Research

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Validity and Reliability Study of the Turkish Version of the Trauma-Informed Climate Scale-10 in Healthcare Settings

Sağlık Hizmeti Sunulan Ortamlarda Travma Bilgili İklim Ölçeği-10'un Türkçe Formunun Geçerlik ve Güvenirlik Çalışması

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ABSTRACT

Objective: This study aimed to adapt the Trauma-Informed Climate Scale–10 (TICS-10) into Turkish and evaluate its psychometric properties among healthcare professionals in Türkiye.

Methods: This methodological, cross-sectional study included 410 healthcare professionals working in various healthcare institutions in Türkiye. The Turkish adaptation followed translation, back-translation, and expert review procedures. Structural validity was examined using principal component analysis (PCA) and confirmatory factor analysis (CFA). Internal consistency was assessed using Cronbach's alpha, McDonald's omega, and Guttman's lambda. Test–retest reliability was evaluated in 49 participants using Pearson's correlation and the intraclass correlation coefficient (ICC). Convergent validity was assessed through correlations with the Moral Injury Symptom Scale–Healthcare Professionals (MISS-HP).

Results: PCA supported a unidimensional structure explaining 50.52% of the variance. CFA confirmed this structure with acceptable fit ($\chi^2(32) = 203.36$, CFI = .915, TLI = .89, SRMR = .056). Internal consistency was high ($\alpha = .89$, $\omega = .89$, $\lambda = .89$), with CR = .91 and AVE = .51. Corrected item–total correlations ranged from .50 to .72. Test–retest reliability was good (ICC = .72, 95% CI [.20, .89]; r = .83, p < .001). Convergent validity was supported by a moderate negative correlation with MISS-HP scores.

Conclusion: The Turkish TICS-10 demonstrated acceptable reliability and validity and may be useful for assessing trauma-informed organizational climate in Turkish healthcare settings.

Keywords: Trauma-informed climate, TICS-10, scale adaptation, validity, reliability, healthcare professionals

ÖZ

Amaç: Bu çalışmanın amacı, Travma Bilgili İklim Ölçeği–10 (TICS-10)'un Türkçeye uyarlanması ve Türkiye'deki sağlık profesyonellerinden oluşan bir örneklemde psikometrik özelliklerinin değerlendirilmesidir.

Yöntem: Bu metodolojik ve kesitsel çalışma, Türkiye'nin çeşitli sağlık kurumlarında görev yapan 410 sağlık profesyoneli ile yürütülmüştür. TICS-10'un Türkçe uyarlama süreci çeviri, geri çeviri ve uzman değerlendirmesi aşamalarını içermiştir. Yapısal geçerlik, temel bileşenler analizi (PCA) ve doğrulayıcı faktör analizi (DFA) ile incelenmiştir. İç tutarlılık Cronbach alfa, McDonald omega ve Guttman lambda katsayıları ile değerlendirilmiştir. Test-tekrar test güvenirliği, 49 katılımcıdan oluşan bir alt örneklemde Pearson korelasyonu ve sınıf içi korelasyon katsayısı (ICC) kullanılarak incelenmiştir. Yakınsak geçerlik ise Ahlaki Yaralanma Semptom Ölçeği: Sağlık Bakım Profesyonelleri Versiyonu (AYSÖ-SBP) ile olan korelasyonlar aracılığıyla değerlendirilmiştir.

Bulgular: PCA, toplam varyansın %50,52'sini açıklayan tek faktörlü bir yapı ortaya koymuştur. DFA, kabul edilebilir uyum gösteren tek boyutlu yapıyı desteklemiştir ($\chi^2(32) = 203,36$, p < .001, CFI = .915, TLI = .89, SRMR = .056). İç tutarlılık yüksektir ($\alpha = .89$, $\omega = .89$, $\lambda = .89$). Birleşik güvenirlik .91, açıklanan ortalama varyans .51 olarak bulunmuştur. Düzeltilmiş madde-toplam korelasyonları .50–.72 arasında değişmiştir. Test-tekrar test güvenirliği kabul edilebilir düzeydedir (ICC = .72; r = .83, p < .001). Yakınsak geçerlilik, MISS-HP puanlarıyla orta düzeyde negatif korelasyon ile desteklenmiştir.

Sonuç: TICS-10'un Türkçe formu, sağlık profesyonellerinden oluşan bir örneklemde kabul edilebilir psikometrik özellikler göstermiştir ve Türkiye'deki sağlık kurumlarında travma bilgili örgütsel iklim üzerine yapılacak araştırmalarda kullanılabilecek uygun bir ölçme aracı olabilir.

Anahtar sözcükler: Travma bilgili iklim, TICS-10, ölçek uyarlama, geçerlik, güvenirlik, sağlık çalışanları

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Introduction

Healthcare workers are routinely exposed to potentially traumatic situations, including patient loss, ethical dilemmas, high workload, and chronic organizational stressors (Weinberg and Creed 2000, De Boer et al. 2011, West et al. 2018, d'Ettorre et al. 2020). Prolonged exposure to such stressors increases the risk of burnout, secondary traumatic stress, and moral distress, adversely affecting well-being and psychological functioning. These experiences can also compromise patient care, reduce job satisfaction, and increase turnover intentions.

While individual coping resources influence responses to work-related trauma, organizational context plays a substantial role. Leadership style, workload distribution, team support, and institutional policies can either buffer or exacerbate stress, with unsupportive environments and high demands linked to higher burnout and distress (Maslach and Leiter 2016, West et al. 2018, Penix et al. 2019). Poor organizational conditions also negatively impact patient safety, service quality, and overall healthcare functioning (Hall et al. 2016).

The recognition of the prevalence of trauma has led various health and human service systems to adopt trauma-informed approaches (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Trauma-Informed Care (TIC) is an organizational model that assumes everyone within the organization may have experienced trauma. A trauma-informed organization understands the impact of trauma on both staff and service recipients and embeds this knowledge into policies, procedures, and practices to respond sensitively to their needs (SAMHSA 2014).

Trauma-informed care is structured around core principles such as safety, trustworthiness, choice, collaboration, and empowerment (Hales et al. 2017a, Tekin and Bayar 2023). These principles foster environments in which individuals feel physically and psychologically safe, experience transparent and respectful relationships, maintain a sense of autonomy, and have their strengths supported. While trauma-informed frameworks have traditionally focused on patients, there is increasing recognition that these principles are equally applicable to staff working within trauma-exposed systems, such as healthcare institutions.

Trauma-informed climate reflects employees' perceptions of how well organizational environments recognize trauma and integrate this awareness into policies, practices, and interpersonal processes (Hales et al. 2019). Organizations characterized by transparency, peer support, and sensitivity to trauma are associated with better employee functioning, lower burnout, and improved professional quality of life (Hales et al. 2017a, 2017b, Hales and Nochalski 2020, Bang et al. 2024, Keesler et al. 2024). In healthcare settings, hierarchical structures, high workload, and time pressure may undermine perceptions of safety and empowerment despite institutional policies; evaluating trauma-informed climate is particularly important (Hales et al. 2017b, Hales and Nochalski 2020).

The Trauma-Informed Climate Scale (TICS, Hales et al. 2019) operationalizes trauma-informed principles at the organizational level by assessing employees' perceptions of safety, trust, choice, collaboration, and empowerment. Although international research demonstrates the benefits of trauma-informed climates, there is currently no validated Turkish version for healthcare workers. This gap limits both research and practical applications in Türkiye.

Addressing this gap, the present study aims to adapt the short version of TICS (Hales et al. 2019) into Turkish and evaluate its psychometric properties in a sample of Turkish healthcare professionals, including factor structure, internal consistency, and construct validity. This study contributes theoretically by situating trauma-informed climate within the Turkish healthcare context, and practically by providing a reliable tool for assessing organizational climate and guiding interventions.

In this context, the following hypotheses are proposed:

H1: Turkish-TICS-10 (T-TICS-10) is psychometrically valid and reliable.

H2: T-TICS-10 scores are negatively related to The Moral Injury Symptom Scale–Healthcare Professionals (MISS-HP).

Method

This study was designed as cross-sectional and methodological research. The main objective of the research is to examine the psychometric properties of the Turkish adaptation of The Trauma-Informed Climate Scale-10 (TICS-10) in a sample of healthcare professionals. For the evaluation of the test–retest reliability, respondents were contacted again by email after a three-week interval and invited to complete the questionnaire a second time.

Sample

The sample consisted of healthcare professionals working in various healthcare institutions in Türkiye. Participants were recruited using convenience sampling, and participation was voluntary. Inclusion and exclusion criteria were established before the commencement of data collection. Participants were eligible if they were healthcare professionals working in healthcare settings in Türkiye, were aged 18 years or older, and provided informed consent for voluntary participation. Individuals who did not meet these eligibility criteria or who did not provide informed consent were excluded from the study.

Sample size was determined based on established recommendations for psychometric validation studies and factor analytic procedures. Recent methodological guidelines recommend either at least 10 participants per item or an absolute sample size of 200–300 participants for factor analytic procedures, particularly confirmatory factor analysis (Boateng et al. 2018). Because the TICS-10 consists of 10 items, a minimum sample of approximately 100 participants would satisfy the participant-to-item recommendation, whereas a sample of at least 200 participants would be considered adequate for CFA. The final sample of 410 healthcare professionals substantially exceeded these recommendations. Additionally, an a priori power analysis was conducted using G*Power 3.1 (Faul et al. 2009). Assuming a two-tailed Pearson correlation, a medium effect size (r = .30; Cohen 1988), an alpha level of .05, and a desired statistical power of .95, the minimum required sample size was 138 participants. Therefore, the final sample of 410 participants provided adequate statistical power for the planned hypothesis-testing analyses.

Table 1.Chi-square test results comparing Time 1 and Time 2

Variable	χ^2	df	p	N
Age	12.023	3	.007	197
Gender	1.965	2	.374	200

χ^2 = chi-square test statistic; df = degrees of freedom; p = asymptotic significance (two-sided); N = number of participants

At Time 1, 410 participants volunteered. Gender information was available for 266 participants: 180 were female (67.7%), 80 were male (30.1%), and 6 preferred not to disclose their gender (2.3%). A total of 144 participants did not provide gender information.

The mean age of participants was M = 35.35 years (SD = 11.50, range = 20–78; N = 261 with age data available). At Time 2, 49 participants volunteered to participate, including 31 women (63.3%) and 18 men (36.7%). The mean age of participants was M = 39.69 years (SD = 12.33, range = 22–69).

To examine whether participants who completed the second assessment differed from those who participated only at Time 1, chi-square analyses were conducted comparing the two groups on demographic characteristics. While significant differences were observed for age, $\chi^2(3) = 12.02$, p = .007 no significant difference was found for gender, $\chi^2(2) = 1.97$, p = .374 (Table 1).

Time 1 Participants' characteristics are presented in Table 2. Among participants who reported their profession (n = 266), the largest group consisted of physicians (41.4%), followed by nurses (19.5%). Other professional roles included psychologists (5.6%), anesthesia/radiology/laboratory technicians (5.6%), paramedics/emergency medical technicians (4.9%), midwives (4.5%), dietitians (3.0%), dentists (2.6%),

physiotherapists (1.1%), and social workers (0.8%). Additionally, 10.9% of participants reported other healthcare-related professions. Among participants who reported their institution type (n = 261), the majority were employed in public healthcare institutions (65.5%), while 30.7% worked in private institutions and 3.8% reported other types of institutions.

Table 2. Demographic characteristics of participants at Time 1

Variable	Category	n	%
Gender	Female	180	43.9
	Male	80	19.5
	No answer	150	36.6
Profession	Physician	110	41.4
	Nurse	52	19.5
	Psychologist	15	5.6
	Anesthesia/ Radiology/ Laboratory Technician	15	5.6
	Social worker	2	0.8
	Other	29	10.9
Institution type	Public	171	65.5
	Private	80	30.7
	Other	10	3.8

Percentages are based on participants who reported the relevant demographic variable. n= number of participants

Time 2 Participants' characteristics are presented in Table 3. Among participants who reported their profession (n = 49), the largest group consisted of physicians (46.9%). Other professional roles included psychologists (16.3%), nurses (12.2%), midwives (6.1%), dietitians (4.1%), physiotherapists (2.0%), and social workers (2.0%). Additionally, 10.2% of participants reported other healthcare-related professions. Anesthesia/radiology/laboratory technicians, paramedics/emergency medical technicians,and dentists were not reported in the Time 2 follow-up assessment. Among participants who reported their institution type (n = 49), the majority were employed in public healthcare institutions (61.2%), while 22.4% worked in private institutions and 16.3% reported other types of institutions.

Table 3. Demographic characteristics of participants at Time 2

Variable	Category	n	%
Gender	Female	31	63.3
	Male	18	36.7
	No answer	0	0
Profession	Physician	23	46.9
	Psychologist	8	16.3
	Nurse	6	12.2
	Midwife	3	6.1
	Dietitian	2	4.1
	Physiotherapists	1	2.0
	Social worker	1	2.0
	Other	5	10.2
Institution type	Public	30	61.2
	Private	11	22.4
	Other	8	16.3

Percentages are based on participants who reported the relevant demographic variable. n = number of participants.

Measures

Demographic Information Form

The demographic information form consisted of 11 questions assessing participants' demographic and occupational characteristics, including gender, age, profession, institution type, and other background information. Participants were also asked to provide their email addresses to enable participation in the test–retest assessment.

The Trauma-Informed Climate Scale–10 (TICS-10)

TICS-10 is a self-report instrument developed by Hales and colleagues (2019) as a shortened version of the TICS. The aim of the scale is to measure employees' perceptions of trauma-informed organizational climate within their service environment. The scale comprises 10 items reflecting five core trauma-informed principles, with two items derived from each domain. These principles of trauma-informed care include safety, trust, choice, collaboration, and empowerment. Responses are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), and items 3, 6, 7, 8, 9, and 10 are reverse-coded. Item scores are summed to obtain a total score ranging from 10 to 50, with higher scores indicating stronger perceptions of a trauma-informed organizational climate. In the original study, the five trauma-informed value domains were found to be strongly intercorrelated, and an alternative model with a single underlying dimension provided a better fit to the data, with high internal consistency for the TICS-10 (Cronbach's α = .91).In this study, the Turkish version of the TICS-10 underwent translation, back-translation, and expert committee review to establish its reliability and validity. In the present study, the internal consistency coefficient for the total scale was found to be α = .89. The Turkish version of the scale is presented in Addendum A.

The Moral Injury Symptom Scale- Healthcare Professional (MISS-HP)

MISS-HP is a 10-item scale originally developed for healthcare professionals by Mantri et al. (2020) and later adapted into Turkish by Üstün (2022). Responses are rated on a 10-point Likert scale (1 = strongly disagree, 10 = strongly agree), and items 5, 6, 7, and 10 are reverse-coded. The MISS-HP consists of three factors: condemnation (items 2, 8, and 9), guilt/shame (items 1, 3, and 4), and moral distress (items 5, 6, 7, and 10). Item scores are summed to produce a total score ranging from 10 to 100, with higher scores indicating greater levels of moral injury. A score above 46 suggests that moral injury may reach clinically significant levels that could lead to clinically significant problems. The scale demonstrated high reliability in the Turkish adaptation study, with a Cronbach's alpha of .91 and a split-half reliability coefficient of .95 (Üstün 2022). In the present study, the internal consistency coefficient for the total scale was found to be α = .70.

Procedure

The study was conducted online among healthcare professionals in Türkiye by researchers from the Department of Psychology at Marmara University, a public university in Türkiye. The online survey was developed and administered by members of the research team. First, the adaptation of TICS-10 into Turkish was asked to the authors who developed the original scale via e-mail, and they approved the adaptation request. Ethical approval for the study was obtained from the Ethics Committee of Marmara University on 29 July 2025, with approval number 2025/44. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Adaptation of TICS-10

The adaptation process followed commonly recommended procedures for the cross-cultural adaptation of self-report measures, including translation, back-translation, assessment of linguistic and conceptual equivalence, and expert review (Beaton et al. 2000). First, the original scale was translated into Turkish by three independent translators, and a bilingual psychologist proficient in both English and Turkish reviewed the translations and agreed on a single preliminary version. Second, different translators back-translated the Turkish version into English, and the back-translated version was compared with the original scale.

After necessary revisions aimed at ensuring semantic, linguistic, and conceptual equivalence, the translated items were reviewed by experts for clarity, cultural appropriateness, and content relevance. A separate pilot study was not conducted before the main data collection because the TICS-10 is a brief measure with straightforward item wording, and the translated items were evaluated through translation, back-translation, and expert review procedures to ensure linguistic, semantic, and conceptual equivalence. Therefore, the final Turkish version of the scale was established following these procedures.

The survey structure was organized to include study information, the informed consent form, measurement instruments, and sociodemographic questions presented in a sequential format. The online survey consisted of a total of 31 questions and was presented across 7 pages. The average completion time was approximately 20 minutes. Participants were required to answer each question (except for demographic questions) before proceeding to the next page; therefore, skipping non-demographic questions was not permitted. However, participants were allowed to return to previous pages and review or modify their responses before completing the survey. Before data collection, the survey was technically tested by the research team to ensure that all items, response options, and the survey flow functioned properly.

Application

Data were collected using an online survey administered via Qualtrics, and the survey link was distributed to participants both online and through printed brochures. As part of the data collection process, medical faculties in Türkiye were contacted; the survey was shared with hospitals, primary healthcare centers, dental clinics, and via social media platforms such as WhatsApp, Instagram, and LinkedIn.

The invitation text was as follows: "With the support of the Marmara University Scientific Research Projects Coordination Unit, we invite healthcare professionals to participate in our study on healthcare workers' work experiences. The study is conducted by academic staff from the Department of Psychology. If you know other healthcare professionals who may be interested, please feel free to share the survey link with them." The poster text was as follows: "We are interested in understanding the work experiences of healthcare professionals. If you are a healthcare professional, you can contribute to our research by sharing your valuable experiences in your field." A form explaining the purpose of the study was given to all participants, and informed consent was obtained before participation. Participation was entirely voluntary, and no financial incentives, payments, or other forms of compensation were offered to participants for taking part in the study.

The pre-test was conducted through an online data collection process. To ensure data confidentiality, no directly identifying information was collected, except for email addresses voluntarily provided by participants who agreed to participate in the retest assessment. These email addresses were used solely to match pre-test and post-test data. Access to the data files was restricted to the research team members involved in the study.

A total of 632 participants initiated the online survey, and 410 participants completed the survey and were included in the analyses. After a three-week interval, the 260 participants who had provided email addresses were re-contacted via email and invited to complete the post-test survey. A total of 49 participants voluntarily completed the measure for a second time. To prevent duplicate responses, IP address verification was used through the Qualtrics platform, allowing only one survey completion from the same IP address.

Statistical Analysis

The collected data were analyzed using SPSS, AMOS, and JASP statistical software. The level of statistical significance was set at 0.05. Descriptive statistics were used to summarize participants' general and work-related characteristics. Descriptive statistics and principal component analysis (PCA) were conducted in SPSS. Before factor analysis, sampling adequacy was evaluated using the Kaiser–Meyer–Olkin (KMO) index and Bartlett's test of sphericity. A principal component analysis (PCA) was conducted. Confirmatory factor analysis (CFA) was conducted in AMOS. Model parameters were estimated with robust maximum likelihood

(MLR) to account for potential non-normality. Univariate skewness and kurtosis values were examined to evaluate distributional properties of the data. Although multivariate normality was not formally tested, robust maximum likelihood estimation (MLR) was used in CFA to account for potential deviations from normality and the ordinal nature of the Likert-type items. Model fit was evaluated using χ^2, CFI, TLI, and SRMR. Internal consistency was assessed using Cronbach's α (SPSS), McDonald's omega, and Guttman's lambda (JASP), and model-based reliability indices (e.g., composite reliability/ω) derived from the CFA model.

Internal consistency was evaluated using Cronbach's alpha, McDonald's omega, and Guttman's lambda coefficients. Cronbach's alpha was reported to ensure comparability with previous literature, while McDonald's omega was used as the primary reliability estimate given its suitability for CFA-based measurement models without the assumption of tau-equivalence. Guttman's lambda was additionally reported as a complementary lower-bound reliability estimate to provide further evidence of internal consistency. Following the CFA results, McDonald's omega was considered the most appropriate reliability indicator for the final unidimensional structure.

Convergent validity was evaluated via Pearson correlation coefficient between T-TICS-10 and the Moral Injury Symptom Scale-Healthcare Professional (MISS-HP), which was administered to assess convergent validity. Test–retest reliability was evaluated using both Pearson's correlation coefficient and the intraclass correlation coefficient (ICC) based on a two-way mixed-effects model with absolute agreement between Time 1 and Time 2 total scores (N = 49). Since this study is a cross-cultural adaptation of an already established scale, Principal Component Analysis (PCA) was conducted for initial data reduction and to examine the underlying structure in the Turkish sample.

Subsequently, CFA was performed to test the factorial validity of the predefined unidimensional structure. In line with the recommendations in psychometric literature, PCA was used as a preliminary step focused on variance explanation rather than latent construct identification (Jolliffe 2025, Hair et al. 2019).

Results

A total of 410 participants were included in the study; however, due to missing data, analyses involving demographic variables were conducted on smaller subsamples. The mean total score of the TICS-10 was 30.54 (SD = 9.37), with scores ranging from 10 to 50, indicating a moderate level of perceived trauma-informed climate. The distribution of TICS-10 scores showed acceptable normality (skewness = 0.073, kurtosis = –0.590), with skewness and kurtosis values within ±1 indicating a normal distribution, indicating that the analyses can be done with parametric tests (George and Mallery 2018).

Among the participants who reported their gender (n = 266), 67.7% were female, 30.1% were male, and 2.3% preferred not to disclose their gender. The mean age of the participants (n = 261) was 35.35 years (SD = 11.50), ranging from 20 to 78. Age distribution was positively skewed (skewness = 1.068) with a slightly leptokurtic tendency (kurtosis = 0.420), suggesting that a greater proportion of participants were clustered at lower age values.

Validity Indices and Factor Structure

Principal Component Analysis

Prior to conducting the factor analysis, the suitability of the data was examined. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was .89, indicating that the sample was highly suitable for factor analysis. In addition, Bartlett's test of sphericity was significant, $\chi^2(45) = 1923.99$, $p < .001$. Examination of the anti-image correlation matrix showed that the measures of sampling adequacy (MSA) for all items ranged between .86 and .92, indicating that no item fell below the acceptable threshold and that no item needed to be removed.

Table 4. Subscale and item factor loadings of TICS-10			
Items	**M**	**SD**	**Factor 1: Explained variance: 50.52%**
Item 1	3.18	1.28	.70
Item 2	3.09	1.31	.69
Item 3	3.07	1.34	.64
Item 4	2.74	1.36	.78
Item 5	3.20	1.23	.59
Item 6	3.29	1.27	.66
Item 7	3.11	1.32	.72
Item 8	2.88	1.39	.75
Item 9	2.97	1.35	.80
Item 10	3.00	1.32	.76

Factor loadings below .35 were suppressed. M = mean; SD = standard deviation.

A principal component analysis (PCA) was conducted. Since both the original TICS-10 (Hales et al. 2019) and the Korean adaptation of the TICS-10 (Bang et al. 2024) supported a unidimensional structure, the extraction was constrained to a single component. This 10-item component explained 50.52% of the total variance. The emergence of a single-component solution in the PCA may reflect the relatively high intercorrelations among conceptually related trauma-informed climate principles rather than clearly separable empirical dimensions. Accordingly, the predefined unidimensional structure of the T-TICS-10 was subsequently examined using confirmatory factor analysis.

As can be seen in Table 4, standardized item loadings of the items were examined along with means and standard deviations of the items involved. According to Hair et al. (2019), rules of thumb for assessing the practical significance: the cutoff for standardized factor loadings is typically .35 to .40 for a sample size of 200–250. In this study, we set the criterion for standardized factor loadings to be at least .35.

Confirmatory Factor Analysis

A confirmatory factor analysis (CFA) was conducted using robust maximum likelihood estimation (MLR) to examine the factorial validity of the Turkish version of the Trauma-Informed Climate Scale (TICS-10). The hypothesized single-factor structure was initially tested. Examination of modification indices suggested the presence of correlated residuals between several item pairs. Given the conceptual similarity and shared wording/content of these items, error covariances were allowed between Items 1 and 2, Items 9 and 10, and Items 5 and 8 to improve model fit. These modifications were theoretically justifiable and were introduced cautiously, as correlated residuals may reflect shared variance not fully explained by the latent construct.

The final modified single-factor model demonstrated an acceptable fit with some limitations to the data, $\chi^2(32) = 203.36$, $p < .001$, CFI = .915, NFI = .90, RFI = .86, TLI = .89, RMSEA = .098, 90% CI [.099, .129], and SRMR = .0568. Consistent with Kenny et al. (2015), RMSEA values should be interpreted with caution in models with small degrees of freedom, as this index tends to over-reject well-fitting models under such conditions.

Although the chi-square statistic was significant, this result was expected given the large sample size (N = 410). Standardized factor loadings ranged from .69 to .95, indicating that all items loaded substantially on the latent trauma-informed climate factor. Overall, the findings supported the adequacy of the modified single-factor structure of the Turkish TICS-10. Figure 1 presents the final CFA model with standardized parameter estimates.

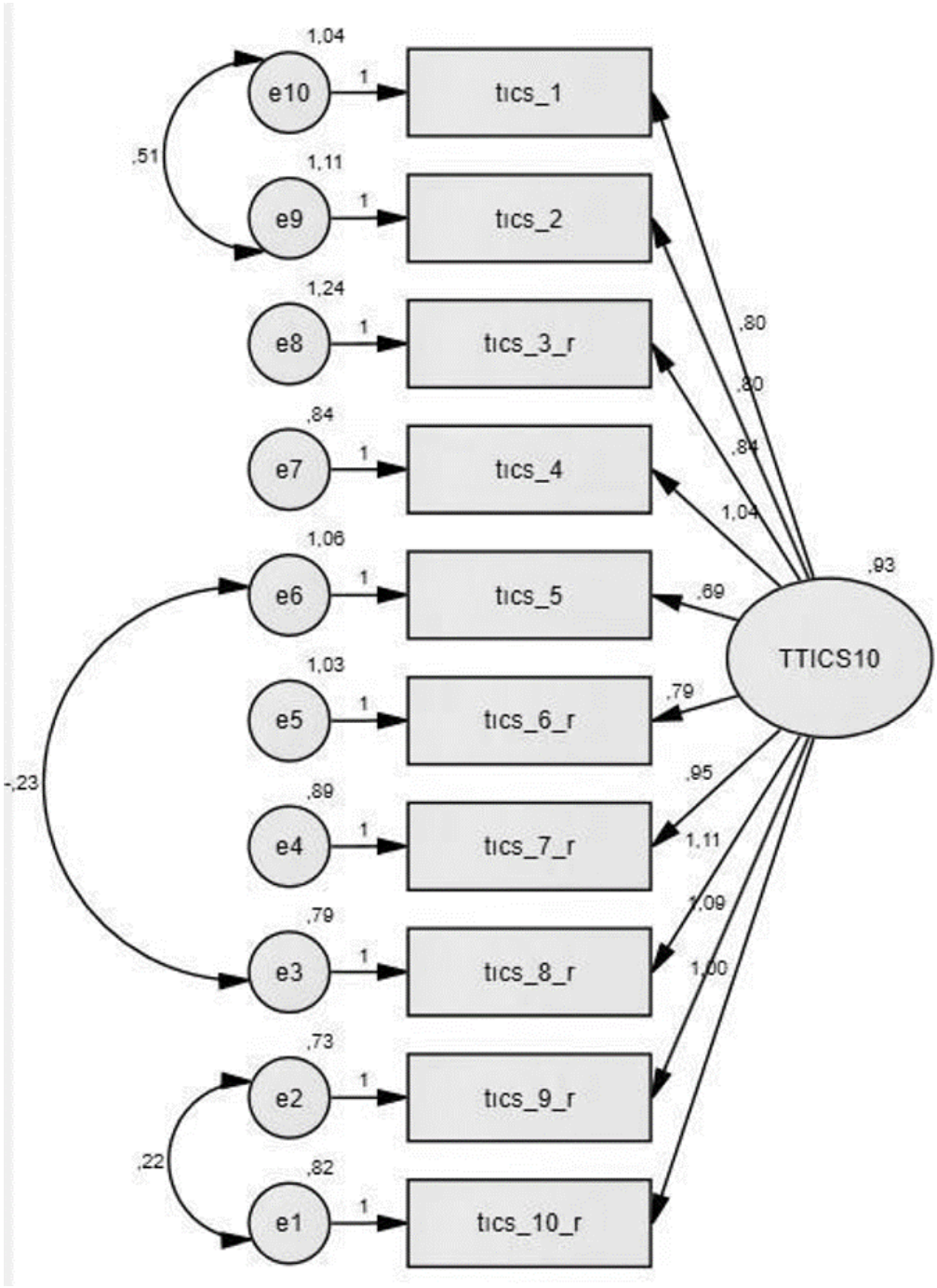


Figure 1. Modified single-factor model of the TICS-10

While the inclusion of correlated residuals improved model fit, these modifications should be interpreted with caution and warrant replication in independent samples to further evaluate the generalizability of the model.

Reliability and Convergent Validity Indices

Internal consistency reliability of the single-factor, 10-item TICS-10 was examined using Cronbach's alpha, McDonald's omega, and Guttman's lambda. For the 10-item scale, the reliability coefficients were as follows: Cronbach's α = .89 (SE = .009, 95% CI [.87, .91]), McDonald's ω = .89 (SE = .008, 95% CI [.87, .91]), and Guttman's λ = .89 (SE = .009, 95% CI [.88, .91]).

To further evaluate construct reliability and convergent validity, composite reliability (CR) and average variance extracted (AVE) values were calculated based on the CFA loadings. The CR value was .91, and the AVE value was .51, indicating adequate construct reliability and convergent validity.

Overall, the internal consistency estimates for TICS-10 indicate acceptable to high reliability. Table 5 presents the corrected item–total correlations and Cronbach's alpha coefficients if item deleted for the 10 items of the single-factor TICS-10. All corrected item–total correlations exceeded the recommended threshold of .35, indicating satisfactory item discrimination and supporting the internal consistency of the scale

Table 5. Corrected item–total correlations and Cronbach's alpha if item deleted for the single-factor TICS-10

Items	Corrected item–total correlation	Cronbach's alpha if item deleted	Cronbach's alpha
Factor 1			
Item 1	.63	.88	
Item 2	.61	.88	
Item 3	.56	.89	.89
Item 4	.70	.87	
Item 5	.50	.89	
Item 6	.58	.88	
Item 7	.63	.88	
Item 8	.67	.88	
Item 9	.72	.87	
Item 10	.68	.88	

Test–Retest Reliability

To examine temporal stability, test–retest reliability was assessed in a subsample of 49 participants who completed the TICS-10 at two time points. The average interval between the two administrations was 17.81 days (SD = 13.57 days). The intraclass correlation coefficient (ICC) indicated acceptable temporal stability between the two administrations (ICC = .72, 95% CI [.20, .89]). In addition, Pearson correlation analysis revealed a strong positive association between the first and second administrations of the scale ($r = .83$, $p < .001$). Taken together, these findings suggest that the Turkish version of the TICS-10 yields consistent scores over time (Table 6).

Table 6. Test–retest reliability of the Turkish Version of the TICS-10

Measure	Estimate	95% CI
Pearson correlation	.83***	—
Intraclass correlation coefficient (ICC)*	.72	.20–.89

N = 49. **p < .001. *ICC = Intraclass correlation coefficient calculated using a two-way mixed-effects model with absolute agreement (single measures). CI = Confidence Interval

Convergent Validity of the TICS-10

Convergent validity was examined by assessing the relationship between TICS-10 total scores and scores on the (MISS-HP). The results indicated a significant negative correlation between the two measures ($r = -.46$, $p < .001$), suggesting that higher TICS-10 scores were associated with lower levels of moral injury symptoms.

Discussion

The present study aimed to adapt the Trauma-Informed Climate Scale-10 (TICS-10, Hales et al. 2019) into Turkish and to evaluate its psychometric properties in a sample of healthcare professionals in Türkiye, including doctors, nurses, technicians, radiology staff, and psychologists. Establishing a brief and reliable

measure of trauma-informed organizational climate is particularly important in high-demand healthcare contexts, where organizational conditions shape staff experiences and, consequently, the quality and sustainability of service delivery. Conceptually, trauma-informed approaches emphasize organizational climates that prioritize safety, trustworthiness, choice, collaboration, and empowerment as core guiding values (Harris and Fallot 2001, SAMHSA 2014).

In Türkiye, healthcare professionals have been exposed to significant occupational stressors in recent years, including increased workload, violence in healthcare settings, financial dissatisfaction, and pandemic-related strain (Bekaroğlu and Yılmaz 2020, Yılmaz and Koyuncu-Aydın 2023). During the COVID-19 pandemic, healthcare workers reported elevated levels of anxiety and hopelessness, which were significantly associated with diminished quality of life (Mert et al. 2022). Moreover, following the 2023 earthquake in Türkiye, healthcare workers described substantial ethical challenges, including difficult resource-allocation decisions, compromised standards of care, and intense emotional strain under crisis conditions (Ünsal et al. 2025). Taken together, these findings highlight the psychological and ethical vulnerability of healthcare professionals and underscore the importance of organizational environments that are responsive to trauma exposure, crisis-related strain, and workforce well-being. Despite the growing international recognition of trauma-informed organizational approaches, there is currently no validated brief instrument available to assess trauma-informed climate within Turkish healthcare settings. Therefore, adapting and validating the TICS-10 in a Turkish context represents an important step toward systematically evaluating institutional sensitivity to trauma and informing evidence-based organizational and system-level interventions.

The findings of the present study support the structural validity of the Turkish version of the TICS-10. Consistent with the original development study (Hales et al. 2019), the results of the confirmatory factor analysis indicated that a unidimensional model demonstrated an acceptable overall model fit in the Turkish healthcare sample ($\chi^2(32) = 203.36$, CFI = .915, TLI = .89, SRMR = .056, RMSEA = .098, 90% CI [.099, .129]). Although the RMSEA value exceeded the conventional cutoff, this finding should be interpreted cautiously because RMSEA has been shown to perform poorly and to overestimate model misfit in models with small degrees of freedom (Kenny et al. 2015).

These findings align with the interpretation of Hales et al. (2019), who reported strong intercorrelations among the trauma-informed value domains and supported the 10-item version as a brief overall indicator of trauma-informed climate. Similar psychometric patterns have also been observed in other cultural adaptations of the TICS-10. For example, the Korean adaptation demonstrated acceptable fit for a modified single-factor structure and satisfactory internal consistency (Cronbach's $\alpha = .82$), further supporting the cross-cultural applicability of the scale (Bang et al. 2024).

The unidimensional pattern observed in the PCA and subsequently supported by the CFA may suggest that trauma-informed principles are perceived by healthcare professionals as closely integrated aspects of a broader organizational climate rather than as clearly separable dimensions. Although trauma-informed care frameworks conceptually distinguish principles such as safety, trustworthiness, choice, collaboration, and empowerment, employees may experience these elements as interconnected features of a single organizational environment. This interpretation is consistent with previous research indicating strong intercorrelations among trauma-informed climate dimensions (Hales et al. 2019). However, alternative explanations should also be considered. The relatively small number of items, conceptual overlap among item content, and the focused nature of the construct may also have contributed to the emergence of a unidimensional pattern. Therefore, the present findings should be interpreted with appropriate caution, and future studies should further examine the dimensionality of the Turkish TICS-10 using independent samples and complementary psychometric approaches.

In the present study, the internal consistency coefficient for the total scale was found to be $\alpha = .89$, which is comparable to the reliability reported in the original validation study ($\alpha = .91$, Hales et al. 2019). The similarity of these reliability estimates suggests that the Turkish adaptation preserves the conceptual coherence of the scale. In addition, both Pearson's correlation ($r = .83$, $p < .001$) and the intraclass correlation coefficient (ICC = .72) indicated good temporal stability, suggesting that the scale yields

consistent scores across repeated administrations. Considering the dynamic and demanding nature of healthcare work environments, this finding further supports the temporal stability of the instrument. Taken together, these results suggest that the Turkish version of the TICS-10 retains the psychometric strength of the original instrument when applied to healthcare professionals in Türkiye.

To provide evidence for construct validity, the present study examined the relationship between trauma-informed organizational climate and moral injury symptoms among healthcare professionals. This analysis was theoretically grounded in prior work suggesting that workplace environments characterized by safety, trust, collaboration, and empowerment shape staff well-being and occupational functioning (Harris and Fallot 2001, Hales et al. 2019). In healthcare settings, moral injury has been increasingly conceptualized as arising not only from exposure to ethically challenging events but also from organizational constraints and perceived institutional support (D'Alessandro-Lowe et al. 2023). Consistent with these conceptualizations, trauma-informed climate demonstrated a moderate negative correlation with moral injury symptoms ($r = -.46$, $p < .001$), indicating that more supportive and trauma-sensitive organizational environments were associated with lower levels of morally distressing experiences among healthcare professionals. Such findings support the scale's construct validity by demonstrating that the Turkish TICS-10 meaningfully captures an organizational climate factor linked to workforce psychological and ethical experiences while remaining conceptually distinct from individual-level distress measures.

A further strength of the TICS-10 is its brevity, which enhances its practical utility in demanding healthcare environments. Clinical work is frequently shaped by heavy workloads and substantial clerical and administrative burden, which can constrain the feasibility of lengthy organizational assessments in practice (West et al. 2018). In this context, the 10-item structure allows for rapid administration with minimal respondent burden while still capturing core trauma-informed principles. Such efficiency is particularly valuable in large-scale staff evaluations, quality-improvement initiatives, and repeated measurements designed to monitor organizational change over time. Therefore, the Turkish TICS-10 offers a pragmatic tool that balances psychometric adequacy with real-world applicability in fast-paced healthcare systems.

Beyond its use as a research instrument, the scale may also serve as an organizational assessment and development tool. Trauma-informed care frameworks emphasize not only individual clinician awareness but also system-level transformation, including policies, leadership practices, and workplace culture that promote psychological safety and collaborative decision-making (Harris and Fallot 2001, SAMHSA 2014). A brief, validated measure may help institutions to evaluate existing climate conditions, identify areas requiring improvement, and track progress following trauma-informed training or structural interventions. In this way, the Turkish TICS-10 may provide a useful tool for organizational assessment and quality improvement initiatives. Nevertheless, further validation studies, particularly in independent samples, are warranted to strengthen the evidence supporting its broader assessment use.

The observed association between trauma-informed climate and moral injury symptoms also contributes to the broader conceptualization of moral injury as a phenomenon shaped not only by exposure to morally challenging events but also by organizational context (Litz et al. 2009, Shay 2014, Williamson et al. 2025). Emerging perspectives in moral injury research emphasize that institutional betrayal, perceived lack of support, and breakdowns in trust may exacerbate ethically distressing experiences among professionals in high-risk occupations (Williamson et al. 2025). In this regard, organizational factors such as leadership practices that foster psychological safety and trust, alongside structured reflection and peer support, may be associated with reduced moral injury-related distress. In particular, when staff perceive their work environment as psychologically safe and responsive (Nembhard and Edmondson 2006), ethically complex situations may be processed within a shared and supported framework rather than experienced as isolated personal failure. The moderate negative association observed in the present study is consistent with this interpretation and suggests that trauma-informed organizational climates may represent a systemic factor relevant to moral injury mitigation.

While the Turkish TICS-10 demonstrated satisfactory psychometric properties, several limitations should be acknowledged. First, the cross-sectional design precludes conclusions regarding the directional nature

of the association observed between trauma-informed climate and moral injury symptoms. In addition, all constructs were assessed using self-report measures at a single time point, raising the possibility of shared method variance. Second, construct validity was evaluated using a single theoretically relevant external criterion. Although the observed association with moral injury was consistent with conceptual expectations, future studies incorporating a broader range of organizational and psychological outcomes would provide a more comprehensive assessment of convergent and discriminant validity.

Third, PCA and CFA were conducted using the same sample. Although the PCA indicated a unidimensional pattern and the CFA provided support for the modified single-factor model, the lack of cross-validation in an independent sample may limit the generalizability and stability of the measurement model. Moreover, although most fit indices indicated acceptable model fit, the Tucker–Lewis Index (TLI = .89) was slightly below the recommended threshold, suggesting that model fit should be interpreted with some caution. Future research should seek to replicate the measurement model across diverse healthcare settings and occupational groups.

Finally, although the scale demonstrated strong test–retest reliability, participants who completed the second assessment differed from those who participated only at the initial assessment with respect to age, institution type, and profession. These differences suggest that the retest sample may not have fully represented the demographic composition of the broader study population. Consequently, the temporal stability estimates should be interpreted with some caution and replicated in more demographically representative longitudinal samples. Taken together, these limitations indicate that the present findings provide encouraging but preliminary evidence for the psychometric adequacy of the Turkish TICS-10, and further validation studies are needed to strengthen support for its measurement model and broader applicability.

Conclusion

The Turkish version of the TICS-10 demonstrated acceptable psychometric properties in a sample of healthcare professionals and may be useful for research on trauma-informed organizational climate in Turkish healthcare settings. The findings provide initial support for the use of the scale in the Turkish healthcare context.

Future research should continue to expand the psychometric evaluation of the Turkish TICS-10. In particular, examining measurement invariance across professional roles, institutional types (e.g., public versus private healthcare settings), and potentially across regions would strengthen evidence for structural stability and score comparability. Additional validation studies incorporating theoretically related (e.g., organizational support) and unrelated constructs would further clarify convergent and discriminant validity. Moreover, investigating predictive and incremental validity in relation to organizational outcomes such as burnout, job satisfaction, and ethical climate may enhance the scale's empirical positioning within organizational research. Expanding validation efforts to different occupational groups and cultural contexts would also help determine whether the unidimensional structure observed in the present study is preserved beyond healthcare environments. Such research would contribute to consolidating the Turkish TICS-10 as a methodologically robust instrument for assessing trauma-informed organizational climate. Overall, the findings provide initial evidence that the Turkish TICS-10 is a psychometrically sound and practically useful instrument for assessing trauma-informed organizational climate in healthcare settings.

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Addendum 1. Turkish Version of the Trauma-Informed Climate Scale–10 (TICS-10)

Instruction

This scale aims to understand your perceptions regarding your current workplace. Please read each statement carefully and indicate the extent to which each statement applies to you. Please rate your responses on a scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Select the option that best reflects your opinion.

1 (Strongly Disagree) .....5 (Strongly Agree)

1 2 3 4 5

	Madde	**Puan**
1	İşe geldiğimde kendimi duygusal olarak güvende hissediyorum.	
2	İş yerinde keyfim kaçtığında ya da üzüldüğümde, diğer çalışanların ve yöneticilerin anlayış göstereceğini biliyorum.	
3	İş arkadaşlarım, yöneticilerim ve idarecilerim arasında kime güvenebileceğimden emin değilim.	
4	Yöneticime tüm çalışanlarla adil bir şekilde ilgileneceği konusunda güvenebilirim.	
5	İş tatminim üzerinde büyük bir kontrolümün olduğunu hissederim.	
6	İşimi yaparken karar verme ve seçim yapma konusunda fazla özgürlüğüm yok.	
7	Yöneticilerim yalnızca favori çalışanlarının söylediklerini dikkate alır.	
8	Çalıştığım yerdeki yönetim, karar alma süreçlerine çalışanları dahil etmez.	
9	Çalıştığım yer, çalışanların işlerini iyi şekilde yapabilmeleri için ihtiyaç duyduğu şeylere sahip olup olmadığını önemsemez.	
10	Çalıştığım yerde, çalışanlar işlerini yapmak için yeni ve daha iyi yöntemler bulmaya çalıştıklarında destek görmezler.	

Scoring

There are no established cut-off scores for the scale. The lowest possible score is 10 and the highest possible score is 50.

Higher scores obtained from the scale indicate higher levels of perceived trauma-informed organizational climate.

Items 1 and 2 represent the safety domain,

Items 3 and 4 represent the trust domain,

Items 5 and 6 represent the choice domain,

Items 7 and 8 represent the collaboration domain,

Items 9 and 10 represent the empowerment domain of trauma-informed climate.

Items 3, 6, 7, 8, 9, and 10 are reverse-scored.