

Turkish Adaptation of the LGBTQIA+ Minority Stress Scale and Evaluation of Its Psychometric Properties

LGBTQİA+ Azınlık Stresi Ölçeği'nin Türkçe Uyarlaması ve Psikometrik Özelliklerinin Değerlendirilmesi

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ABSTRACT

Objective: This study aimed to adapt the LGBTQIA+ Minority Stress Scale into Turkish and evaluate its psychometric properties.

Method: A total of 660 LGBTQIA+ people living in Türkiye participated in the study. To examine the scale's 25-item structure, Exploratory Factor Analysis (EFA) was conducted using data from 340 participants, followed by Confirmatory Factor Analysis (CFA) using data from 320 participants. Internal consistency was assessed using Cronbach's alpha and McDonald's omega coefficients. Temporal stability was evaluated using the Pearson correlation coefficient and intraclass correlation coefficient (ICC), based on test-retest data from 144 participants who were reached again 21 days after the initial administration. Convergent, discriminant, and criterion-related validity were examined. The Perceived Victimization Scale and the General Belongingness Scale were used to assess criterion-related validity.

Results: EFA yielded a seven-factor structure consistent with the original scale, which was subsequently confirmed through CFA. The structure explained 56.60% of the total variance. The overall Cronbach's alpha and McDonald's omega coefficients were 0.922 and 0.932, respectively, while Cronbach's alpha coefficients for the subscales ranged from 0.701 to 0.901. CFA indicated an acceptable model fit (RMSEA = 0.038, CFI = 0.94, TLI = 0.93, SRMR = 0.037). Test-retest analyses indicated high temporal stability (ICC = 0.91, $r = 0.84$). The validity findings supported the scale's underlying theoretical structure.

Conclusion: The Turkish version of the LGBTQIA+ Minority Stress Scale was found to be a valid and reliable instrument for assessing minority stress experiences among LGBTQIA+ people living in Türkiye.

Keywords: Minority stress, gender minorities, stress, psychological, psychometrics, psychological tests

ÖZ

Amaç: Bu çalışmada, LGBTQİA+ Azınlık Stresi Ölçeği'nin Türkçeye uyarlanması ve psikometrik özelliklerinin değerlendirilmesi amaçlanmıştır.

Yöntem: Araştırmaya Türkiye'de yaşayan 660 LGBTQİA+ birey katılmıştır. Ölçeğin 25 maddelik yapısını incelemek amacıyla 340 katılımcının verileriyle Açımlayıcı Faktör Analizi (AFA), 320 katılımcının verileriyle Doğrulamalı Faktör Analizi (DFA) gerçekleştirilmiştir. İç tutarlılık Cronbach alfa ve McDonald's omega katsayılarıyla; zamansal kararlılık ise ilk uygulamadan 21 gün sonra yeniden ulaşılan 144 katılımcının verileriyle Pearson korelasyon katsayısı ve Sınıf İçi Korelasyon Katsayısı (ICC) kullanılarak değerlendirilmiştir. Yakınsak, ayrışma ve ölçüt geçerliği incelenmiş; ölçüt geçerliği kapsamında Algılanan Mağduriyet Ölçeği ve Genel Aidiet Ölçeği kullanılmıştır.

Bulgular: AFA sonucunda özgün yapıyla uyumlu yedi faktörlü yapı elde edilmiş ve DFA ile doğrulanmıştır. Bu yapı toplam varyansın %56,60'ını açıklamıştır. Ölçeğin toplam Cronbach alfa ve McDonald's omega katsayıları sırasıyla 0,922 ve 0,932; alt boyutlara ilişkin Cronbach alfa katsayıları ise 0,701-0,901 arasında bulunmuştur. DFA sonucunda model uyumu kabul edilebilir düzeyde bulunmuştur (RMSEA = 0,038, CFI = 0,94, TLI = 0,93, SRMR = 0,037). Test-tekrar test analizleri yüksek zamansal kararlılığa işaret etmiştir (ICC = 0,91, $r = 0,84$). Geçerlik bulguları ölçeğin kuramsal yapısını desteklemiştir.

Sonuç: LGBTQİA+ Azınlık Stresi Ölçeği'nin Türkçe formunun, Türkiye'de yaşayan LGBTQİA+ bireylerin azınlık stresi deneyimlerini değerlendirmede geçerli ve güvenilir bir ölçme aracı olduğu sonucuna ulaşılmıştır.

Anahtar sözcükler: Azınlık stresi, toplumsal cinsiyet azınlıkları, psikolojik stres, psikometri, psikolojik testler

Introduction

Experiences of social stigma, discrimination, and exclusion are among the most important social determinants affecting the mental and physical health of disadvantaged groups. For many years, research has consistently shown that individuals exposed to discrimination based on sexual orientation and gender identity are at greater risk than the general population of experiencing a range of adverse health outcomes, including depression, anxiety, suicidal ideation, substance use disorders, and reduced quality of life (Meyer 2003, Hatzenbuehler 2009, Pachankis et al. 2020, Kara 2026). It is increasingly recognized that these disparities cannot be explained solely by individual characteristics; rather, the effects of structural inequalities, social stigma, and discrimination to which individuals are exposed must also be considered in understanding biopsychosocial health outcomes.

Minority Stress Theory, developed within this framework, is one of the most widely used theoretical models for explaining health disparities experienced by sexual and gender minorities. Meyer (2003) argues that individuals belonging to minority groups face not only the ordinary stressors of everyday life but also chronic and additional sources of stress arising from social prejudice, stigma, and discrimination. According to the theory, these stressors constitute a distinct form of stress that originates from individuals' social positions, accumulates over time, and adversely affects mental health and psychosocial well-being. A substantial body of research conducted over the past two decades has demonstrated that minority stress is associated not only with mental health but also with a range of outcomes, including physical health, quality of life, social relationships, and access to healthcare services (Hatzenbuehler 2009, Hatzenbuehler and Pachankis 2016, Flentje et al. 2020, Pachankis et al. 2020, Diamond and Alley 2022, Frost and Meyer 2023).

Meyer's (2003) model explains minority stress through two main processes: distal and proximal stressors. Distal stressors include external, objectively occurring events such as discrimination, violence, exclusion, and victimization, whereas proximal stressors refer to individuals' subjective psychological responses to these experiences. Concealment of identity, expectations of rejection, and internalized stigma fall into the latter category. The model also proposes that protective psychosocial resources, such as community connectedness and social support, may mitigate the adverse effects of minority stress. Thus, minority stress is conceptualized as a multidimensional construct that encompasses not only experiences of discrimination but also the processes through which individuals perceive, manage, and cope with these experiences.

Although Minority Stress Theory has been widely applied in the international literature, research has long tended to measure only selected components of the construct. Much of the research has focused exclusively on discriminatory events, internalized homophobia, or expectations of rejection. The lack of comprehensive measurement instruments capable of assessing all dimensions of minority stress simultaneously has been identified as an important methodological limitation (Meyer and Frost 2013). In particular, the limited representation of everyday microaggressions, identity concealment, and community connectedness in many studies has made it difficult to assess minority stress comprehensively.

In response to this need, Outland (2016) developed the LGBT Minority Stress Measure based on Meyer's theoretical model. The scale consists of 25 items across seven subscales: identity concealment, everyday discrimination/microaggressions, expectations of rejection, discriminatory events, internalized stigma, victimization experiences, and community connectedness. Findings from the scale development study, which included 640 participants, supported the psychometric properties of the seven-factor structure, demonstrated high internal consistency, and indicated a significant association between minority stress and psychological distress.

Following the original study, further research has developed and adapted measurement instruments based on different conceptualizations of minority stress across cultural contexts. For example, the Minority Stress Scale developed by Norcini Pala et al. (2017) was evaluated in the Italian context using a seven-factor structure. This instrument is distinct from the LGBT Minority Stress Measure developed by Outland (2016). Subsequent cross-cultural adaptation studies of Outland's (2016) LGBT Minority Stress Measure have

enabled researchers to examine the factor structure of the same instrument in different cultural contexts (Blažev et al. 2025, Nebot-Garcia et al. 2026). Similarly, recent studies have demonstrated that minority stress is closely associated with factors such as activism, social support, identity processes, outness, and psychological well-being (Krok et al. 2024, Jaspal 2025).

Although the use of measures assessing minority stress and related dimensions among LGBTQIA+ individuals in Türkiye has increased in recent years, existing instruments have generally focused on specific components of minority stress or particular subgroups. For example, the Turkish version of the Gender Minority Stress and Resilience Measure focuses on assessing minority stress and resilience processes among transgender and gender-nonconforming individuals (Şahin et al. 2023), whereas the Turkish adaptation of the LGBT Community Connectedness Scale assesses community connectedness (Barburoğlu et al. 2024). Similarly, the Turkish adaptation of the Daily Heterosexist Experiences Questionnaire focuses on heterosexist experiences encountered by LGBTI+ individuals in everyday life and the minority stress processes associated with these experiences (Karakaş 2024). Although these studies make important contributions to the assessment of different processes related to minority stress among LGBTQIA+ individuals in Türkiye, a need remains for a multidimensional instrument that encompasses diverse sexual orientation and gender identity experiences and assesses distal and proximal stressors alongside protective psychosocial resources within a single measurement framework. Accordingly, the present study aims to adapt Outland's (2016) seven-dimensional LGBT Minority Stress Measure into Turkish to contribute to a more comprehensive assessment of minority stress in research conducted in Türkiye.

The aim of this study is to adapt the LGBT Minority Stress Measure into Turkish and examine its linguistic equivalence, construct validity, criterion-related validity, and reliability in a sample from Türkiye. The psychometric properties of the scale will be evaluated using exploratory and confirmatory factor analyses. Internal consistency will be examined using Cronbach's alpha, McDonald's omega, and composite reliability coefficients, while criterion-related validity will be assessed using the Perceived Victimization Scale and the General Belongingness Scale. The findings are expected to provide researchers in Türkiye with a valid and reliable instrument for investigating minority stress and to contribute to the methodological quality of psychosocial research in this field.

Method

This section presents the research design, study group, data collection procedures, data analysis, and interpretation of the findings. This study employed a methodological/psychometric research design to adapt the LGBT Minority Stress Measure into Turkish and evaluate its validity and reliability. The psychometric evaluation addressed key measurement properties, including construct validity, reliability, and criterion-related validity (Boateng et al. 2018).

Sample

The study group consisted of individuals aged 18 years and older who were living in Türkiye and self-identified under the LGBTQIA+ umbrella. Convenience sampling, a non-probability sampling method, was used.

Data were obtained from a total of 660 participants. No participants in the main sample were excluded or omitted from the analyses. As the dataset contained no missing data, no participants were excluded from the study due to missing responses. To examine the construct validity of the scale, an Exploratory Factor Analysis (EFA) was conducted using data from the first 340 participants recruited during the data collection process. Subsequently, a Confirmatory Factor Analysis (CFA) was performed using data from the next 320 participants. This approach prevented the same participants from being included in both the EFA and CFA, allowing the factor structure obtained through EFA to be tested in a separate participant group. Participants were not randomly assigned to the EFA and CFA groups; rather, group allocation was based on the order in which data were collected.

The sample size was justified based on the participant-to-item ratio (N ratio) recommended for factor analysis and absolute sample size criteria. For EFA and CFA, a minimum of 10 participants per item (a 10:1 ratio) and a total sample size exceeding 300 are recommended (Comrey and Lee 1992, Tabachnick and Fidell 2019, Hair et al. 2022). For the 25-item scale, the minimum threshold of 250 participants calculated using the 10:1 ratio was exceeded. The EFA group of 340 participants corresponded to a participant-to-item ratio of 13.6:1, while the CFA group of 320 participants corresponded to a ratio of 12.8:1. According to the classification proposed by Comrey and Lee (1992), both sample sizes were considered “good” ($N \geq 300$).

To evaluate the temporal stability of the scale, it was administered a second time, 21 days after the initial administration, to 144 participants who could be contacted again. Test-retest reliability was then assessed.

Language and Cultural Adaptation Process

Permission to adapt and use the scale in Turkish was obtained via email from the scale developer, Dr. Pearl Grey (formerly published as Pearl L. Outland). The original version of the scale was developed by Outland (2016) as part of an unpublished master’s thesis at Colorado State University. The institutional repository record for the thesis is available through Mountain Scholar.

As the LGBT Minority Stress Measure had not previously been adapted into Turkish, the language and cultural adaptation process was carried out during the initial phase of the study. The cross-cultural adaptation guidelines proposed by Beaton et al. (2000) served as a reference throughout this process. First, the original English version of the scale was translated into Turkish by the researcher. The resulting Turkish translation was then evaluated in terms of linguistic equivalence, conceptual appropriateness, and cultural relevance by four language experts with advanced proficiency in both English and Turkish and four subject-matter experts with experience in LGBTQIA+ studies, psychology, and social work. The experts were asked to rate each item using a four-point scale: 1 = “Not appropriate,” 2 = “Largely inappropriate,” 3 = “Partially appropriate,” and 4 = “Appropriate.” To quantitatively assess the expert evaluations, the item-level Content Validity Index (I-CVI), the Scale-Level Content Validity Index based on the Average Method (S-CVI/Ave), and the Scale-Level Content Validity Index based on Universal Agreement (S-CVI/UA) were calculated using the proportion of experts assigning a rating of 3 or 4. Overall agreement among the experts was assessed using Kendall’s coefficient of concordance (W).

Following the expert evaluations, 21 items were accepted without modification, while four items were revised with respect to wording, word choice, linguistic structure, or sentence construction. The I-CVI values ranged from 0.750 to 1.000, the S-CVI/Ave was 0.975, and the S-CVI/UA was 0.840. Agreement among the experts was calculated as Kendall’s $W = 0.782$ ($\chi^2 = 149.81$, $p < 0.001$). Based on the experts’ recommendations, the necessary revisions were made and a consensus Turkish version was produced. In this process, instead of the two independent forward translations and separate synthesis stage recommended by Beaton et al. (2000), a forward translation conducted by the researcher followed by expert evaluation was used. Accordingly, it should be acknowledged that the forward translation procedure differed from the recommended standard process. Following the expert evaluation, the Turkish version was independently back-translated into English by two translators with advanced proficiency in English. The resulting back-translations were compared with the original scale and examined for shifts in meaning, conceptual consistency, and cultural appropriateness. Final revisions were made to items where deemed necessary. This process was intended to establish the linguistic and conceptual equivalence of the Turkish version.

Although the original name of the instrument is the LGBT Minority Stress Measure, it was referred to as the LGBTQIA+ Minority Stress Scale during the Turkish adaptation process. This decision was based on the fact that the primary construct assessed by the instrument is minority stress and that the study sample included not only lesbian, gay, and bisexual individuals but also transgender, non-binary, and queer individuals, as well as intersex individuals with diverse sex characteristics and individuals with diverse sexual orientations. Thus, the adapted name more inclusively reflects both the theoretical construct being

measured and the diversity of gender identities, sex characteristics, and sexual orientations represented by the scale's target population.

Items 1–16 are rated on a scale ranging from 1 = “Never” to 5 = “Always,” whereas items 17–25 are rated on a scale ranging from 1 = “Strongly disagree” to 5 = “Strongly agree.” Items in the Community Connectedness subscale are reverse-coded because higher scores on this subscale represent stronger community connectedness and, consequently, a protective resource against minority stress. Reverse coding aligns the direction of all item scores so that higher scores consistently indicate higher levels of minority stress. After reverse-coding the Community Connectedness items, the total scale score is calculated as the mean of the scores for all 25 items. The total score ranges from 1 to 5, with higher scores indicating higher levels of minority stress. This scoring procedure follows the approach used for the original scale. However, because a second-order factor model was not tested in the present study, the extent to which the total score represents a single, unidimensional general factor was not independently verified. Therefore, the total score was treated as a general indicator in accordance with the original scale's scoring approach, while scores for the seven subscales were also evaluated separately.

In the final stage of the adaptation process, the resulting Turkish version was pilot-tested with 20 participants who met the characteristics of the target population and were independent of the main sample. The pilot study assessed item comprehensibility, response feasibility, cultural appropriateness, and administration time. Following the pilot study, only the expression “isimlerle” (“with names”) in Item 6 was revised to “isimlerle/zamirlerle” (“with names/pronouns”); no other items were modified. The 20 participants in the pilot study were not included in the main sample.

Procedure

All procedures in this study complied with the principles set forth in the Directive on Scientific Research and Publication Ethics of Higher Education Institutions. Ethical approval for the implementation of the study was obtained from the Sinop University Human Research Ethics Committee (decision dated May 6, 2026, no. 2026/190).

Participation in the study was voluntary, and written informed consent was obtained from all participants. Participants were informed about the purpose of the study and the data collection procedures. They were also informed that participation was voluntary and that they could withdraw from the study at any time. Face-to-face data collection was conducted in a separate room to ensure that participants' responses could not be viewed by others. Completed paper forms were stored in a locked cabinet by the researcher, and digital data were stored in password-protected files. Access to the research data was restricted to the researcher. No payment or financial incentive was provided to participants for taking part in the study.

Participants who voluntarily agreed to take part in the test-retest procedure provided their email addresses to enable them to be contacted for the second administration. These contact details were stored separately from the research data and used solely for the test-retest procedure. To match responses from the first and second administrations, a coding system based on participants' initials and the last three digits of their telephone numbers was used. Thus, while enabling the matching of test-retest data, care was taken to ensure that direct identifying information was not included in the analytical dataset.

Data were collected between May and July 2026 through face-to-face administration, with the support of non-governmental organizations (NGOs) working in the LGBTQIA+ field in various provinces across Türkiye.

The data collection process was conducted under the coordination of the researcher, with the assistance of three field support personnel who were not members of the research team. The researcher directly participated in face-to-face data collection in Istanbul, Ankara, and Trabzon, while coordinating and monitoring data collection activities in other provinces through the field support personnel. NGOs working in the LGBTQIA+ field in various provinces across Türkiye helped publicize the study and reach potential participants through their volunteer networks. They also provided suitable physical settings for face-to-face data collection. The field support personnel received the necessary information regarding the study's

objectives, data collection procedures, and fundamental practices concerning participants' voluntary participation and confidentiality.

To prevent missing data during the data collection process, the scale forms were checked during administration. Participants' right to leave any item unanswered was respected, and they were not required to complete unanswered items. Examination of the dataset before analysis revealed no missing data.

Measures

The data collection instruments used in this study were the Sociodemographic Information Form, the Minority Stress Scale, the Perceived Victimization Scale, and the General Belongingness Scale.

Sociodemographic Information Form

The Sociodemographic Information Form was developed by the researcher based on the relevant literature and consisted of questions designed to identify participants' demographic and health-related characteristics. The form included questions about participants' gender identity, sex characteristics, sexual orientation, age, educational attainment, relationship status, place of residence, employment status, chronic infection or illness status, disability status, and the province in which they participated in the study. This information was used to describe the sociodemographic characteristics of the sample and to support the interpretation of the research findings.

Minority Stress Scale

The Minority Stress Scale was developed by Outland (2016) based on Meyer's (2003) Minority Stress Theory. The scale was designed to assess individuals' experiences of stress associated with their minority status and consists of 25 items in total. It comprises seven subscales: Identity Concealment (4 items), Everyday Discrimination/Microaggressions (4 items), Expectations of Rejection (4 items), Discriminatory Events (4 items), Internalized Stigma (3 items), Victimization Experiences (3 items), and Community Connectedness (3 items). The Identity Concealment, Everyday Discrimination/Microaggressions, Expectations of Rejection, Discriminatory Events, and Victimization Experiences subscales are rated on a 5-point frequency-based Likert scale (1 = Never, 5 = Always), whereas the Internalized Stigma and Community Connectedness subscales are rated on a 5-point agreement-based Likert scale (1 = Strongly disagree, 5 = Strongly agree). The Community Connectedness subscale is reverse-scored, and higher scores on the scale indicate higher levels of minority stress. In the original study, the Cronbach's alpha coefficient for the total scale was reported as .87.

Perceived Victimization Scale

The Perceived Victimization Scale was developed by Aquino et al. (1999) to assess individuals' perceived levels of victimization. The scale consists of eight items across two subscales: direct victimization and indirect victimization. Its Turkish adaptation was conducted by Ülbeği, Özgen, and Özgen (2014). The scale is scored on a 5-point Likert-type scale, with higher scores indicating higher levels of perceived victimization. Although the scale was originally developed for use in workplace settings, it was selected as a criterion variable in the present study because its items assess experiences of direct victimization, including humiliating behaviors, inappropriate comments and gestures, physical threats, swearing, attempts to portray an individual negatively, and other behaviors that adversely affect a person's reputation. Nevertheless, because the scale was originally designed for the workplace context, findings concerning criterion-related validity were interpreted with due consideration of contextual factors. In this study, the scale was used to examine the relationship between LGBTQIA+ minority stress and experiences of victimization. The Cronbach's alpha coefficient for the total score on the Perceived Victimization Scale was .92 in the present study.

General Belongingness Scale

The General Belongingness Scale was developed by Malone et al. (2012) to assess individuals' sense of

belonging and acceptance within their social environments. The scale consists of 12 items across two subscales: Acceptance/Inclusion and Rejection/Exclusion. Its Turkish adaptation was conducted by Duru (2015). The scale is rated on a 7-point Likert-type scale (1 = Strongly disagree, 7 = Strongly agree). Scores range from 12 to 84, with higher scores indicating a stronger sense of belonging. In the present study, the General Belongingness Scale was used to assess the criterion-related validity of the Minority Stress Scale. The Cronbach's alpha coefficient for the total score on the General Belongingness Scale was .94 in the present study.

Statistical Analysis

IBM SPSS Statistics 28, IBM SPSS AMOS 24, and R software (version 4.3.2; R Core Team, 2023) were used to analyze the data obtained in this study. First, the dataset was examined in terms of missing data, outliers, and distributional characteristics. Item-level distributional properties were assessed using skewness and kurtosis values. The assumption of multivariate normality was examined in R using the MVN package (version 5.9; Korkmaz et al., 2014) and the Henze-Zirkler, Mardia, and Doornik-Hansen tests.

Exploratory Factor Analysis (EFA) was conducted to examine the factor structure of the scale. Given the ordinal nature of the five-point Likert-type items, EFA was performed using a polychoric correlation matrix in R with the psych package (version 2.3.9; Revelle 2023). Before conducting EFA, the suitability of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Principal Axis Factoring (PAF) was used as the factor extraction method, and Direct Oblimin rotation was employed to allow for correlations among factors. The number of factors was determined by jointly considering the eigenvalue-greater-than-one criterion, the scree plot, and Horn's parallel analysis, conducted in R using the paran package (version 1.5.3; Dinno 2018), with a 95% confidence level and 1,000 simulations.

The factor structure obtained from EFA was tested using Confirmatory Factor Analysis (CFA) in IBM SPSS AMOS 24 with a sample separate from the EFA sample. Only the first-order seven-factor model was tested in the CFA; a second-order general factor model comprising the seven factors was not examined. Given the ordinal nature of the five-point Likert-type indicators, Diagonally Weighted Least Squares (DWLS) was used as the primary estimation method for CFA. An additional sensitivity analysis using Robust Maximum Likelihood (MLR) estimation was conducted to assess the model's sensitivity to the estimation method. Model fit was evaluated using χ^2/df , the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR) as the primary fit indices. The 90% confidence interval for RMSEA was also reported. The following criteria were adopted: $\chi^2/df \leq 3$, RMSEA and SRMR ≤ 0.05 , and CFI and TLI ≥ 0.95 indicated excellent fit; $\chi^2/df \leq 5$, RMSEA and SRMR ≤ 0.08 , and CFI and TLI ≥ 0.90 indicated acceptable fit. The Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Incremental Fit Index (IFI), and Normed Fit Index (NFI) were reported as supplementary fit indices.

Corrected item-total correlations were calculated to assess the discriminatory power of the scale items, with 0.30 adopted as the minimum acceptable value (Clark and Watson, 1995). Scale reliability was evaluated using Cronbach's alpha, McDonald's omega (ω), calculated with the psych package in R (Revelle 2023), and test-retest methods. Internal consistency coefficients of 0.70 or higher were considered indicative of acceptable reliability (Nunnally and Bernstein 1994; Hayes and Coutts 2020).

Test-retest reliability was assessed using the Pearson correlation coefficient (r) and the Intraclass Correlation Coefficient (ICC), with a 95% confidence interval, based on a two-way random-effects model, single measurements, and absolute agreement [ICC(2,1)] (Koo and Li 2016). The second administration took place 21 days after the initial administration. This interval was selected to reduce potential bias associated with remembering items from the first administration while limiting the likelihood of genuine changes in the construct being measured. However, participants' exposure to discrimination, victimization, or other significant life events during the interval between the two administrations was not assessed separately.

Average Variance Extracted (AVE) and Composite Reliability (CR) were calculated to assess convergent validity and composite reliability, respectively. The Heterotrait-Monotrait ratio (HTMT) matrix was used to

assess discriminant validity. These indices were calculated using the semTools package in R (version 0.5-6; Jorgensen et al. 2022). AVE values of 0.50 or higher and CR values of 0.70 or higher were considered adequate (Fornell and Larcker 1981, Hair et al. 2022). To assess discriminant validity, the square roots of the AVE values for each factor were compared with the inter-factor correlation coefficients in accordance with the Fornell-Larcker criterion. In addition, HTMT values below 0.85 were considered indicative of discriminant validity (Henseler et al. 2015). To examine criterion-related validity, the relationships between the LGBTQIA+ Minority Stress Scale, the Perceived Victimization Scale, and the General Belongingness Scale were assessed using Pearson product-moment correlation analysis.

Results

A total of 660 LGBTQIA+ individuals participated in the study. To examine the factor structure, data from 340 participants were used for Exploratory Factor Analysis (EFA), and data from 320 participants were used for Confirmatory Factor Analysis (CFA). Participants' ages ranged from 18 to 65 years, with a mean age of 34.7 ± 10.5 years, a median age of 33 years, and an interquartile range (IQR) of 26–42 years. Of the participants, 46.2% ($n = 305$) were aged 18–30 years, 35.5% ($n = 234$) were aged 31–45 years, and 18.3% ($n = 121$) were aged 46–65 years.

Regarding gender identity, 37.7% ($n = 249$) of participants identified as men, 17.0% ($n = 112$) as women, 13.3% ($n = 88$) as trans women, 13.0% ($n = 86$) as non-binary, 10.3% ($n = 68$) as trans men, and 8.6% ($n = 57$) as gender-fluid. In terms of sexual orientation, 31.2% ($n = 206$) of participants identified as gay, 21.5% ($n = 142$) as bisexual, 17.1% ($n = 113$) as lesbian, 14.4% ($n = 95$) as pansexual, 9.4% ($n = 62$) as heterosexual, and 6.4% ($n = 42$) as queer. The heterosexual participants included in the study were transgender individuals who identified as heterosexual in terms of sexual orientation but fell under the LGBTQIA+ umbrella because of their gender identity. Regarding sex characteristics, 92.7% ($n = 612$) of participants identified as endosex, while 7.3% ($n = 48$) identified as intersex.

In terms of educational attainment, 32.4% ($n = 214$) of participants held a bachelor's degree, 30.5% ($n = 201$) had completed high school, 11.2% ($n = 74$) had completed lower secondary education, 8.8% ($n = 58$) held a master's degree, 6.4% ($n = 42$) had graduated from a two-year higher education institution, 6.1% ($n = 40$) had completed primary education, and 4.7% ($n = 31$) held a doctoral degree. Regarding relationship status, 54.4% ($n = 359$) of participants reported being single, 37.1% ($n = 245$) reported having a partner, and 8.5% ($n = 56$) reported being married. When asked about the type of settlement in which they had spent most of their lives, 35.8% ($n = 236$) reported living in a metropolis, 33.9% ($n = 224$) in a metropolitan municipality, 19.4% ($n = 128$) in a city, 5.0% ($n = 33$) in a district town, 4.1% ($n = 27$) in a small town, and 1.8% ($n = 12$) in a village.

Study data were collected in seven provinces across Türkiye. Of the participants, 22.7% ($n = 150$) were recruited in Ankara, 21.5% ($n = 142$) in Istanbul, 14.7% ($n = 97$) in Izmir, 12.4% ($n = 82$) in Diyarbakır, 11.4% ($n = 75$) in Antalya, 10.3% ($n = 68$) in Gaziantep, and 7.0% ($n = 46$) in Trabzon. Detailed sociodemographic characteristics of the participants are presented in Table 1.

Item-Level Distribution Characteristics and Suitability for Factor Analysis

An examination of item-level distribution characteristics showed that item means ranged from 1.98 to 3.45, while standard deviations ranged from 1.02 to 1.20. Skewness values ranged from -0.480 to 1.050 , and kurtosis values ranged from -0.720 to 0.580 (Table 2). These values indicate that the distributional characteristics of the items were within acceptable limits.

The assumption of multivariate normality was examined using the Henze-Zirkler, Mardia, and Doornik-Hansen tests. Mardia's test of multivariate skewness was statistically significant ($(b_{1p}) = 48.32$), ($\chi^2 = 2577.07$), ($p < 0.001$)). Mardia's test of multivariate kurtosis was also significant ($(b_{2p}) = 742.15$), ($z = 18.45$), ($p < 0.001$)). Similarly, the Henze-Zirkler test was statistically significant ($(HZ = 1.48)$), ($p < 0.001$)), and the Doornik-Hansen test likewise indicated that the assumption of multivariate normality was not met ($(DH = 312.84)$, ($df = 50$), ($p < 0.001$)).

Table 1. Descriptive characteristics of the study sample			
Variable	Total (N=660) n (%)	EFA (n=340) n (%)	CFA (n=320) n (%)
Age			
Mean $\pm$ SD	34.7 $\pm$ 10.5	33.2 $\pm$ 10.3	36.3 $\pm$ 10.5
Median (IQR)	33 (26–42)	33 (26–42)	33 (26–43)
Minimum–Maximum	18–65	18–65	18–65
18–30	305 (46.2)	157 (46.2)	148 (46.3)
31–45	234 (35.5)	121 (35.6)	113 (35.3)
46–65	121 (18.3)	62 (18.2)	59 (18.4)
Gender Identity			
Woman	112 (17.0)	58 (17.1)	54 (16.9)
Trans woman	88 (13.3)	45 (13.2)	43 (13.4)
Man	249 (37.7)	128 (37.6)	121 (37.8)
Trans man	68 (10.3)	35 (10.3)	33 (10.3)
Non-binary	86 (13.0)	44 (12.9)	42 (13.1)
Gender-fluid	57 (8.6)	30 (8.8)	27 (8.4)
Sexual Orientation			
Lesbian	113 (17.1)	58 (17.1)	55 (17.2)
Gay	206 (31.2)	106 (31.2)	100 (31.3)
Bisexual	142 (21.5)	73 (21.5)	69 (21.6)
Pansexual	95 (14.4)	49 (14.4)	46 (14.4)
Queer	42 (6.4)	22 (6.5)	20 (6.3)
Heterosexual	62 (9.4)	32 (9.4)	30 (9.4)
Sex Characteristics			
Intersex	48 (7.3)	25 (7.4)	23 (7.2)
Endosex	612 (92.7)	315 (92.6)	297 (92.8)
Educational Attainment			
Primary school	40 (6.1)	21 (6.2)	19 (5.9)
Lower secondary school	74 (11.2)	38 (11.2)	36 (11.3)
High school	201 (30.5)	104 (30.6)	97 (30.3)
Two-year higher education	42 (6.4)	22 (6.5)	20 (6.3)
Bachelor's degree	214 (32.4)	110 (32.4)	104 (32.5)
Master's degree	58 (8.8)	29 (8.5)	29 (9.1)
Doctoral degree	31 (4.7)	16 (4.7)	15 (4.7)
Relationship Status			
Single	359 (54.4)	185 (54.4)	174 (54.4)
Married	56 (8.5)	29 (8.5)	27 (8.4)
Has a partner	245 (37.1)	126 (37.1)	119 (37.2)
Place Where Most of Life Was Spent			
Village	12 (1.8)	6 (1.8)	6 (1.9)
Small town	27 (4.1)	14 (4.1)	13 (4.1)
District	33 (5.0)	17 (5.0)	16 (5.0)
City	128 (19.4)	66 (19.4)	62 (19.4)
Metropolitan municipality	224 (33.9)	115 (33.8)	109 (34.1)
Metropolis	236 (35.8)	122 (35.9)	114 (35.6)
City of Study Participation			
Istanbul	142 (21.5)	73 (21.5)	69 (21.6)
Izmir	97 (14.7)	50 (14.7)	47 (14.7)
Ankara	150 (22.7)	77 (22.6)	73 (22.8)
Antalya	75 (11.4)	39 (11.5)	36 (11.3)
Trabzon	46 (7.0)	24 (7.1)	22 (6.9)
Gaziantep	68 (10.3)	35 (10.3)	33 (10.3)
Diyarbakir	82 (12.4)	42 (12.4)	40 (12.5)

Continuous variables are presented as mean $\pm$ standard deviation and median (interquartile range; IQR); categorical variables are presented as counts and percentages [n (%)]. EFA = exploratory factor analysis; CFA = confirmatory factor analysis

Table 2. Descriptive statistics and distributional properties of the minority stress scale items

Item	Mean (X)	SD	Skewness	Kurtosis
I1	3.24	1.12	-0.312	-0.645
I2	3.15	1.18	-0.245	-0.720
I3	3.28	1.15	-0.350	-0.580
I4	3.30	1.20	-0.385	-0.690
I5	2.85	1.05	0.112	-0.510
I6	2.90	1.10	0.085	-0.580
I7	2.78	1.08	0.180	-0.490
I8	2.82	1.12	0.145	-0.530
I9	3.42	1.02	-0.450	-0.310
I10	3.38	1.05	-0.410	-0.380
I11	3.45	1.08	-0.480	-0.290
I12	3.40	1.04	-0.430	-0.350
I13	2.45	1.15	0.520	-0.420
I14	2.38	1.12	0.580	-0.360
I15	2.40	1.18	0.550	-0.410
I16	2.48	1.14	0.490	-0.450
I17	2.15	1.05	0.820	0.110
I18	2.10	1.02	0.880	0.250
I19	2.22	1.08	0.750	0.050
I20	2.05	1.10	0.950	0.320
I21	1.98	1.04	1.050	0.580
I22	2.02	1.08	0.980	0.410
I23 (Reverse)	2.65	1.12	0.280	-0.610
I24 (Reverse)	2.70	1.15	0.220	-0.680
I25 (Reverse)	2.58	1.10	0.340	-0.550

SD = standard deviation. Items I23–I25 belong to the Community Connectedness subscale and are reverse-coded.

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to examine the factor structure of the Minority Stress Scale. Before the analysis, the suitability of the dataset for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO coefficient was .91, and Bartlett's test of sphericity was statistically significant ($\chi^2 = 9782.534$, $df = 300$), ($p < 0.001$). These findings indicate that the dataset was suitable for factor analysis.

Table 3. Factor retention and explained variance (n=340)

Factor	Initial Eigenvalue	Parallel Analysis Eigenvalue (95th Percentile)	Decision	Eigenvalue After Extraction	Explained Variance (%)	Cumulative Variance (%)	Sum of Squared Loadings After Rotation
Factor 1	8.102	1.412	Retain	7.620	30.48	30.48	6.85
Factor 2	2.146	1.325	Retain	1.710	6.84	37.32	5.42
Factor 3	1.842	1.258	Retain	1.420	5.68	43.00	5.80
Factor 4	1.536	1.201	Retain	1.150	4.60	47.60	5.35
Factor 5	1.293	1.152	Retain	0.880	3.52	51.12	3.90
Factor 6	1.133	1.108	Retain	0.720	2.88	54.00	3.25
Factor 7	1.078	1.065	Retain	0.650	2.60	56.60	2.80
Factor 8	0.920	1.028	Reject	—	—	—	—

* Because Direct Oblimin oblique rotation was used, the sums of squared loadings after rotation are reported separately.

Given the ordinal nature of the five-point Likert-type items, EFA was performed using a polychoric correlation matrix. Principal Axis Factoring (PAF) was used as the factor extraction method, and Direct Oblimin rotation was employed to allow for correlations among factors. The number of factors was determined by jointly considering the eigenvalue-greater-than-one criterion, the scree plot, and Horn's parallel analysis. The parallel analysis results showed that the observed eigenvalues for the first seven factors exceeded the eigenvalues generated from random data at the 95th percentile, whereas the eigenvalue for the eighth factor was lower. These findings supported a seven-factor structure. The seven factors extracted using PAF explained 56.60% of the total variance (Table 3).

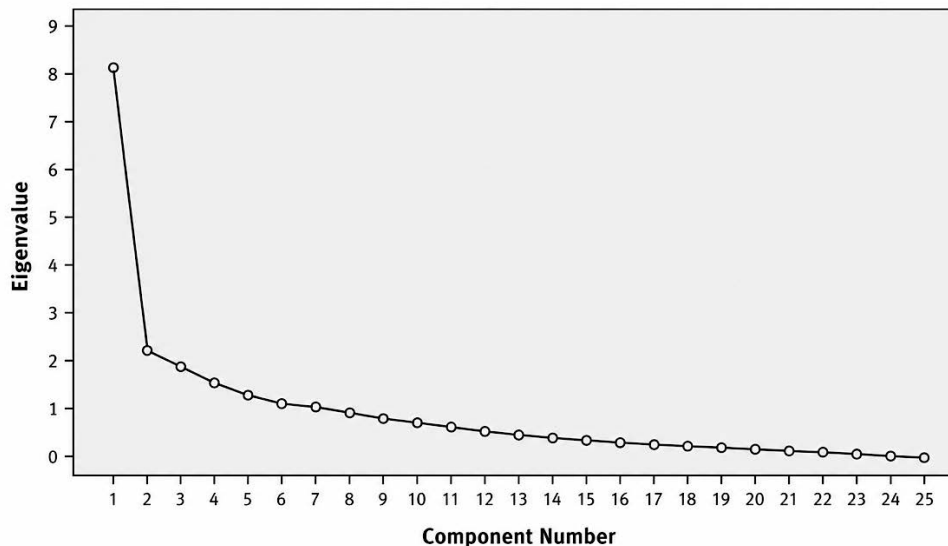


Figure 1. Scree plot of the Minority Stress Scale data obtained from the EFA

The first factor (Identity Concealment) consisted of four items and accounted for 30.48% of the variance after extraction. The second factor (Everyday Discrimination/Microaggressions) consisted of four items, increasing the cumulative explained variance to 37.32%. The third factor (Expectations of Rejection) consisted of four items, bringing the cumulative explained variance to 43.00%. The fourth factor (Discriminatory Events) consisted of four items, increasing the cumulative explained variance to 47.60%. The fifth factor (Internalized Stigma) consisted of three items, bringing the cumulative explained variance to 51.12%. The sixth factor (Victimization Experiences) consisted of three items, increasing the cumulative explained variance to 54.00%. The seventh factor (Community Connectedness) consisted of three items, bringing the total explained variance to 56.60%. Furthermore, the point of inflection observed in the scree plot also supported the seven-factor structure of the scale (Figure 1).

The factor loading of no item was below .40, and no items exhibited cross-loadings inconsistent with the theoretical structure. Therefore, all items were retained in the Turkish version of the scale.

As shown in Table 4, factor loadings ranged from 0.501 to 0.911, while corrected item-total correlations ranged from 0.475 to 0.893. The factor loadings and corrected item-total correlations of all items exceeded the established minimum threshold of 0.30. Furthermore, no item loaded significantly on more than one factor, and no cross-loadings were identified. Therefore, all 25 items from the original scale were retained in the Turkish adaptation. These findings indicate that the scale items adequately represent their respective factors and demonstrate sufficient discriminatory power. The internal consistency of the scale was evaluated using Cronbach's alpha and McDonald's omega coefficients (Table 5).

For the total score of the Minority Stress Scale, Cronbach's alpha was 0.922 and McDonald's omega was 0.932. Cronbach's alpha coefficients for the subscales ranged from 0.701 to 0.901, while McDonald's omega coefficients ranged from 0.713 to 0.911. These reliability coefficients support the conclusion that the Minority Stress Scale demonstrates adequate to high internal consistency at both the total-score and subscale levels.

Table 4. Exploratory factor analysis results and corrected item-total correlations (n=340)

Factor / Subscale	Item	Factor Loading	Corrected Item-Total Correlation
Factor 1 (Identity Concealment)	1	0.911	0.830
	2	0.870	0.817
	3	0.881	0.798
	4	0.902	0.892
Factor 2 (Everyday Discrimination/Microaggressions)	5	0.903	0.881
	6	0.884	0.795
	7	0.811	0.787
	8	0.835	0.798
Factor 3 (Expectations of Rejection)	9	0.885	0.851
	10	0.887	0.801
	11	0.901	0.893
	12	0.888	0.824
Factor 4 (Discriminatory Events)	13	0.854	0.797
	14	0.897	0.802
	15	0.905	0.857
	16	0.890	0.804
Factor 5 (Internalized Stigma)	17	0.780	0.701
	18	0.745	0.695
	19	0.733	0.683
Factor 6 (Victimization Experiences)	20	0.661	0.587
	21	0.630	0.556
	22	0.639	0.598
Factor 7 (Community Connectedness)	23	0.510	0.488
	24	0.501	0.475
	25	0.551	0.503

Item loadings were examined using a threshold of 0.30. No item exhibited a cross-loading of 0.30 or higher.

Table 5. Reliability analysis results for the minority stress scale and its subscales (n=660)

Scale and Subscales	Cronbach Alpha	McDonald's Omega
Overall Minority Stress Scale Score	0.922	0.932
Identity Concealment (Factor 1)	0.901	0.911
Everyday Discrimination/Microaggressions (Factor 2)	0.893	0.902
Expectations of Rejection (Factor 3)	0.887	0.895
Discriminatory Events (Factor 4)	0.884	0.881
Internalized Stigma (Factor 5)	0.844	0.856
Victimization Experiences (Factor 6)	0.788	0.798
Community Connectedness (Factor 7)	0.701	0.713

Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was conducted using an independent validation sample (n = 320) to confirm the seven-factor structure obtained from the Exploratory Factor Analysis (EFA). CFA was performed using IBM SPSS AMOS 24 with the Diagonally Weighted Least Squares (DWLS) estimation method. DWLS was selected in consideration of the ordinal nature of the five-point Likert-type indicators. The standardized path diagram for the seven-factor measurement model is presented in Figure 2. Standardized factor loadings, error variances, and critical ratios were examined as part of the CFA, and the corresponding results are presented in Table 6.

The CFA results indicated that the seven-factor measurement model yielded a chi-square value of ($\chi^2(254) = 483.76$), with a chi-square-to-degrees-of-freedom ratio of ($\chi^2/df = 1.90$). The other model fit indices were as follows: RMSEA = 0.038, 90% CI [0.029-0.042]; SRMR = 0.037; CFI = 0.94; TLI = 0.93; IFI = 0.94; GFI = 0.92; AGFI = 0.90; and NFI = 0.91 (Table 7). To evaluate the sensitivity of the findings to the estimation method, an additional analysis was conducted using Robust Maximum Likelihood (MLR)

estimation. The MLR analysis yielded ($\chi^2(254) = 498.12$), ($\chi^2/df = 1.96$), RMSEA = 0.041, 90% CI [0.031-0.048], SRMR = 0.039, CFI = 0.93, TLI = 0.92, and IFI = 0.93. The similarity between the DWLS and MLR results suggests that the seven-factor model demonstrated comparable fit across the two estimation approaches.

Table 6. Confirmatory factor analysis results: standardized factor loadings, standard errors, error variances, and critical ratios (N=320)

Factor and Items	Standardized Loading (λ)	Standard Error (S.E.)	Error Variance ($1 - \lambda^2$)	Critical Ratio (C.R.)	p
Factor 1: Identity Concealment					
Item 1 (I1)	0.890	0.048	0.208	—	—
Item 2 (I2)	0.885	0.048	0.217	18.42	<0.001
Item 3 (I3)	0.892	0.048	0.204	18.65	<0.001
Item 4 (I4)	0.893	0.048	0.203	18.70	<0.001
Factor 2: Everyday Discrimination/Microaggressions					
Item 5 (I5)	0.860	0.051	0.260	—	—
Item 6 (I6)	0.852	0.051	0.274	16.80	<0.001
Item 7 (I7)	0.841	0.051	0.293	16.45	<0.001
Item 8 (I8)	0.846	0.051	0.284	16.58	<0.001
Factor 3: Expectations of Rejection					
Item 9 (I9)	0.878	0.049	0.229	—	—
Item 10 (I10)	0.880	0.049	0.226	17.90	<0.001
Item 11 (I11)	0.885	0.049	0.217	18.12	<0.001
Item 12 (I12)	0.878	0.049	0.229	17.80	<0.001
Factor 4: Discriminatory Events					
Item 13 (I13)	0.862	0.050	0.257	—	—
Item 14 (I14)	0.870	0.051	0.243	17.20	<0.001
Item 15 (I15)	0.875	0.050	0.234	17.45	<0.001
Item 16 (I16)	0.871	0.051	0.241	17.25	<0.001
Factor 5: Internalized Stigma					
Item 17 (I17)	0.810	0.054	0.344	—	—
Item 18 (I18)	0.802	0.054	0.357	14.85	<0.001
Item 19 (I19)	0.799	0.054	0.362	14.70	<0.001
Factor 6: Victimization Experiences					
Item 20 (I20)	0.720	0.058	0.482	—	—
Item 21 (I21)	0.705	0.058	0.503	12.10	<0.001
Item 22 (I22)	0.715	0.058	0.489	12.35	<0.001
Factor 7: Community Connectedness (Reverse-Coded)					
Item 23 (I23)	0.710	0.059	0.496	—	—
Item 24 (I24)	0.695	0.059	0.517	11.80	<0.001
Item 25 (I25)	0.708	0.059	0.499	12.05	<0.001

λ = standardized factor loading; S.E. = standard error; C.R. = critical ratio; p = significance level. The first item of each factor was fixed as the reference indicator; therefore, S.E., C.R., and p values were not estimated for these items. Error variance = $1 - \lambda^2$

Convergent and Discriminant Validity

Composite Reliability (CR) and Average Variance Extracted (AVE) were calculated to assess convergent validity. Discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio (HTMT).

As shown in Table 8, the CR values for the subscales ranged from 0.747 to 0.938, while the AVE values ranged from 0.496 to 0.792. The AVE values for the Identity Concealment, Everyday Discrimination/Microaggressions, Expectations of Rejection, Discriminatory Events, Internalized Stigma, and Victimization Experiences subscales exceeded 0.50, whereas the AVE value for the Community

Connectedness subscale was 0.496. Although the AVE value for Community Connectedness was slightly below the 0.50 threshold, its CR value of 0.747 indicated an acceptable level of internal consistency for this subscale.

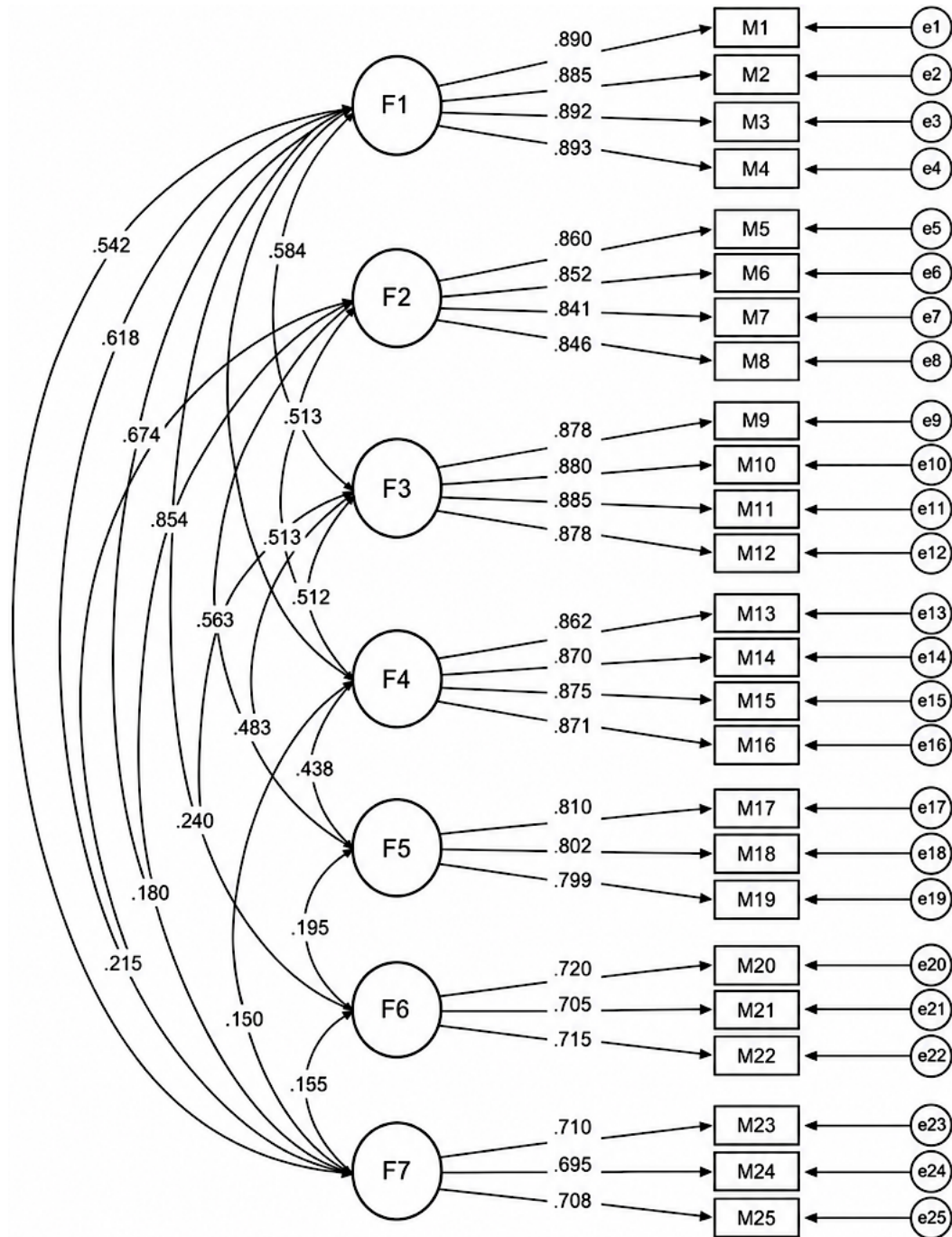


Figure 2. Confirmatory factor analysis model of the Minority Stress Scale (Standardized estimates)

In accordance with the Fornell-Larcker criterion, the square root of the AVE for each subscale ($\sqrt{\text{AVE}}$) was found to be greater than the correlation coefficients between that subscale and the other subscales. Furthermore, the HTMT values for pairs of subscales ranged from 0.182 to 0.693, with all values below the recommended threshold of 0.85 (Table 9). These findings provide evidence that the subscales are sufficiently distinct from one another. With regard to convergent validity, the findings are generally supportive, although the borderline AVE value for the Community Connectedness subscale should be taken into consideration.

Table 7. Model fit indices for different estimation methods in confirmatory factor analysis (N=320)

Estimation Method	χ^2	df	χ^2/df	RMSEA (90% CI)	SRMR	CFI	TLI	IFI	GFI	AGFI	NFI
DWLS (Primary)	483.76	254	1.90	0.038 [0.029–0.042]	0.037	0.94	0.93	0.94	0.92	0.90	0.91
Robust ML (MLR)	498.12	254	1.96	0.041 [.031–0.048]	0.039	0.93	0.92	0.93	0.91	0.89	0.90
Good Fit Criteria	—	—	≤3	≤0.05	≤0.05	≥0.95	≥0.95	≥0.95	≥0.90	≥0.90	≥0.90
Acceptable Fit Criteria	—	—	≤5	≤0.08	≤0.08	≥0.90	≥0.90	≥0.90	≥0.85	≥0.85	≥0.85

χ^2 = chi-square; df = degrees of freedom; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index; TLI = Tucker–Lewis index; IFI = incremental fit index; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index. DWLS = diagonally weighted least squares; MLR = robust maximum likelihood. The fit criteria represent commonly used thresholds for good and acceptable model fit.

Criterion-Related Validity

Pearson correlation analyses were conducted with the Perceived Victimization Scale and the General Belongingness Scale to assess the criterion-related validity of the Minority Stress Scale. Theoretically, minority stress was expected to be positively associated with perceived victimization and negatively associated with general belongingness. The results of these analyses are presented in Table 10.

Table 8. Convergent and discriminant validity results

Dimension	CR	AVE	1	2	3	4	5	6	7
1. Identity Concealment	0.938	0.792	0.890						
2. Everyday Discrimination/Microaggressions	0.912	0.722	0.412	0.850					
3. Expectations of Rejection	0.932	0.775	0.528	0.436	0.880				
4. Discriminatory Events	0.925	0.756	0.485	0.574	0.512	0.869			
5. Internalized Stigma	0.845	0.646	0.520	0.495	0.563	0.438	0.804		
6. Victimization Experiences	0.757	0.509	0.412	0.430	0.448	0.505	0.472	0.713	
7. Community Connectedness	0.747	0.496	0.215	0.180	0.240	0.155	0.310	0.195	0.704

CR = composite reliability; AVE = average variance extracted. Diagonal values represent the square roots of the AVE values for each subscale

Table 9. Heterotrait–Monotrait Ratio (HTMT) matrix

Dimension	1	2	3	4	5	6	7
1. Identity Concealment	—						
2. Everyday Discrimination/Microaggressions	0.459	—					
3. Expectations of Rejection	0.591	0.490	—				
4. Discriminatory Events	0.544	0.693	0.579	—			
5. Internalized Stigma	0.596	0.570	0.651	0.507	—		
6. Victimization Experiences	0.489	0.513	0.536	0.606	0.579	—	
7. Community Connectedness (Reverse-Coded)	0.270	0.228	0.305	0.182	0.403	0.262	—

HTMT = heterotrait–monotrait ratio. Diagonal values are omitted. All HTMT values are below 0.85.

As shown in Table 10, the total score on the Minority Stress Scale was strongly and positively correlated with the Perceived Victimization Scale ($r = 0.615$, $p < 0.001$) and moderately and negatively correlated with the General Belongingness Scale ($r = -0.382$, $p < 0.001$). Regarding the subscales, Identity Concealment ($r = 0.412$), Everyday Discrimination/Microaggressions ($r = 0.548$), Expectations of Rejection ($r = 0.482$), Discriminatory Events ($r = 0.591$), Internalized Stigma ($r = 0.435$), and Victimization Experiences ($r = 0.624$) were all positively and significantly correlated with perceived victimization. Conversely, all six of these subscales were negatively and significantly correlated with general belongingness (r ranging from -0.215 to -0.410 ; $p < 0.001$). In contrast to the other subscales, Community Connectedness, which is considered a protective factor, showed a negative association with the Perceived Victimization Scale ($r = 0.195$, $p < 0.001$) and a positive association with the General Belongingness Scale ($r = -0.485$, $p < 0.001$).

Table 10. Correlations between the Minority Stress Scale and the Perceived Victimization Scale and General Belongingness Scale (n=660)

Minority Stress Scale and Subscales	Perceived Victimization Scale (r)	General Belongingness Scale (r)
Identity Concealment	0.412*	-0.285*
Everyday Discrimination/Microaggressions	0.548*	-0.312*
Expectations of Rejection	0.482*	-0.364*
Discriminatory Events	0.591*	-0.245*
Internalized Stigma	0.435*	-0.410*
Victimization Experiences	0.624*	-0.215*
Community Connectedness	0.195*	-0.485*
Total Minority Stress Scale Score	0.615*	-0.382*

r = Pearson correlation coefficient. *p < 0.001.

Test-Retest Reliability

A 21-day interval was established between test and retest administrations to assess the temporal stability of the LGBTQIA+ Minority Stress Scale. It has been recommended that the interval between test and retest should be long enough to reduce the likelihood that participants remember their previous responses, yet short enough to limit the possibility of genuine changes in the construct being measured (Deyo et al., 1991; Mokkink et al., 2010). Accordingly, a 21-day interval was selected in the present study to balance the potential effects of recall against the possibility of actual changes in the measured construct. Participants who completed the initial administration were contacted again after 21 days, and the scale was administered a second time to the 144 participants who could be reached. No separate target sample size had been established in advance for the test-retest assessment.

Table 11. Test-retest reliability results

Scale / Subscale	n	Pearson r	ICC [%95 GA]	p(ICC)	Mean Difference (d̄) [%95 GA]	t	p(difference)	SEM	MDC95
Overall LGBTQIA+ Minority Stress Scale Score	144	0.84	0.91 [0.88–0.94]	<0.001	0.03 [–0.03–0.09]	0.98	0.329	0.23	0.64
Identity Concealment	144	0.81	0.89 [0.85–0.92]	<0.001	0.04 [–0.04–0.12]	0.95	0.344	0.37	1.03
Everyday Discrimination/Microaggressions	144	0.79	0.88 [0.83–0.91]	<0.001	0.02 [–0.06–0.10]	0.48	0.632	0.37	1.04
Expectations of Rejection	144	0.82	0.90 [0.86–0.93]	<0.001	0.03 [–0.04–0.10]	0.82	0.414	0.33	0.92
Discriminatory Events	144	0.78	0.87 [0.82–0.91]	<0.001	0.05 [–0.04–0.14]	1.12	0.264	0.41	1.15
Internalized Stigma	144	0.75	0.85 [0.79–0.89]	<0.001	0.03 [–0.06–0.12]	0.65	0.517	0.41	1.13
Victimization Experiences	144	0.74	0.84 [0.78–0.88]	<0.001	0.02 [–0.07–0.11]	0.45	0.653	0.43	1.20
Community Connectedness (Reverse-Coded)	144	0.72	0.83 [0.77–0.88]	<0.001	0.04 [–0.06–0.14]	0.78	0.437	0.46	1.28

r = Pearson correlation coefficient; ICC = intraclass correlation coefficient (two-way random-effects model, absolute agreement); CI = confidence interval; p (ICC) = significance test for the ICC; mean difference (d̄) = mean score difference between Test 2 and Test 1; t and p (difference) = paired-samples t-test statistic and significance value; SEM = standard error of measurement ($SEM = SD_{\text{pooled}} \times \sqrt{1 - ICC}$); MDC₉₅ = minimal detectable change at the 95% confidence level ($MDC_{95} = SEM \times 1.96 \times \sqrt{2}$). A p (difference) value greater than 0.05 and a 95% confidence interval for the mean difference that includes zero indicate that the mean difference between the two measurements is not statistically significant.

Of the 144 participants in the test-retest group, 58 belonged to the EFA group and 86 to the CFA group. The 144 participants who completed the test-retest assessment were compared with the 516 participants who did not complete it in terms of age, gender identity, sexual orientation, sex characteristics, educational

attainment, and relationship status. No statistically significant differences were found between the groups (all ($p > 0.05$)).

Test-retest reliability was assessed using the Pearson correlation coefficient (r) and the Intraclass Correlation Coefficient (ICC). In addition, the mean difference between the two administrations, the 95% confidence interval for the mean difference, the Standard Error of Measurement (SEM), and the Minimal Detectable Change at the 95% confidence level ($MDC_{\{95\}}$) were calculated. The findings are presented in Table 11.

As shown in Table 11, the Pearson correlation coefficient for the total score of the LGBTQIA+ Minority Stress Scale was 0.84, and the ICC was 0.91 (95% CI [0.88–0.94]). The mean difference in total scores between the two administrations was 0.03, with a 95% confidence interval ranging from –0.03 to 0.09. No statistically significant difference was found between the two measurements ($t = 0.98$, $p = 0.329$). The SEM for the total score was 0.23, and the ($MDC_{\{95\}}$) was 0.64. For the subscales, Pearson correlation coefficients ranged from 0.72 to 0.82, while ICC values ranged from 0.83 to 0.90. Mean differences between the two administrations were also not statistically significant for any of the subscales (all $p > 0.05$). SEM values ranged from 0.33 to 0.46, and ($MDC_{\{95\}}$) values ranged from 0.92 to 1.28. These findings provide evidence that the LGBTQIA+ Minority Stress Scale demonstrates a high level of temporal stability over a 21-day interval.

Discussion

In this study, the LGBTQIA+ Minority Stress Scale was adapted into Turkish, and its psychometric properties were evaluated in a sample of LGBTQIA+ individuals living in Türkiye. The findings indicate that the seven-factor structure proposed by Outland (2016) in the original study was also supported in the Turkish sample and that evidence was obtained for the validity and reliability of the Turkish version. By assessing Identity Concealment, Everyday Discrimination/Microaggressions, Expectations of Rejection, Discriminatory Events, Internalized Stigma, Victimization Experiences, and Community Connectedness, the scale enables a multidimensional examination of the distinct stress processes described in Meyer's (2003) Minority Stress Theory. Studies conducted in different cultural contexts also indicate a continuing need for valid and reliable instruments to measure minority stress (Blažev et al., 2025; Nebot-Garcia et al., 2026).

One of the main findings of this study is that the seven-factor structure of the LGBT Minority Stress Measure, developed by Outland (2016), was also supported in the Turkish sample. The findings from the exploratory and confirmatory factor analyses indicate that the items clustered under the theoretically expected dimensions. The seven-factor structure obtained through EFA explained 56.60% of the total variance and was subsequently supported by CFA conducted in an independent validation sample. These results provide evidence that the instrument developed by Outland (2016) can also be used in the Turkish context while retaining its original factor structure.

When making cross-cultural comparisons of factor structures, it is important to distinguish between different instruments. The Minority Stress Scale (MSS), developed in Italy by Norcini Pala et al. (2017), is not the same instrument as the LGBT Minority Stress Measure developed by Outland (2016). Norcini Pala et al. developed an original instrument to assess different components of minority stress and examined its factor structure. The study conducted in Croatia by Blažev et al. (2025) involved the translation, cultural adaptation, and psychometric evaluation of the MSS developed by Norcini Pala et al. In contrast, the study conducted in Spain by Nebot-Garcia et al. (2026) focused on adapting the LGBT Minority Stress Measure developed by Outland (2016). Accordingly, comparisons concerning the factor structure in the present study should particularly consider studies examining the same instrument as Outland (2016). In this respect, the retention of the seven-factor structure in the present study highlights the importance of examining the psychometric properties of the same instrument across different cultural contexts. Nevertheless, the use of different instruments to measure minority stress, as well as differences in their theoretical frameworks and item content, must be considered when interpreting variations in factor structures. Iniewicz et al. (2017) also addressed the relationship between the theoretical components of

sexual minority stress and the instruments used to assess this construct, highlighting the existence of different conceptualizations of minority stress measurement.

The reliability analyses indicate that the Turkish version has adequate internal consistency. Cronbach's alpha and McDonald's omega coefficients for the total scale were 0.922 and 0.932, respectively. Cronbach's alpha coefficients for the subscales ranged from 0.701 to 0.901, while omega coefficients ranged from 0.713 to 0.911. These values indicate acceptable internal consistency for both the total scale and its subscales. However, given that the alpha coefficient for the Community Connectedness subscale was 0.701, its reliability should be considered adequate but comparatively lower than that of some other subscales. In the test-retest analyses, the Pearson correlation coefficient for the total score was 0.84, and the ICC was 0.91, supporting a high level of temporal stability over the 21-day interval. For the subscales, Pearson correlations ranged from 0.72 to 0.82, and ICC values ranged from 0.83 to 0.90. The absence of statistically significant mean differences, together with the calculation of SEM and (MDC_{95}) values, provided a more comprehensive assessment of temporal stability than one based solely on correlation coefficients. Overall, these findings are broadly consistent with the internal consistency findings reported in Outland's (2016) original study.

The findings concerning convergent and discriminant validity also support the seven-factor measurement model. CR values ranged from 0.747 to 0.938, while AVE values ranged from 0.496 to 0.792, indicating generally adequate convergent validity and composite reliability across the dimensions. However, because the AVE value for Community Connectedness was slightly below 0.50, the evidence for convergent validity for this subscale is comparatively more limited. Nevertheless, the overall findings from the Fornell-Larcker criterion and HTMT analyses fell within acceptable limits, supporting the interpretation that the factors represent distinguishable constructs.

The findings concerning criterion-related validity revealed significant positive associations between minority stress and perceived victimization and significant negative associations between minority stress and general belongingness. These relationships indicate that minority stress is associated with adverse experiences and social belonging in theoretically expected directions. In particular, the positive association between Community Connectedness and the General Belongingness Scale, together with its negative association with the Perceived Victimization Scale, suggests that community connectedness and belonging may be considered social resources associated with minority stress processes. However, because these associations were derived from cross-sectional data, they should not be interpreted as evidence of a causal protective effect. Furthermore, because the Perceived Victimization Scale was originally developed for workplace settings, the criterion-related validity findings obtained using this instrument should be interpreted with attention to context. Although the scale demonstrated high internal consistency in the present study ($\alpha = 0.92$), this does not establish that it directly represents the broader social and interpersonal victimization experiences of LGBTQIA+ individuals. Therefore, future research should examine associations between minority stress and criterion measures that directly assess psychological distress, mental health, and LGBTQIA+-specific victimization experiences.

The limited availability of Turkish-language instruments capable of assessing minority stress multidimensionally among LGBTQIA+ individuals in Türkiye in accordance with Meyer's (2003) theoretical model enhances the significance of this study. Support for the seven-factor structure of the Turkish version enables the assessment of different components of minority stress within a single instrument. In this respect, the scale may contribute to research examining different dimensions of minority stress in social work, psychology, counseling, psychiatry, and public health. Nevertheless, further evaluation of its psychometric properties in diverse samples and testing of its measurement properties across different LGBTQIA+ groups are needed before the scale can be used for comparisons across cultural contexts.

In the Turkish context, family relationships, social and religious norms, and the legal and institutional conditions encountered by LGBTQIA+ individuals may be considered contextual factors that shape experiences of minority stress. In particular, the potential influence of family and close social networks on decisions to disclose or conceal one's identity and on expectations of rejection highlights the importance of considering the cultural context when interpreting the Identity Concealment and Expectations of

Rejection dimensions. Similarly, social and religious norms may be associated with how dimensions such as Internalized Stigma and Community Connectedness are experienced. Legal and institutional conditions provide a broader structural context that may influence the occurrence of distal stressors associated with discrimination, victimization, and perceptions of safety. However, the effects of these cultural and structural factors on the factor structure were not directly tested in the present study. Future research should examine their potential associations with factor structure, item functioning, and measurement invariance.

Despite its strengths, this study has several limitations. First, the use of convenience sampling and the involvement of non-governmental organizations working in the LGBTQIA+ field may limit the extent to which the sample represents the LGBTQIA+ population in Türkiye. Individuals who learn about the study through civil society organizations may differ in their level of community engagement or willingness to participate in research, potentially introducing selection effects, particularly in the Community Connectedness and Identity Concealment dimensions. In addition, the EFA and CFA samples were formed according to the order of data collection rather than through random assignment. Thus, although two separate samples were used, the non-probability and sequential formation of these samples should be considered when evaluating the generalizability of the factor structure. Second, the cross-sectional, self-report design prevents causal interpretations of the relationships between variables, and the possibility of social desirability bias cannot be ruled out. Social desirability was not assessed in this study. Similarly, measurement invariance across different sexual orientation and gender identity groups was not tested. Consequently, no direct conclusions can be drawn regarding whether the scale maintains the same measurement structure and item functioning among women, men, transgender, non-binary, intersex, or different sexual orientation groups. Known-groups validity was also not examined. Future studies should systematically evaluate measurement invariance and known-groups validity. Third, the Perceived Victimization Scale used to assess criterion-related validity was originally developed for workplace settings. Therefore, the observed associations may not represent the full range of victimization experiences related to minority stress among LGBTQIA+ individuals. In addition, the psychological distress and general health indicators used in Outland's (2016) original study were not included as criterion variables in the present research. Accordingly, this study did not provide direct evidence concerning the relationship between the Turkish version and psychological distress or mental health indicators. Future research examining associations with psychological distress, depression, anxiety, trauma symptoms, and other mental health indicators could expand the evidence for the scale's criterion-related validity. Finally, the fact that the original instrument was developed by Outland (2016) as part of an unpublished master's thesis should be acknowledged as a limitation with respect to the accessibility of the source instrument in the literature and the scope of independently replicated psychometric evidence. Replication of the present findings in different samples, further investigation of the psychometric properties of the same instrument across cultural contexts, and longitudinal studies evaluating the scale's sensitivity to change are therefore important directions for future research.

Conclusion

In this study, the LGBT Minority Stress Measure developed by Outland (2016) was adapted into Turkish, and the psychometric properties of the LGBTQIA+ Minority Stress Scale were examined in a sample of LGBTQIA+ people living in Türkiye. The findings indicate that the original seven-factor structure was supported in the Turkish sample and that evidence was obtained for internal consistency, temporal stability, convergent validity, discriminant validity, and criterion-related validity. These results provide evidence that the scale can be used for research purposes to assess minority stress experiences among LGBTQIA+ people living in Türkiye.

Nevertheless, measurement invariance, known-groups validity, and sensitivity to change were not examined in the present study, and criterion measures of psychological distress and mental health were not used. Therefore, the current findings should not be used to make claims beyond the available evidence, such as concluding that the scale ensures measurement equivalence across different LGBTQIA+ subgroups, can be used with specific cut-off scores for clinical or epidemiological classification, or is

sufficiently sensitive to change for monitoring outcomes in intervention studies. Future research examining measurement invariance across different LGBTQIA+ groups, assessing associations with psychological distress and mental health indicators, investigating known-groups validity, and testing sensitivity to change using longitudinal designs would help expand the evidence supporting the scale's potential applications.

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Addendum 1. LGBTQIA+ Minority Stress Scale (Turkish version)

Instruction

Minority stress is a form of stress associated with experiences such as stigma, discrimination, and exclusion that LGBTQIA+ individuals face due to their sexual orientation, gender identity, or gender characteristics. Below are various statements regarding the life experiences of LGBTQIA+ individuals.

Please read each statement carefully and select the appropriate option to indicate how often the described situation has occurred in your life or to what extent you agree with the statement. Select only one response for each item.

A. Sıklık Temelli Maddeler (1-16)

Yanıt seçenekleri: 1 = Hiçbir zaman | 2 = Çok nadiren | 3 = Bazen | 4 = Sık sık | 5 = Her zaman

Madde	İfade	1 Hiçbir zaman	2 Çok nadiren	3 Bazen	4 Sık sık	5 Her zaman
1	LGBTİ+ olduğumu ima edebilecek yaşamımdaki bazı durumları başkalarına anlatmaktan kaçınıyorum.	☐	☐	☐	☐	☐
2	LGBTİ+ olduğumun anlaşılmasını istemediğim için romantik yaşamım hakkında konuşmaktan kaçınıyorum.	☐	☐	☐	☐	☐
3	LGBTİ+ olduğumun anlaşılmasını istemediğim için sosyal etkinliklere bir partnerle katılmam.	☐	☐	☐	☐	☐
4	LGBTİ+ olduğumun bilinmemesi için sosyal medyada paylaşımlarımı sınırlar veya kimlerin görebileceğini kontrol ederim.	☐	☐	☐	☐	☐
5	LGBTİ+ olmayan kişilere LGBTİ+ ile ilgili konuları açıklamak zorunda olduğum varsayılır.	☐	☐	☐	☐	☐
6	Başkaları tarafından istemediğim isimlerle/zamirlerle seslendirildiği olur.	☐	☐	☐	☐	☐
7	Cinsiyete göre ayrılmış ortamlarda kendimi dışlanmış hissedirim.	☐	☐	☐	☐	☐
8	LGBTİ+ konularında konuşurken "fazla hassas" veya "politik doğrucu" olmakla suçlandım.	☐	☐	☐	☐	☐
9	Yeni biriyle tanıştığımda, LGBTİ+ olduğum için bana olumsuz yaklaşılacağından endişe ederim.	☐	☐	☐	☐	☐
10	LGBTİ+ olduğum için saygısız davranışlarla karşılaşmaya hazırlıklı olurum.	☐	☐	☐	☐	☐
11	Başkalarının beni kabul etmeyeceğini düşünürüm.	☐	☐	☐	☐	☐
12	İnsanlar LGBTİ+ olduğumu öğrenirse ne olacağı konusunda kaygı duyarım.	☐	☐	☐	☐	☐
13	LGBTİ+ olduğum için bir organizasyondan (örneğin dinî grup, spor takımı vb.) dışlandım.	☐	☐	☐	☐	☐
14	Sağlık çalışanları tarafından gereksiz hizmet almaya zorlandım veya sağlık hizmeti verilmedi.	☐	☐	☐	☐	☐
15	Bir işletmede LGBTİ+ olduğum için kötü hizmet aldım.	☐	☐	☐	☐	☐
16	Öğretmenler veya yöneticiler tarafından adil olmayan muameleye maruz bırakıldım.	☐	☐	☐	☐	☐

B. Katılım Düzeyi Temelli Maddeler (17-25)

Yanıt seçenekleri: 1 = Kesinlikle katılmıyorum | 2 = Katılmıyorum | 3 = Ne katılıyorum ne katılmıyorum | 4 = Katılıyorum | 5 = Kesinlikle katılıyorum

Madde	İfade	1 Kesinlikle katılmıyorum	2 Katılmıyorum	3 Ne katılıyorum ne katılmıyorum	4 Katılıyorum	5 Kesinlikle katılıyorum
17	LGBTİ+ olmayan biri olma fırsatım olsaydı bunu kabul ederdim.	☐	☐	☐	☐	☐
18	LGBTİ+ olmayı istemezdim.	☐	☐	☐	☐	☐
19	LGBTİ+ olmayan insanları kıskanırım.	☐	☐	☐	☐	☐
20	LGBTİ+ olduğum için sözlü tacize veya hakarete maruz bırakıldım.	☐	☐	☐	☐	☐
21	Başkaları tarafından bana zarar verileceği yönünde tehdit edildim.	☐	☐	☐	☐	☐
22	Başkaları tarafından zorbalığa maruz bırakıldım.	☐	☐	☐	☐	☐
23	LGBTİ+ konularına ilişkin bilgi ve broşürlere ulaşabileceğimi düşünürüm.	☐	☐	☐	☐	☐
24	Gerektiğinde LGBTİ+ konularında profesyonel hizmet bulabileceğimi düşünürüm.	☐	☐	☐	☐	☐
25	LGBTİ+ faaliyetlerini destekleyen kamusal alanlar bulabileceğime inanırım.	☐	☐	☐	☐	☐

Scoring

Items 1–16 are scored on a scale from 1 = “Never” to 5 = “Always”;

Items 17–25 are scored on a scale from 1 = “Strongly Disagree” to 5 = “Strongly Agree.”

Items 23, 24, and 25 in the “Community Connectedness” subscale are reverse-coded: 1→5, 2→4, 3→3, 4→2, and 5→1.

After reverse-coding, the total scale score is calculated by taking the average of the scores for the 25 items.

The total score ranges from 1 to 5; higher scores indicate higher levels of minority stress.

Subdimensions and item distributions:

1. Identity Concealment (1–4);
2. Everyday Discrimination/ Microaggressions (5–8);
3. Expectations of Rejection (9–12);
4. Discrimination Events (13–16);
5. Internalized Stigma (17–19);
6. Victimization Experiences (20–22);
7. Community Connectedness (23–25).

Note: The items on Community Connectedness are reverse-coded because high scores indicate a protective factor; this ensures that the scoring direction of all items aligns with that of minority stress.