable of assessing adult individuals' perceptual awareness of climate change in Turkey across its environmental, emotional, and media-based dimensions.

In line with this general objective, the study sought to answer the following questions: Does the Turkish version of the Climate Change Perceptual Awareness Scale preserve the four-dimensional structure defined in the original scale within the Turkish sample? Are the items in the Turkish version of the scale adequate in terms of linguistic and conceptual equivalence? Is the internal consistency of the Turkish version sufficient to allow for the reliable use of the measurement tool? Do the total and subscale scores of the scale show a relationship with the level of eco-anxiety which is considered conceptually related in the expected direction?

Method

This study is a methodological investigation aimed at adapting the Climate Change Perceptual Awareness Scale into Turkish and examining its psychometric properties.

The study was conducted throughout Turkey, and the data collection process took place between December 24, 2025, and January 24, 2026. The study was not conducted at a specific institution or organization; data were collected from individuals living throughout Turkey via an online survey form (Google Forms) shared through social media and email. The data collection process was carried out directly by the researchers without the involvement of any institutional intermediaries or third-party implementers; the creation of the survey form, sharing of the link, downloading of the data, and pre-analysis checks were all performed by the researchers. The first section of the form included an informed consent statement, and only participants who provided consent were directed to the scale items. Identifying information such as first and last names, email addresses, and IP addresses was not collected; the form settings were configured to ensure that each participant could respond only once. The resulting data file was stored in a password-protected digital environment accessible only to the researchers; incomplete or inconsistent records were independently checked by two researchers prior to analysis.

Prior to the start of the study, written permission was obtained via email from Cipriani and colleagues for the adaptation of the scale into Turkish and its use within the scope of the study. Ethical approval was obtained from the Research Ethics Committee of the Faculty of Medicine at Çukurova University (date: September 12, 2025; number: 2025/158) to conduct the study. The participant information and consent process was conducted online. The introductory section of the survey prepared using Google Forms for data collection included detailed explanations regarding the study's purpose, scope, and implementation process. It was clearly stated to participants that participation in the study was voluntary, that their personal information would be kept confidential, and that the data collected would be used solely for scientific purposes. Participants who provided informed consent were included in the study. The study was conducted in accordance with the principles of the Declaration of Helsinki

Sample

The study population consists of individuals aged 18 and older living in Turkey. In scale adaptation studies, it is recommended that the sample size be at least 5–10 times the number of items (Aksu et al. 2017). Since the Climate Change Perceptual Awareness Scale consists of 15 items, the goal was to reach a minimum of 75–150 participants. Participants were recruited via an online survey link using convenience and snowball sampling methods. Analyses were conducted using data from 202 participants. However, the sample size was not based solely on the number of items; the recommended lower limits for confirmatory factor analysis were also taken into account. The literature indicates that a sample size of 200 or more is

considered sufficient for DFA (Kline 2014). Therefore, the lower limit of 75-150 participants calculated for a 15-item scale was deemed insufficient, and the target sample size was increased to over 200.

The inclusion criteria for the study were defined as being 18 years of age or older, voluntarily agreeing to participate in the study by providing electronic informed consent, and possessing a sufficient level of Turkish language proficiency to understand the questionnaire. Individuals who did not meet these criteria, as well as those who indicated they had a condition that would make it difficult for them to understand the questions, were excluded from the study. The main study was conducted using an online data collection method. Thanks to the informed consent process and the mandatory nature of all survey items, complete data was obtained from 202 participants, and all data sets were included in the analyses. Thus, the data from 202 participants who met the inclusion criteria and completed the form in full were included in the analysis.

Data Collection Tools

The data collection tools used in the study were the Personal Information Form, the Turkish draft version of the Climate Change Perceived Awareness Scale, and the Eco-Anxiety Scale.

Personal Information Form

This is a 9-question form prepared by the researchers to determine participants' sociodemographic characteristics, such as age, gender, educational status, marital status, employment status, and place of residence.

Climate Change Perceptual Awareness Scale (CCPAS)

Originally titled the "Climate Change Perceptual Awareness Scale (CCPAS)," this scale was developed by Cipriani et al. in 2024 (Cipriani et al. 2024a). This scale is a psychometric measure designed to assess individuals' perceptual awareness of climate change in their daily lives. The scale consists of 15 items and has four subscales: Emotional Awareness, Temperature Change Awareness, Drought/Water Scarcity Awareness, and Media (News) Awareness. The scale uses a 5-point Likert-type rating scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very often). The internal consistency coefficients of the scale's subscales range from 0.81 to 0.94, and its four-factor structure has been confirmed in both the United Kingdom and Italian samples (Cipriani et al. 2024a). The scale was developed through two independent cross-sectional studies. In the first study conducted with the UK sample (n = 332), exploratory factor analysis was applied to the 19-item form; four items were removed due to cross-loadings or low shared variance, resulting in a 15-item form. Instead of the initially hypothesized three- -factor structure, a four-factor structure was supported; the subscales were named Awareness of Emotions (40%), Awareness of Drought/Water Scarcity (21%), Media (News) Awareness (20%), and Awareness of Temperature Change (18%) (Cipriani et al. 2024a). Structural validity was tested in both studies using confirmatory factor analysis with WLSMV estimation and the Satorra-Bentler correction. In the first study, the model showed good fit in both the female and male groups (robust CFI = 0.993; robust TLI = 0.991; robust RMSEA = 0.046; SRMR = 0.050); In the second study, conducted with an Italian sample (n=302), it was reported that dimensional invariance was preserved (robust TLI=0.987; robust RMSEA=0.049; SRMR=0.052) and that the internal consistency coefficients of the subscales ranged from 0.78 to 0.92. In terms of convergent validity, the first study found that scale scores were associated with scores on the Climate Change Anxiety Scale (CCAS) and the Pro-Environment Behavior Scale (PEBS) at a low-to-moderate level (ρ = 0.20–0.40); while in the second study, they were found to be moderately correlated ($\rho \geq 0.55$) with the New Environmental Paradigm Scale (NEP-R) and weakly correlated ($\rho = 0.24$) with the "observation" subscale of the Five-Factor Mindfulness Questionnaire (FFMQ). In predictive validity analyses, the "Emotional Awareness" subscale was identified as the strongest predictor of pro-environmental behavior ($b = 0.596$; $p < 0.001$) (Cipriani et al. 2024a). In this study, the scale's original 15-item version was administered; as a result of the analyses conducted for the Turkish version, the final form consists of 14 items and four subscales. Scoring involves summing the item scores, and a higher score indicates an increased level of perceptual awareness.

Eco-Anxiety Scale

The scale was developed by Hogg et al. (2021) to measure individuals' psychological responses to environmental issues and was adapted into Turkish by Uzun et al. (2022). The scale consists of four subscales and a total of 13 items. There are no reverse-scored items on the scale. Higher total and subscale scores on the scale indicate increased levels of eco-anxiety. In the adaptation study, the scale's internal consistency coefficient (Cronbach's Alpha) was reported as 0.91 (Uzun et al., 2022). In this study, the scale's Cronbach's Alpha value was calculated as 0.933. Eco-anxiety was selected as the criterion variable due to its theoretical relevance to emotional and perceptual responses to climate change. The original scale is known as the Hogg Eco-Anxiety Scale (HEAS-13). The scale's subscales are labeled as emotional symptoms, behavioral symptoms, rumination, and anxiety regarding personal impact; items are answered using a four-point rating scale (0 = Never, 1 = A few days, 2 = More than half the days, 3 = Almost every day) based on frequency over the past two weeks. The total score on the scale ranges from 0 to 39. In the Turkish adaptation study, the four-factor structure was supported by confirmatory factor analysis (CFI=0.97; NFI=0.96; RMSEA = 0.06; GFI = 0.96), and that the internal consistency coefficients for the subscales were 0.83 for emotional symptoms, 0.86 for behavioral symptoms, 0.84 for rumination, and 0.84 for anxiety related to personal impact (Uzun et al. 2022). In the original scale development study, the four-factor structure was supported by exploratory (n = 365) and confirmatory (n = 370) factor analyses, and the stability of the dimensions over time was demonstrated in a longitudinal sample (n = 189) (Hogg et al. 2021). The Turkish adaptation study was conducted with 698 individuals living in Turkey; the suitability of the data for factor analysis was confirmed by a KMO of 0.91 and a significant Bartlett's sphericity test, and the four-factor solution explained 74.77% of the total variance. with composite reliability (CR) values ranging from 0.81 to 0.86 and average variance explained (AVE) values ranging from 0.59 to 0.64 (Uzun et al. 2022).

Adaptation Process

The process of adapting the Climate Change Perceptual Awareness Scale into Turkish was conducted in stages: translation, expert review, back-translation, pilot testing, and main application. In the first stage, permission to adapt the scale into Turkish was obtained via email from the original scale authors. Subsequently, the scale items were independently translated into Turkish by three independent experts proficient in both English and Turkish. These translations were compared by the researchers, and the items were evaluated in terms of semantic coherence, conceptual equivalence, linguistic clarity, and cultural appropriateness. For items with multiple translation options, the expressions that best reflected the meaning of the original item were selected to create a draft Turkish version.

The resulting Turkish draft form was submitted for expert review. During the expert evaluation process, input was sought from an academic specializing in measurement and evaluation, two faculty members specializing in the Turkish language, and four faculty members with research experience in climate change. The experts were asked to evaluate each item in terms of content appropriateness, clarity, cultural appropriateness, and alignment with the construct the scale aims to measure. Based on the expert feedback, revisions were made to some items to simplify the wording, strengthen the conceptual meaning, and improve alignment with Turkish language structure. At this stage, no structural changes were made that would alter the original meaning of the items.

Following the expert reviews, the revised Turkish version was retranslated into English by an independent expert with advanced proficiency in both Turkish and English. The back-translated version was compared with the original scale items to assess semantic equivalence. The comparison confirmed that the items were conceptually consistent with the original scale. Thus, the Turkish pilot version of the scale was finalized.

A pilot study was conducted on a group of 75 participants to evaluate the comprehensibility of the Turkish pilot version. During the pilot study, participants provided feedback on whether the items were clear, understandable, and answerable. The results of the pilot study indicated that the items were generally understandable, the item-total correlations were at an acceptable level, and there was no need to remove

any items at this stage. Following the pilot study, the Turkish version of the scale was finalized for use in the main study.

The main study was conducted using an online data collection method. Complete data were obtained from 202 participants within the scope of the research. Confirmatory Factor Analysis (CFA) was applied to the collected data to test the construct validity of the scale. The fit indices obtained were evaluated in accordance with the threshold values recommended in the literature, and it was determined that the four-factor structure demonstrated statistically acceptable fit. In addition, the reliability of the scale was re-examined, and it was determined that the internal consistency coefficients were at an adequate level. These findings demonstrate that the Turkish version of the Climate Change Perceptual Awareness Scale is a valid and reliable measurement tool.

Development and Administration of the Online Survey Form

The study was prepared in accordance with the CHERRIES (Checklist for Reporting Results of Internet E-Surveys) checklist for reporting online survey studies (Eysenbach 2004). The online survey form was created by the researchers using Google Forms; the form consisted of four screens an informed consent page, a Personal Information Form (9 questions), the Turkish version of the Climate Change Perceived Awareness Scale (15 items), and the Eco-Anxiety Scale (13 items) for a total of 37 questions. Before the main study began, the researchers tested the form on various devices and browsers (desktop computers, tablets, and smartphones); they verified the display of items, screen transitions, mandatory item warnings, and the correct recording of responses in the data file. In addition, a pilot study conducted with a group of 75 participants provided an opportunity to test both the clarity of the items and the form's electronic functionality; it was determined that the form was completed in an average of 15 minutes during the pilot study, and this information was shared with participants on the consent page.

Only individuals who received the link could access the survey. The link was shared via the research team's social media accounts and professional networks; no paid promotion, advertising, or sponsored posts were used, and initial contact with participants was established exclusively through online platforms. The invitation message specified the study's title and purpose, the principal investigators, that participation was entirely voluntary, the estimated time to complete the form, that responses would be evaluated anonymously, and that participants could withdraw from the study at any time; participants were asked to share the link with individuals who met the inclusion criteria (snowball sampling). No payment, gift, or other incentive was offered to participants in exchange for their participation.

Prior to data collection, the purpose of the study, the procedures to be followed, potential benefits and risks, and participants' rights (including the right to withdraw from the study at any stage without any adverse consequences) were explained in detail on the first page of the form, and access to the survey was granted only to individuals who provided informed consent electronically. Participants were informed that their responses would be anonymized, that no personally identifiable information would be stored, and that the findings would be published as open access; consent was obtained for the use and publication of anonymized data. All items on the form were marked as mandatory; participants could not proceed to the next screen without answering an item, and the system automatically issued a warning in case of incomplete responses. Alternative response options such as "I don't know" or "I don't want to answer" were not offered; however, participants could use the "back" option to return to previous screens and modify their responses before submitting the form. As a result, all completed forms were submitted in full and included in the analyses. A Google account was required to access the survey, which prevented the same individual from submitting multiple responses; duplicate participation was not restricted or identified through IP address tracking, cookie usage, or log file analysis. Due to the open sharing of the link and the absence of tracking mechanisms, the form's view and participation rates could not be calculated. The data was stored on password-protected devices accessible only to the research team. Although Google Forms is not a platform specifically designed for health data, the risk to data security is minimal in this study because no clinical patient data or personal health information was collected; furthermore, no technical

data that could reveal participants' IP addresses or identities was recorded, and this was considered an additional measure to protect data confidentiality and participant privacy.

Statistical Analysis

The research data were analyzed using SPSS 22 and AMOS. The participants' sociodemographic characteristics were summarized using frequencies and percentages. The data's conformity to a normal distribution was assessed primarily by considering the skewness and kurtosis values. Skewness and kurtosis values within the ±1.5 range were accepted as an indicator of a normal distribution. Additionally, the results of the Kolmogorov-Smirnov test and the presence of outliers in the dataset were examined. The analysis determined that the skewness and kurtosis values were within acceptable limits, and the data were deemed to follow a normal distribution. In scale adaptation studies, it is recommended to conduct confirmatory factor analysis (CFA) due to the presence of a predefined structure. In this study, since the scale possessed a four-factor structure that had been validated in the original development study, exploratory factor analysis (EFA) was not applied; instead, confirmatory factor analysis (CFA) was directly preferred for assessing construct validity. It has been noted that DFA is an appropriate method for testing a predefined and theoretically supported factor structure across different cultures in scale adaptation studies (Kline 2014, DeVellis and Thorpe 2021). Prior to DFA, the suitability of the data for factor analysis was examined using the Kaiser–Meyer–Olkin (KMO) coefficient and Bartlett's sphericity test. Item–total correlations above 0.30 and a Cronbach's alpha coefficient above 0.70 were accepted as criteria. Confirmatory factor analysis (CFA) was conducted to validate the resulting factor structure. Model fit was assessed using the CMIN/DF, χ^2, CFI, RMSEA, RMR, SRMR, IFI, TLI, NFI, PGFI, and PNFI fit indices. The scale's convergent validity and composite reliability were examined using the Average Variance Extracted (AVE) and Composite Reliability (CR) values. Discriminant validity was assessed based on the Fornell–Larcker criterion. The scale's reliability was tested using Cronbach's alpha and McDonald's Omega coefficients, while item-total correlations and alpha values obtained when items were removed were examined as part of the item analysis. The relationships among the subscales and between the subscales and the total scale score were assessed using Pearson correlation analysis. A significance level of 0.05 was adopted for all analyses (Kline 2014, Howard 2016, Bae 2017, Pallant 2020, DeVellis and Thorpe 2021).

Table 1. Characteristics of the participants (N=202)

Characteristics	Variables	N	%
Gender	Female	143	70.8
	Male	59	29.2
Marital status	Married	67	33.2
	Single	135	66.8
Education level	High school	17	8.4
	University	147	72.8
	Postgraduate	38	18.8
Employment status	Public Employee	81	40.1
	Private Employee	12	5.9
	Student	84	41.6
	Unemployed	25	12.4
Place of residence	Metropolitan	60	29.7
	City center	85	42.1
	District center	40	19.8
	Village	17	8.4
Received climate change education	Yes	33	16.3
	No	169	83.7
Participation in climate-related organizations or activities	Yes	16	7.9
	No	186	92.1
Directly affected by climate-related disasters	Yes	107	53.0
	No	95	47.0
Age	28.72±9.32 (18-64)		

N = Number, SD = Standard deviation, $\bar{x}$= Mean, % = Percentage.

Although confirmatory factor analysis was used in the study to validate the predefined factor structure, the Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett's Sphericity Test results were also reported to assess the factorizability of the dataset and demonstrate sample adequacy.

Results

In the study, 70.8% of the participants were women, 66.8% were single, 72.8% were college graduates, 41.6% were students, and 42.1% lived in a county seat. It was determined that 83.7% of the participants had not received any education on climate change, 92.1% had not participated in any civil society organization, club, or volunteer activity related to climate change, and 53% had been directly affected by climate change-related disasters (floods, fires, storms, extreme heat, etc.). The average age of the participants was 28.72 ± 9.32 and that the sample consisted of relatively young adults (Table 1).

Table 2. Mean, standard deviation, total ıtem correlation coefficient, and Cronbach's alpha values when ıtems are removed

Items	Mean	Standard Deviation	Item-Total Correlation Coefficient	Cronbach's Alpha Value if Item Is Removed
i1. I have noticed that streams and other water sources are drying up more frequently.	3.96	0.86	0.482	0.887
i2. I have noticed an increase in news reports about forest fires.	4.44	0.73	0.510	0.886
i3. I've noticed an increase in the number of dried-up plants.	3.91	0.96	0.599	0.882
i5. I noticed an increase in the number of heat waves.	4.32	0.78	0.596	0.882
i6. I have noticed changes in winter temperatures.	4.29	0.75	0.620	0.882
i7. I noticed an increase in the number of news reports about drought.	4.27	0.82	0.624	0.881
i8. I have noticed changes in temperatures during the fall season.	4.10	0.83	0.620	0.881
i9. I felt that animals were suffering more and more due to environmental factors.	3.94	0.92	0.589	0.882
i10. I felt anger due to changes in the environment.	3.75	0.97	0.709	0.876
i11. I felt a sense of disappointment due to changes in my surroundings.	3.80	0.99	0.621	0.881
i12. I felt guilty because of the changes taking place around me.	2.78	1.10	0.410	0.892
i13. I felt a sense of unease (restlessness) due to the changes taking place in my surroundings.	3.72	1.01	0.580	0.883
i14. I noticed an increase in the number of news reports about flooding.	3.46	0.95	0.558	0.884
i15. I noticed an increase in the number of yellowing leaves on plants.	3.39	1.04	0.555	0.884

i = **item**, Mean = Arithmetic mean

Validity

Confirmatory Factor Analysis

Upon examining the suitability of the dataset for factor analysis, it was determined that the item-total correlation coefficient for item i4 (I felt that nature was being harmed more and more) in the original scale was 0.112, which fell below the accepted threshold of 0.30. Furthermore, it was observed that this item's contribution to the factor structure was limited. Therefore, the item was removed from the analysis. After the item was removed, an increase in the scale's internal consistency coefficient was observed, and it was

assessed that the theoretical integrity of the four-factor structure was preserved. It was determined that the item-total correlation values for the 14 remaining items ranged from 0.410 to 0.709, and the Cronbach's Alpha value for the 14 items was 0.891. It was determined that the dataset followed a normal distribution. The values for skewness (Skewness = -0.493) and kurtosis (Kurtosis = 1.088) were found to be within the ±1.5 limits. The results of the Kolmogorov–Smirnov test also supported this finding (p = 0.200). The KMO value (0.885) and Bartlett's Sphericity test results (χ^2 = 1,354.208, df = 91, p = 0.001) indicated that the sample was adequate and the dataset was suitable for analysis. The mean, standard deviation, item-total correlation values, and Cronbach's alpha values when items were removed for the 14 items are presented in Table 2 (Table 2).

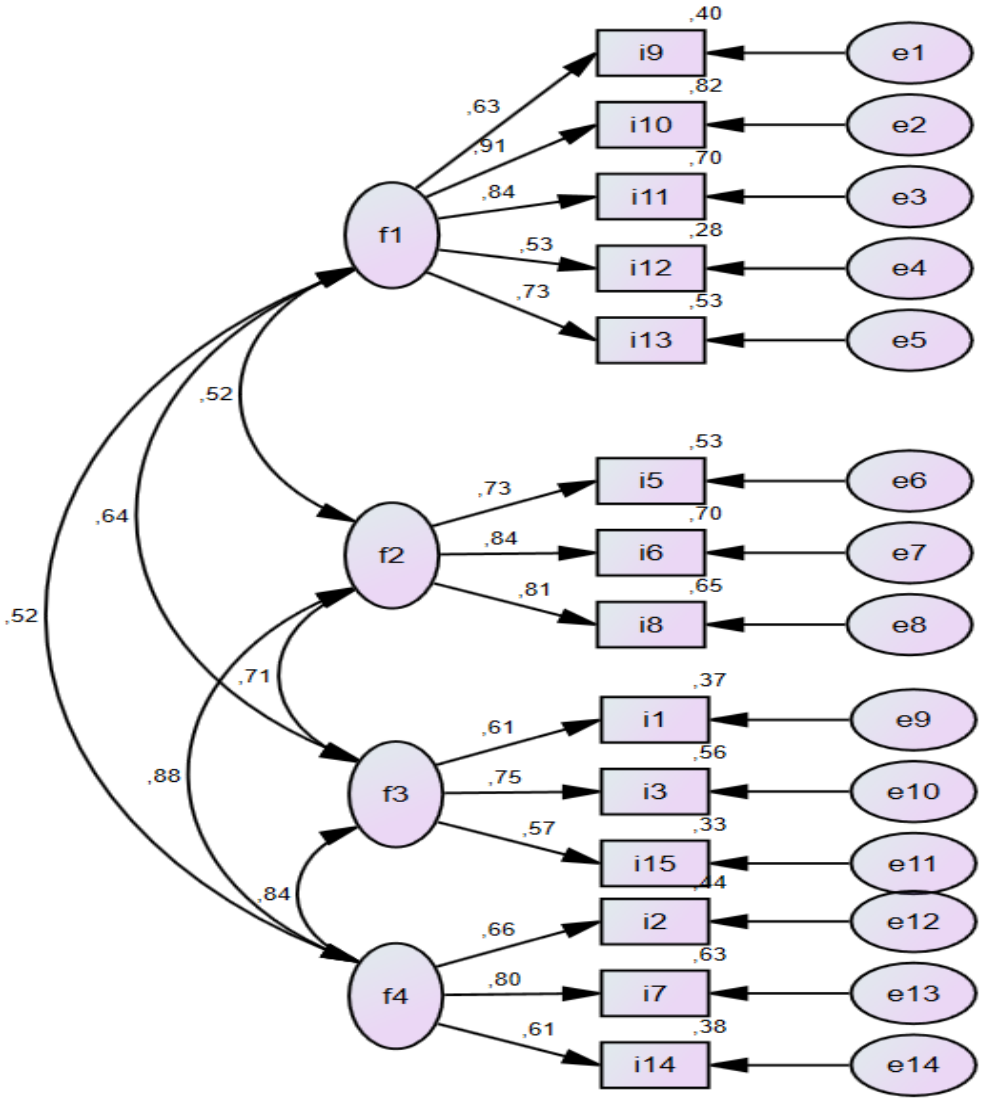


Figure 1. Confirmatory factor analysis results and fit indices

F1 = Emotional Awareness, F2 = Awareness of Temperature Change, F3 = Awareness of Drought/Water Scarcity, F4 = Awareness of the Media (News)
CMIN/DF=2.444, χ^2p=0.001, CFI=0.921, RMSEA=0.080, RMR=0.059, SRMR=0.0671, IFI = 0.922, TLI = 0.900, NFI = 0.875, PGFI = 0.600, PNFI = 0.683

Confirmatory factor analysis confirmed a 14-item, 4-factor structure. The first factor, consistent with the original scale, consisted of items i9, i10, i11, i12, and i13. This dimension was named "Awareness of Emotions." The second factor, consistent with the original scale, consisted of items i5, i6, and i8. This dimension was named "Awareness of Temperature Change." The third factor, consistent with the original scale, consisted of items i1, i3, and i15. This dimension was named "Awareness of Drought/Water Scarcity." The fourth factor consisted of items i2, i7, and i14 , consistent with the original scale. This dimension was named "Media (News) Awareness." The DFA factor loadings are presented in Table 3 (Table 3).

The 14-item, 4-dimensional structure was tested using Confirmatory Factor Analysis, and the resulting fit indices were found to be "CMIN/DF=2.444, χ^2p=0.001, CFI=0.921, RMSEA=0.080, RMR=0.059, SRMR=0.0671, IFI = 0.922, TLI = 0.900, NFI = 0.875, PGFI = 0.600, PNFI = 0.683." These values indicate that the structure of the scale, consisting of 14 items and 4 dimensions, is valid (Figure 1) (Kline 2014, Bae 2017) .

In addition, the factor loadings of the items were examined, and it was observed that the first factor ranged from 0.53 to 0.91, the second factor from 0.53 to 0.84, the third factor from 0.57 to 0.75, and the fourth factor from 0.61 to 0.80. These values indicate that the items load strongly on their respective factors (Table 3, Figure 1).

Table 3. CFA factor loadings

Items	Factors			
	F1	F2	F3	F4
i9. I felt that animals were suffering more and more due to environmental factors.	0.63			
i10. I felt anger due to changes in the environment.	0.91			
i11. I felt a sense of disappointment due to changes in the environment.	0.84			
i12. I felt guilty because of the changes in my surroundings.	0.53			
i13. I felt a sense of unease (boredom) due to the changes in my surroundings.	0.73			
i5. I noticed an increase in the number of heat waves.		0.73		
i6. I noticed changes in winter temperatures.		0.84		
i8. I have noticed changes in temperatures during the fall season.		0.81		
i1. I have noticed that streams and other water sources are drying up more frequently.			0.61	
i3. I have noticed an increase in the number of dried-up plants.			0.75	
i15. I have noticed an increase in the number of yellowing leaves on plants.			0.57	
i2. I noticed an increase in news reports about forest fires.				0.66
i7. I've noticed an increase in the number of news reports about drought.				0.80
i14. I've noticed an increase in the number of news reports about floods.				0.61

CFA=Confirmatory factor analysis, F=Factor, i=Item.

Convergent Validity

The composite reliability (CR) values ranged from 0.68 to 0.85, indicating an acceptable level of internal consistency for all factors. The average variance explained (AVE) values for the "Emotional Awareness (F1)" and "Awareness of Temperature Change (F2)" factors were found to be above the recommended threshold of 0.50. Although the AVE values for the "Awareness of Drought/Water Scarcity (F3)" and "Awareness of the Media (News)(F4)" factors fell slightly below the threshold, the fact that the CR values were at an acceptable level indicates that convergent validity was also established for these factors. Overall, the measurement model possesses an adequate level of convergent validity and internal consistency. Furthermore, the fact that the items in the "Drought/Water Scarcity Awareness (F3)" and "Media (News) Awareness (F4)" factors exhibited significant and high factor loadings in the DFA results supports the retention of these dimensions in the scale (Table 4).

Table 4. AVE, CR, root mean square error of approximation, and correlation values for dimensions

			Root Mean Square of Explained Variance and Correlation Values				CCPAS
Factor	CR	AVE	F1	F2	F3	F4	
Emotional Awareness (F1)	0.85	0.55	0.74*	0.45	0.53	0.43	0.84
Awareness of Temperature Change (F2)	0.84	0.63	0.45	0.79*	0.55	0.68	0.78
Awareness of Drought/Water Scarcity (F3)	0.68	0.42	0.53	0.55	0.65*	0.63	0.81
Media (News) Awareness (F4)	0.73	0.48	0.43	0.68	0.63	0.69*	0.79

AVE = Average Variance Extracted, CR = Composite Reliability, F = Factor, CCPAS = Climate Change Perceived Awareness Scale. *AVE square root value.

To examine the criterion-related validity of the adapted scale, the relationships between the scale's total score and its subdimensions and the mean scores on the Eco-Anxiety Scale were evaluated using Pearson

correlation analysis. According to the analysis results, a positive and statistically significant relationship was found between the total score of the adapted scale and the eco-anxiety scores. Furthermore, it was found that all subdimensions of the scale showed positive and significant correlations with eco-anxiety scores. These findings indicate that as the level of awareness regarding climate change increases, so does the level of eco-anxiety, thereby supporting the criterion-related validity of the adapted scale (Table 5).

Table 5. Descriptive statistics for scales and dimensions, number of ıtems, reliability results, and correlation analysis results with the Eco-Anxiety Scale

Scales and Subdimensions	Descriptive Statistics			Number of Items	Reliability Results		Eco-Anxiety Scale
	$\bar{x}$	SD	Min-Max		α	Ω	
Emotional Awareness (F1)	17.99	3.92	6-25	5	0.842	0.848	0.488**
Awareness of Temperature Change (F2)	12.71	2.04	4-15	3	0.831	0.833	0.262**
Awareness of Drought/Water Scarcity (F3)	11.26	2.21	4-15	3	0.761	0.794	0.283**
Media (News) Awareness (F4)	12.16	2.00	1-15	3	0.717	0.724	0.215**
Climate Change Perceived Awareness Scale (CCPAS)	54.13	8.22	19-70	14	0.891	0.885	0.425**

F = Factor, CCPAS = Climate Change Perceived Awareness Scale, Min-Max = Minimum-Maximum score, SS = Standard deviation, $\bar{x}$= Mean, α = Cronbach's alpha value, Ω = McDonald's omega value. **Correlation value is significant at the 0.001 level.

Discriminant Validity (Fornell-Larcker Criterion)

The discriminant validity of the measurement model was assessed using the Fornell–Larcker criterion. According to this criterion, the square root of the Average Variance Explained (AVE) value for each construct must be greater than the correlation coefficients between that construct and the other constructs. According to the findings presented in Table 4, the square root of AVE values were calculated as 0.74 for Emotional Awareness, 0.79 for Awareness of Temperature Change, 0.65 for Awareness of Drought/Water Scarcity, and 0.69 for Media (News) Awareness. It is observed that the correlation coefficients between factors range from 0.43 to 0.68. It was determined that the square root of the AVE values for all factors was greater than the highest correlation coefficients of the respective factors. These findings indicate that the variance shared by each construct with its own indicators is greater than the variance shared with other constructs, and that the discriminant validity of the measurement model is established (Table 4).

Structural Validity

The correlation values between the scale and its subscales were examined, and it was determined that all subscales showed a high, positive, and statistically significant relationship with the total scale score (F1: $r = 0.84$; F2: $r = 0.78$; F3: $r = 0.81$; F4: $r = 0.79$; all $p < 0.001$). These values indicate that the scale's construct validity is supported (Table 4).

Reliability

Internal Consistency (Cronbach's Alpha) and McDonald's Omega Values

The reliability of the scale was determined by examining Cronbach's Alpha and McDonald's Omega values. Values above 0.70 indicated that the scale or dimension was sufficiently reliable. It was determined that the Cronbach's Alpha value for the "Emotional Awareness (F1)" dimension was 0.842, and the McDonald's Omega value was 0.848. It was determined that the Cronbach's Alpha value for the "Awareness of Temperature Change (F2)" dimension was 0.831 and the McDonald's Omega value was 0.833. It was determined that the Cronbach's Alpha value for the "Awareness of Drought/Water Scarcity (F3)" dimension was 0.761, and the McDonald's Omega value was 0.794. It was observed that the Cronbach's Alpha value for the "Media (News) Awareness (F4)" dimension was 0.717, and the McDonald's Omega value was 0.724. The Cronbach's Alpha value for the Climate Change Perceptual Awareness Scale was found to be 0.891, and the McDonald's Omega value was 0.885 (Table 5).

Discussion

This study evaluated the psychometric properties of the Turkish adaptation of the Climate Change Perceptual Awareness Scale (CCPAS). The findings indicate that the Turkish version of the scale is a valid and reliable measurement tool and that the four-factor structure proposed in the original study has been preserved. The evidence obtained regarding internal consistency, convergent and discriminant validity, and criterion-related validity supports the scale's structural integrity. Furthermore, considering the 14 items in the final version of the scale, the 202 participants in the study correspond to approximately 14 participants per item. This number exceeds the minimum sample size criteria recommended in scale adaptation studies and is considered sufficient for the confirmatory factor analysis conducted (Seçer 2020).

Studies conducted in the Turkish context indicate that climate awareness varies according to demographic and developmental variables (Demir et al. 2024, Han Yekdeş et al. 2025, Ökde 2025). This diversity underscores the importance of measurement tools that are culturally sensitive and psychometrically robust. The Turkish adaptation of the CCPAS provides a methodologically sound tool that enables the comparative examination of perceptual awareness across different age and occupational groups.

The fit indices obtained from the DFA (CMIN/DF = 2.444; CFI = 0.921; TLI = 0.900; RMSEA = 0.080; SRMR = 0.067) indicate that the model exhibits an acceptable level of fit. The fact that the CFI and TLI values meet the .90 threshold and the SRMR is below .08 indicates that the model-data fit is adequate. Although the RMSEA value of 0.08 suggests that the model has an acceptable but improvable fit, it does not indicate a need for modifications that would compromise the theoretical structure (Kartal and Bardakçı 2018, Pallant 2020). These findings support that the original factor structure is preserved in the Turkish sample. However, the NFI value (0.875) is seen to fall slightly below the recommended threshold of 0.90. Although this value does not indicate perfect fit, the fact that other fit indices are at acceptable levels supports the conclusion that the model demonstrates generally adequate fit. The fact that other fit indices, such as the SRMR, are also at acceptable levels indicates that the model's overall fit is adequate and that the original factor structure is preserved in the Turkish sample.

The fact that factor loadings at the item level range from .53 to .91 indicates that the items adequately reflect the latent structure they represent, and quite strongly in some dimensions. The highest loading, obtained in the Emotional Awareness dimension (.91), suggests that the emotional response dimension may carry significant weight within the perceptual awareness structure. The removal of an item (i4) that exhibited a low item-total correlation improved the scale's internal consistency and strengthened its structural integrity (Seçer 2020). In adaptation studies, the elimination of items that do not sufficiently align with the cultural context is considered a well-established practice that enhances measurement quality. Although item i4 demonstrated an acceptable level of factor loading under the relevant factor in the original study, it did not exhibit the same performance in the Turkish sample. This situation may be related to differences in cultural context, environmental experiences, and the varying ways in which perceptions of climate change are structured across societies. The fact that the effects of climate change are experienced in different ways across various regions may cause some items to be perceived as less observable or less meaningful by individuals. Therefore, the low discriminant validity of the item in question in the Turkish sample can be considered an expected outcome in cultural adaptation studies.

The validation of the four-factor structure within the Turkish cultural context suggests that perceptual awareness may exhibit structural consistency across cultures. A similar multidimensional structure was also reported in the scale's original development study (Cipriani et al. 2024a). The structuring of perceptual awareness through temperature changes, drought/water scarcity, media-driven changes, and emotional responses indicates that climate change is perceived as an experiential phenomenon rather than an abstract risk. This finding is consistent with meta-analysis results showing that personal experience strengthens climate perception (Xia et al. 2022) and with studies indicating that individual experience can increase climate action (Wei et al. 2024). The findings are also generally consistent with other climate change awareness scales developed or adapted in Turkey (Gönen et al. 2023, Satmaz et al. 2025, Şahin

Bayram et al. 2025). However, the present scale differs from existing tools in that it assesses how individuals perceive environmental changes in their daily lives, their emotional responses to these changes, and their awareness of climate-related content presented through the media, rather than focusing on knowledge about climate change or general awareness levels. In this regard, the scale offers a more comprehensive approach to assessing the experiential and psychological dimensions of climate change.

In terms of convergent validity, the fact that the CR values fall within the range of .68–.85 indicates that the subscales possess an adequate level of composite reliability. Although the AVE values for the F3 and F4 dimensions fall slightly below the .50 threshold, the fact that the CR values are above .60 and the factor loadings are statistically significant supports the acceptability of convergent validity. It is known that relatively low AVE values in subdimensions with only three items are statistically expected (Seçer 2020, DeVellis and Thorpe 2021).

The fulfillment of the Fornell–Larcker criterion in the discriminant validity analysis indicates that the subscales are interrelated but conceptually distinct constructs. The fact that the square root of AVE values is higher than the intercorrelations among factors supports the structural integrity of the measurement model. The correlation values between the scale and its subscales were examined, and it was determined that all subscales exhibited a high, positive, and statistically significant relationship with the total scale score (F1: $r = 0.84$; F2: $r = 0.78$; F3: $r = 0.81$; F4: $r = 0.79$; all $p < 0.001$). These values indicate that the scale's construct validity is supported (Seçer 2020).

The fact that both Cronbach's Alpha and McDonald's Omega coefficients were above .70 across all subscales in the reliability analyses indicates that the scale provides consistent and reliable measurements. In particular, the reporting of the Omega coefficients constitutes a methodological strength, as it provides more robust evidence of reliability that does not rely on the tau-equivalence assumption. The high reliability coefficients obtained for the total scale ($\alpha = 0.891$; $\Omega = 0.885$) demonstrate that the CCPAS provides stable measurement as a holistic construct (Seçer 2020). However, this study evaluated only internal consistency-based reliability measures, and the scale's test-retest reliability was not examined. Therefore, it would be beneficial to investigate test-retest reliability in future research.

Within the scope of criterion-related validity, the significant correlations between CCPAS scores and eco-anxiety indicate that perceptual awareness is associated with emotional outcomes. It has been reported that increased climate change awareness is associated with anxiety and hopelessness (Ediz and Yanık 2023) and that exposure to vicarious trauma through the media is associated with climate anxiety (Ediz et al. 2025). The Climate Change Anxiety Scale (Clayton and Karazsia 2020) demonstrates that climate anxiety is a measurable psychological construct. In this regard, the finding that the CCPAS is associated with eco-anxiety supports the notion that perceptual awareness has not only cognitive but also emotional dimensions. The fact that the correlation coefficients obtained were significant and in the expected direction indicates that the scale exhibits consistent relationships with psychological constructs related to climate change. This provides additional evidence for the criterion-related validity of the CCPAS.

The relationship between perceptual awareness and pro-environmental behavior is not linear. It has been shown that risk perception can reduce inaction under certain conditions, but awareness does not always translate into behavioral change (Changcheng et al. 2021, Hochachka 2024). It is emphasized that perceived self-efficacy plays a decisive role in this process (van Valkengoed et al. 2024). When evaluated alongside findings related to adaptation and technology adoption processes (Alkaabi et al. 2025), it becomes clear that perceptual awareness is a variable that can influence not only individual attitudes but also social adaptation strategies. Furthermore, considering that perceptions of climate change are associated with political orientation and psychosocial variables (Leite et al. 2023) and that cognitive style can shape climate expectations (Li et al. 2021), perceptual awareness must be examined in interaction with cognitive and emotional processes. The multidimensional structure of the CCPAS provides a suitable framework for such advanced analyses.

This study has certain limitations. First, since the study was conducted using an online data collection method and convenience/snowball sampling, it may have increased the risk of selection bias and limited

the representativeness of the sample. Therefore, caution should be exercised when generalizing the results to the entire adult population in Turkey. Participants' attention levels could not be directly controlled during the online data collection process. Furthermore, self-report measures may be susceptible to social desirability bias. In addition, since test-retest reliability was not assessed, no information regarding the scale's temporal stability can be provided. The fact that the majority of participants were women and university graduates, combined with the data being collected via self-report, can be considered a limitation of the study. The study did not examine the measurement invariance of the scale across different demographic groups (such as gender, education level, and age groups). In future studies, conducting measurement invariance analyses across different subgroups will provide stronger evidence regarding the comparative use of the scale in different populations. It is recommended that future studies use the test-retest method to evaluate the scale's test-retest reliability.

Additionally, the scale's psychometric properties were examined on a single sample, and the findings were not cross-validated in an independent second sample. Criterion-related validity was assessed solely through eco-anxiety; other theoretically related variables, such as pro-environmental behavior, climate knowledge, or general anxiety, were excluded from the scope of the study. Given the cross-sectional nature of the study, it is also possible that seasonal climate events may have temporarily affected participants' levels of perceptual awareness. The requirement of an internet connection and a Google account to access the survey may have made it difficult for individuals with limited access to digital resources to be included in the sample. Despite these limitations, the findings indicate that the Turkish version of the CCPAS is psychometrically adequate and provides a useful tool for future research.

Conclusion

This study demonstrated that the 14-item, four-factor structure of the Turkish version of the Climate Change Perceptual Awareness Scale (CCPAS) is valid and reliable. The findings of confirmatory factor analysis revealed that the original structure was preserved; internal consistency, convergent, and discriminant validity analyses supported the scale's psychometric adequacy. The fact that the total and subscale scores of the CCPAS show positive and significant correlations with eco-anxiety indicates that perceptual awareness encompasses not only cognitive but also emotional dimensions. This finding supports the notion that climate change is experienced by individuals as an experiential and psychological reality. In conclusion, the findings of this study support that the Turkish version of the CCPAS is a valid and reliable measurement tool for assessing the levels of perceptual awareness of climate change among adults in Turkey in a multidimensional manner. However, it is recommended that future studies retest the scale across different age groups, socioeconomic levels, and regional samples; examine measurement invariance, and evaluate its relationships with behavioral variables related to climate change.

References

Aksu G, Eser MT, Güzeller CO (2017) Açımlayıcı ve Doğrulayıcı Faktör Analizi İle Yapısal Eşitlik Uygulamaları. Ankara, Detay Yayıncılık.

Alkaabi K, Bouhaddioui C, Senghore S, Al Darmaki SO (2025) Exploring climate adaptation in UAE residential communities: Temperature trends, awareness, and technology adoption. Front Built Environ, 11:1602348.

Bae BR (2017) Structural Equation Modeling with AMOS 24. Seoul, Korea, Chenngram Books.

Changcheng W, Geng L, Rodríguez-Casallas JD (2021) How and when higher climate change risk perception promotes less climate change inaction. J Clean Prod, 321:128952.

Cipriani E, Gemignani A, Menicucci D (2024a) Awareness of everyday effects of climate change: the climate change perceptual awareness scale (CCPAS). Heliyon, 10:e38461.

Cipriani E, Frumento S, Grassini S, Gemignani A, Menicucci D (2024b) Do individual differences in perception affect awareness of climate change? Brain Sci, 14:266.

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

Demir R, Yalazı RÖ, Dinç A (2024) The relationship between women's climate change awareness and concerns about climate change in Türkiye. Public Health Nurs, 41:215-220.

DeVellis RF, Thorpe CT (2021) Scale Development: Theory and Applications, 5th ed. Thousand Oaks, CA, Sage.

Ediz Ç, Yanık D (2023) The effects of climate change awareness on mental health: comparison of climate anxiety and hopelessness levels in Turkish youth. Int J Soc Psychiatry, 69:2157-2166.

Ediz Ç, Yanık D, Okuyan CB, Uzun S (2025) The psychological impact of climate change: exploring the link between media-induced indirect trauma and climate anxiety. Psychol Health Med, doi:10.1080/13548506.2025.2606185

Eysenbach G (2004) Improving the quality of web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). J Med Internet Res, 6:e34.

Gönen Ç, Deveci EÜ, Aydede MN (2023) Development and validation of climate change awareness scale for high school students. Environ Dev Sustain, 25:4525-4537.

Han Yekdeş D, Yekdeş AC, Takir Stewart S, Çağlayan M, Uysal H, Çelikkalp Ü et al. (2025) Are early adolescents aware of climate change? Current Topic in Developing World, 47:373-385.

Hanedar M, Ozyazici G, Ceyhan GD (2024) Assessment and validation: an updated climate change plausibility perception measure. Environ Educ Res, 30:2291-2314.

Hochachka G (2024) When concern is not enough: overcoming the climate awareness-action gap. Ambio, 53:1182-1202.

Hogg TL, Stanley SK, O'Brien LV, Wilson MS, Watsford CR (2021) The Hogg Eco-Anxiety Scale: development and validation of a multidimensional scale. Glob Environ Change, 71:102391.

Howard MC (2016) A review of exploratory factor analysis decisions and overview of current practices: what we are doing and how can we improve? Int J Hum Comput Interact, 32:51-62.

IPCC (2023) Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, Intergovernmental Panel on Climate Change.

Kartal M, Bardakçı S (2018) SPSS ve AMOS Uygulamalı Örneklerle Güvenirlik ve Geçerlik Analizleri. Ankara, Akademisyen Kitabevi.

Karlsson H, Asutay E, Västfjäll D (2023) A causal link between mental imagery and affect-laden perception of climate change related risks. Sci Rep, 13:10081.

Kline P (2014) An Easy Guide to Factor Analysis. London, Routledge.

Leite Â, Lopes D, Pereira L (2023) Pro-environmental behavior and climate change anxiety, perception, hope, and despair according to political orientation. Behav Sci, 13:966.

Li LMW, Mei D, Li WQ, Ito K (2021) Dialectical versus linear thinking shapes people's anticipation of climate change. Front Psychol, 11:623591.

Luo Y, Zhao J (2019) Motivated attention in climate change perception and action. Front Psychol, 10:1541.

Luo Y, Zhao J (2021) Attentional and perceptual biases of climate change. Curr Opin Behav Sci, 42:22-26.

Medrano J, Mohan S, Lombardi D (2025) Cognitive flexibility moderates shifts in plausibility judgments of claims about climate change. Discourse Process, 62:378-395.

Ökde F (2025) Awareness and attitudes of academics in Türkiye toward the impacts of global climate change. Environmental Research and Technology, 8:630-640.

Pallant J (2020) SPSS Survival Manual: A Step-by-Step Guide to Data Analysis Using IBM SPSS, 3rd ed. London, McGraw-Hill.

Republic of Türkiye Ministry of Environment, Urbanization and Climate Change (2024) Türkiye Climate Change Adaptation Strategy and Action Plan (2024-2030). https://iklim.gov.tr/eylem-planlari-i-19 (Accessed 28.07.2026).

Rüttenauer T (2024) More talk, no action? The link between exposure to extreme weather events, climate change belief and pro-environmental behaviour. Eur Soc, 26:1046-1070.

Satmaz İ, Girgin D, Ayverdi L, Yalçınkaya Önder E (2025) Ortaokul öğrencilerine yönelik küresel iklim değişikliği farkındalık ölçeği: geçerlik ve güvenirlik çalışması. Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, 73:59-88.

Seçer İ (2020) Psikolojik Test Geliştirme ve Uyarlama Süreci: SPSS ve LISREL Uygulamaları, 3. Baskı. Ankara, Anı Yayıncılık.

Şahin Bayram S, Karademir E, Memiçnan C (2025) Adaptation of the climate change awareness scale to Turkish adults: a validity and reliability study. Turkiye Klinikleri Journal of Health Sciences, 10:357-365.

Şen ÖL, Bozkurt D (2019) Climate change impacts in Turkey and the Mediterranean Basin. Reg Environ Change, 19(Suppl 1):S1-S3.

Tohidi A, Balietti S, Fraiberger S, Balietti A (2025) Divergence between predicted and actual perception of climate information. PNAS Nexus, 4:pgaf084.

Uzun K, Öztürk AF, Karaman M, Cebeci F, Altın MO, Arıcı A et al. (2022) Adaptation of the eco-anxiety scale to Turkish: a validity and reliability study. Arch Health Sci Res, 9:110-115.

van Valkengoed AM, Perlaviciute G, Steg L (2024) From believing in climate change to adapting to climate change: the role of risk perception and efficacy beliefs. Risk Anal, 44:553-565.

van Valkengoed AM, Steg L, Perlaviciute G (2021) Development and validation of a climate change perceptions scale. J Environ Psychol, 76:101652.

Wei X, Yu F, Peng K (2024) Seeing is more than believing: personal experience increases climate action. Br J Soc Psychol, 63:1410-1428.

Xia Z, Ye J, Zhou Y, Howe PD, Xu M, Tan X et al. (2022) A meta-analysis of the relationship between climate change experience and climate change perception. Environ Res Commun, 4:105005.

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Addendum 1. Climate Change Perceptual Awareness Scale Turkish version

Instructions

The statements below relate to the effects of climate change that you may have encountered in your daily life over the past five years. Please read each statement carefully and select the option that best applies to you. Remember, there are no "right" or "wrong" answers in this survey.

	Hiç (1)	Nadiren (2)	Ara sıra (3)	Sıklıkla (4)	Çok sık (5)
1. Akarsuların ve diğer su kaynaklarının daha sık kuruduğunu fark ettim.					
2. Orman yangınlarıyla ilgili haberlerin arttığını fark ettim.					
3. Kurumuş bitkilerin sayısında bir artış olduğunu fark ettim.					
4. Sıcak hava dalgalarının sayısında bir artış olduğunu fark ettim.					
5. Kış mevsimindeki sıcaklıklarda değişiklikler olduğunu fark ettim.					
6. Kuraklıkla ilgili haberlerin sayısında bir artış olduğunu fark ettim.					
7. Sonbahar mevsimindeki sıcaklıklarda değişiklikler olduğunu fark ettim.					
8. Çevresel nedenlerle hayvanların giderek daha fazla acı çektiğini hissettim.					
9. Çevrede meydana gelen değişimler nedeniyle öfke hissettim.					
10. Çevrede meydana gelen değişiklikler nedeniyle bir tür hayal kırıklığı hissettim.					
11. Çevrede meydana gelen değişimlerden dolayı kendimi suçlu hissettim.					
12. Çevrede meydana gelen değişimler nedeniyle bir rahatsızlık (can sıkıntısı) hissettim.					
13. Sel olaylarına ilişkin haberlerin sayısında bir artış olduğunu fark ettim.					
14. Bitkilerde sararan yaprakların arttığını fark ettim.					

Scoring

Scale Type: 5-point Likert scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very often)

Number of Items: 14 items

Reversed Item: There are no reversed items on the scale.

Subscales and Item Distributions:

1. Emotional Awareness [5 Items]: Items 8, 9, 10, 11, 12
2. Awareness of Temperature Change [3 Items]: Items 4, 5, 7
3. Awareness of Drought/Water Scarcity [3 Items]: Items 1, 3, 14
4. Media (News) Awareness [3 Items]: Items 2, 6, 13

The score for each subscale is calculated by summing the scores of the relevant items. The total score of the scale is obtained by summing the scores of all items; theoretically, it ranges from 14 to 70 points.

There are no reverse-coded items on the scale.

A high total score indicates that the individual has a higher level of perceptual awareness regarding climate change.

Analyses have shown that the scale's four-dimensional structure is validated in the Turkish sample. Item factor loadings ranged from 0.53 to 0.91, and model fit indices were determined to be at an acceptable level.

The Cronbach's alpha coefficient for the scale's total score was found to be 0.891, and the McDonald's omega coefficient was 0.885.