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Individual Disaster Resilience Scale-Short Form (IDRS-SF): Turkish Validity and Reliability Study

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Abstract

This study aimed to adapt the "Disaster Resilience Scale for Individuals, Short Form," developed by Matsukawa et al. [1], to Turkish culture and to examine its psychometric properties in order to assess individuals' preparedness, behavior, and adaptation capacities in the face of disasters. The adaptation process consisted of content validity, linguistic validity (translation-back translation), confirmatory factor analysis (CFA), internal consistency reliability, test-retest reliability, and criterion validity. Data collection was carried out by distributing an online form prepared via Google Forms to the adult population through social media and other digital platforms. Analyses were conducted on two samples (Sample A: 340, Sample B: 230). The Individual Disaster Resilience Scale-Short Form (IDRS-SF) is an assessment tool consisting of three sub-dimensions (Knowledge, Preparedness, Action) and eight items. The scale is rated on a 4-point Likert scale (1 = Inappropriate, 4 = Appropriate), with total scores ranging from 8 to 32. Higher scores indicate that individuals have a higher level of personal resilience to disasters. Confirmatory Factor Analysis (CFA) results revealed that the three-factor structure exhibited acceptable fit indices ($\chi^2/df = 2.216$; RMSEA = .060; CFI = .96; TLI = .93; GFI = .97; SRMR = .046). The scale has a Cronbach α of .76 and McDonald's ω of .74 at the total score level, demonstrating sufficient internal consistency. Test-retest results showed ICC values of "good" (ICC = .79–.82). In terms of criterion validity, significant and positive correlations were found between the total score of the Disaster Resilience Scale (DRS) and perceived social support and psychological resilience. These results indicate that the Turkish form of the DRS is a valid and reliable measurement tool for assessing individual disaster resilience. The scale offers a practical and concise assessment tool for use in studies in the fields of disaster management, community risk reduction, disaster education, and community mental health.

Keywords: Resilience, Disaster resilience, Validity, Reliability, Disaster management

Introduction

Defined in its simplest form as the capacity to adapt and recover in the face of adversity [2], resilience can be addressed in various forms at different levels of analysis, such as individual, societal, organizational, and ecological systems [3]. The negative impacts of economic and political crises and disasters are clearly visible across all segments of society, including institutions, communities, and individuals [4]. Klein et al. stated that the meaning attributed to the concept of resilience remains too general and is not directly applicable in planning and management processes. They emphasized that resilience should be defined by limiting it to

measurable characteristics such as how much disruption a system can tolerate and to what extent it can reorganize itself. Clarifying adaptive capacity and resilience strengthens communication in disaster management and climate fields, facilitating the transition from response to risk reduction and preparedness [5]. Resilience can be defined as a community's capacity to recover from the negative impacts of disasters and various crisis situations, to anticipate potential adverse events, and to effectively adapt to and withstand them [6]. While resilience is a key element in reducing vulnerability, it is emphasized as a fundamental systems characteristic that offers an alternative to traditional defense approaches but needs conceptual clarification to be effective [7, 8]. Resilience is particularly critical in addressing and mitigating the impacts of increased disaster risks, especially those related to climate change [1]. The United Nations Office for Disaster Risk Reduction defines resilience as a community's ability to resist and adapt to adverse effects in a timely and efficient manner when exposed to hazards. The resilience process also encompasses risk management [9].

The resilience approach is a dynamic approach that considers society and the environment as a whole, and regards the capacity to adapt to change as a fundamental element of the system's survival. Resilience supports the analysis of adaptation processes to adversities and the development of appropriate policy approaches [10]. Norris et al. [11] define community resilience as the totality of adaptive capacities that enable a community to adapt after a disruption or adversity [3, 11]. Community resilience is a process built on adaptive capacities consisting of economic development, social capital, information and communication, and community competence, supporting disaster risk reduction, disaster preparedness, and post-disaster adaptation [11, 12]. Community resilience is assessed through elements such as physical and psychological well-being, access to healthcare, effective risk communication and training, strengthening social ties, self-efficacy, partnerships, quality, and productivity [13, 14]. The disaster resilience approach emphasizes various adaptive capacities operating at the system level, aiming to mitigate the negative impacts of disasters, accelerate the post-disaster recovery process, and reduce future vulnerabilities [15]. Given the limited resources available after a disaster, resilience is considered a critical element in preventing communities from prolonging their post-disaster recovery processes [13].

Disasters, occurring almost daily in every corner of the world, negatively impact communities, families, and individuals in various ways. The consequences of a disaster are not limited solely to the extent of physical damage. These consequences are shaped by the relationship the community establishes with the vulnerability dynamics that define its social, economic, and political structures [16]. Matsukawa et al. [1] emphasize that disaster resilience

studies often address resilience at the community level, neglecting the individual level; they also criticize current assessments for limiting individual resilience solely to the psychological dimension [1]. Individual resilience is a dynamic process that refers to an individual's capacity to adapt and recover from challenges, enabling effective responses to adverse situations [12].

Individual resilience is closely related to an individual's internal skills and the external resources they obtain from their environment. Internal skills such as self-efficacy, autonomy, communication skills, problem-solving, and stress management, along with external resources such as family, friends, financial resources, and social support, support an individual's adaptation and recovery from challenges. The interaction between internal characteristics and external support plays a significant role in strengthening individual resilience [17, 18, 19, 20]. Individual resilience is the ability of individuals to successfully respond to, adapt to, recover from, and learn from unexpected threats and adversities. In the face of increasing global threats, individual resilience is of critical importance. However, the measurement of individual resilience has not been sufficiently discussed [1, 17, 21].

Disaster resilience is assessed, particularly before a disaster, to understand the capacity of individuals and communities to adapt and recover, and to identify actions to enhance this capacity. It can also be assessed after a disaster to reveal how individuals or communities adapt to and cope with the disaster. However, most measurement tools focus on community-level resilience rather than individual resilience [17]. On the other hand, recent studies have focused on individual disaster resilience and its strengthening [22, 23, 24]. The 2015-2030 Disaster Risk Reduction Framework also focuses on resilience and investments aimed at increasing the resilience of individuals, communities, and countries [25]. This study aims to adapt the Disaster Resilience Scale for Individuals – Short Form, developed by Matsukawa et al. [1], to Turkish culture and to examine its psychometric properties. In this context, in Turkey, which frequently experiences natural and technological disasters such as earthquakes, floods, and landslides, it is expected that developing a valid and reliable measurement tool for assessing individuals' disaster resilience will contribute to a better understanding of individual resilience and to future studies and policies.

Materials and Methods

Research Aim and Significance

This study aimed to adapt the "Disaster Resilience Scale for Individuals-Short Form," originally developed by Matsukawa et al. [1], to Turkish culture and to examine its psychometric properties. The scale was translated into Turkish as the Individual Disaster Resilience Scale-

Short Form. The frequency, intensity, and impact of disasters are increasing globally due to climate change, rapid urbanization, population pressures, and socioeconomic vulnerabilities. This situation necessitates an assessment of the resilience of societies to disasters, and particularly highlights the need for a systematic examination of individuals' preparedness and adaptation capacities to disasters. Therefore, measuring disaster resilience at the individual level is a critical element in determining the effectiveness of disaster risk reduction policies. In this context, the development and adaptation of measurement tools for individual disaster resilience to different cultures points to both a current need emerging in the academic literature and a significant gap in the field of application. Especially in countries like Turkey, which face multiple disaster risks such as earthquakes, floods, landslides, and fires, assessing individuals' preparedness levels for disasters and their post-disaster adaptation capacities is a strategic necessity. This is because accurate measurement of resilience at the individual level can guide decision-making processes across a wide range of areas, from planning disaster education programs to developing societal risk reduction strategies.

Type of Research

This study is a methodological study because it is a scale adaptation study [26]. Therefore, the methodological steps recommended for cultural adaptation [27] were used as a basis in the scale adaptation process.

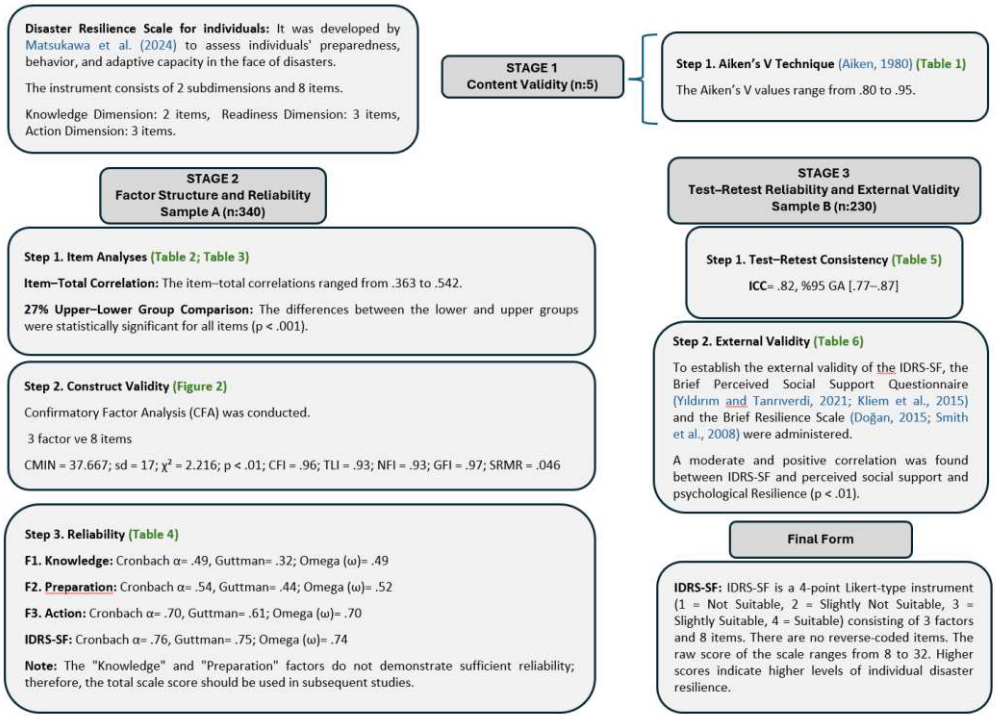


Figure 1. Research methodology

Data Collection Tools

In this study, the following instruments were used as data collection tools: “Personal Information Form”, “Individual Disaster Resilience Scale-Short Form (IDRS-SF)”, “Brief Perceived Social Support Scale (BPSS)”, and “Brief Psychological Resilience Scale (BPRS)”.

Personal Information Form

This form was prepared by researchers to determine the demographic characteristics of the participants.

Individual Disaster Resilience Scale-Short Form (IDRS-SF)

The scale, which assesses individual disaster resilience in a multidimensional way, was developed by Matsukawa et al. [1]. The IDRS-SF consists of three sub-dimensions and eight items. Scoring is done on a 4-point Likert scale (1 = valid, 2 = somewhat valid, 3 = somewhat invalid, and 4 = invalid). The scoring for each item ranges from 1 to 4, with a minimum score of 8 and a maximum score of 32.

Brief Perceived Social Support Scale (BPSS)

BPSS is a scale developed to assess individual differences in the general perception of social support [28]. The Turkish adaptation of the scale was done by Yıldırım and Tanrıverdi [29]. The scale consists of 6 items. Participants evaluated each item on a 5-point Likert scale ranging from 1 (not true at all) to 5 (very true). All items are summed to obtain an overall score. Higher scores reflect higher perceived levels of social support.

Brief Psychological Resilience Scale (BPRS)

The scale was developed by Smith et al. [30] to measure the psychological resilience of individuals. The BPRS is a 6-item, 5-point Likert-type, self-report scale. High scores obtained after reversing the reverse-coded items indicate high psychological resilience. The Turkish validity and reliability of the scale was conducted by Doğan [31] with university students. The BPRS is a 5-point Likert-type scale. It has a response key that includes "Not suitable at all" (1), "Not suitable" (2), "Somewhat suitable" (3), "Suitable" (4), and "Completely suitable" (5). Items 2, 4, and 6 are reverse-coded. High scores obtained after reversing the reverse-coded items indicate a high level of psychological resilience.

Ethical Principles

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki [32]. Participants were informed about the purpose and scope of the study, the conditions for voluntary participation, and confidentiality provisions; informed written consent was obtained from all participants. Participants' personal information was kept confidential, and the data collected were used solely for scientific purposes. Participants had the right to withdraw from the study at any time. Permission was obtained from the original developers of the scale to adapt it into Turkish. Permission to conduct this study was obtained from the Artvin Çoruh University Scientific Research and Publication Ethics Committee (Ethics Committee Approval No.: 12.12.2025/204914). Every effort was made to ensure compliance with ethical principles and respect for participants' rights throughout the study.

Translation into Turkish

In the process of adapting the scale into Turkish, the cross-cultural adaptation guidelines suggested by Beaton et al. [27] were followed. In the first stage, the original English form of the scale was translated into Turkish by two translators who are experts in psychology and linguistics and are native-level English speakers. The semantic agreement between the two translations was evaluated using Cohen's Kappa; the kappa coefficient was found to be .88, indicating excellent agreement [33]. It is recommended to obtain expert opinions after translation to identify insufficient concepts in the translation and also to detect inconsistencies between the two languages with further translations [34]. Therefore, this form was presented to an expert panel consisting of three specialists working in the fields of psychology, psychiatry, and disaster management; the semantic equivalence, conceptual appropriateness, and cultural validity of the items were discussed [35]. Necessary linguistic and conceptual adjustments were made in line with the experts' opinions. Subsequently, the resulting Turkish form was re-translated into English by two independent translators with native-level English proficiency who were not involved in the initial translation [36]. At this stage, the back-translation was compared with the original form to assess whether the content meaning of the text was preserved, and differences in meaning were discussed and corrected [37].

Content Validity

To evaluate the content validity of the scale, expert opinions were obtained from five academics specializing in the field, and Aiken's V coefficient was calculated.

Pilot Application

The aim of the pilot study is to test the suitability of the developed scale for the target population. In this process, a sample representing the target population and exhibiting demographic, social, and economic diversity should be selected [38, 39]. The resulting preliminary form was administered to a pilot sample of 52 individuals, and feedback was obtained from participants regarding comprehensibility and clarity of the statements [40].

Population and Sample

The study population consists of individuals over 18 years of age in Turkey. Two separate samples were used in the study (Sample A: 340 and Sample B: 230). Sample A was used for item analysis, construct validity, and reliability analyses, while Sample B was used for test-retest reliability and external validity. Since this study is a scale adaptation study, the use of factor analysis techniques is necessary. The literature indicates that a sample size of 300 individuals is considered good for factor analysis [41, p. 206; 42]. Therefore, the sample size obtained with Sample A is sufficiently large for factor analysis.

Sample characteristics

Sample A: 50.9% are women, 12.4% are university graduates, and 61.5% have experienced a disaster situation before. The average age of Sample A is 20.4 ± 2.9 (min: 18, max: 46). Sample B: 46.5% are women, 12.8% are married, 14.8% are university graduates, and 52.2% have experienced a disaster situation. The average age of Sample B is 21.2 ± 3.2 (min: 18, max: 55).

Data Collection Phase

Research data were collected from a sample group determined after obtaining ethical committee approval. During the data collection process, participants were informed about the purpose and scope of the research, confidentiality principles, and the voluntary participation conditions. Written and informed consent was obtained from the participants. Data collection was carried out via the Google Forms application. To prevent duplicate entries, only one submission per device was allowed. No personal information of the participants was collected, IP addresses were not recorded, and the data was evaluated completely anonymously.

Data Analysis

SPSS 26 and AMOS 24 software packages were used in the data analysis phase. Aiken's V coefficient was calculated based on expert opinion for content validity. In the data analysis

process, descriptive statistics (mean, standard deviation, skewness, and kurtosis values) related to the scale items were examined first [43]. Item analyses were performed before factor analysis. To test the factor structure of the scale, Confirmatory Factor Analysis (CFA) was performed, and the following fit indices were considered: χ^2/df (Chi-Square / Degrees of Freedom); RMSEA (Root Mean Square Error of Approximation); CFI (Comparative Fit Indices); TLI (Tucker–Lewis Index); GFI (Goodness-of-Fit Index), NFI (Normed Fit Index), and SRMR (Standardized Root Mean Square Residual) [44]. Cronbach's alpha coefficient and McDonald's omega (ω) values were calculated to assess the reliability of the scale. Test-retest consistency was examined to assess the scale's consistency over time, and correlations with the "Brief Perceived Social Support Scale (BPSS)" and the "Brief Psychological Resilience Scale (BPRS)" were investigated for external validity.

Result

Content Validity

Aiken's V coefficient was used to evaluate the content validity of the scale. This method is a statistical method that quantifies the extent to which items are appropriate in terms of content by having experts rate each item on a specific scale [45]. In the study, the scale items were rated by five academics specializing in psychology, nursing, and disaster management on a scale of "1 = not appropriate at all" to "5 = completely appropriate". Aiken's V value was calculated for each item based on the obtained scores, and values of 0.70 and above were interpreted as acceptable, while values of 0.80 and above were interpreted as good content validity [46].

Table 1. Content validity findings

No	Aiken's V	No	Aiken's V	No	Aiken's V
i1	.90	**i4**	.80	**i7**	.85
i2	.85	**i5**	.95	**i8**	.90
i3	.95	**i6**	.80	**-**	-

According to Aiken's V analysis, the content validity of the scale items ranges from .80 to .95. In the literature, values of .70 and above are considered acceptable for Aiken's V. In this study, the fact that all items received values above .70 indicates that the items are sufficient in measuring the relevant construct in terms of content. In addition, the fact that the vast majority of items received values of .80 and above shows that the content validity of the scale is at a high level (Table 1). Therefore, the Turkish-culture adapted form of the 8-item scale was found to be appropriate in terms of content by field experts (Table 1).

Item Analysis

Item analysis primarily involved examining the normal distribution of items, supported by item-total correlations and upper and lower group analyses.

Item-Total Correlations

Item-total correlations are a widely accepted method in the literature to improve the validity and reliability of scales. Item-total correlation should generally be .30 or higher. This indicates that the item adequately represents the overall structure of the scale [47]. Low item-total correlations may indicate that the item does not contribute sufficiently to the structure and may reduce the reliability of the scale [26]. Therefore, if the item-total correlation coefficient is below .30, it should be considered problematic and either modified or removed from the scale [41, 48].

Table 2. Item means and item total correlations and normal distribution.

No	x	sd	S	K	ITC	No	x	sd	S	K	ITC
i1	2.86	1.01	.154	1.083	.413	**i5**	2.50	1.02	-1.113	.084	.373
i2	3.42	.94	-1.073	-.634	.432	**i6**	2.94	1.11	-.264	-1.463	.542
i3	3.16	1.07	.624	1.308	.499	**i7**	3.15	1.05	-.596	-1.300	.479
i4	2.52	1.10	.107	-1.329	.363	**i8**	2.89	1.09	-.219	-1.015	.531

X: Mean; sd: Standard deviation; S: Skewness; K: Kurtosis; ITC: Item-total correlation; Analyses were performed with sample A (n:340).

The mean values of the items in the scale range from 2.50 to 3.42. This indicates that the scale items were answered by participants over a wide range of distributions, and there is no significant ceiling or floor effect on the scale. When the indicators of normal distribution were examined, it was observed that the skewness values of the items ranged from -1.113 to .624; and the kurtosis values ranged from -1.463 to 1.308. Since these values are acceptable for normal distribution [43], it can be said that all items of the scale meet the assumption of normal distribution. Item-total correlation (ITC) values range from .363 to .542. These values indicate that each item significantly contributes to the construct measured by the scale. According to the literature, ITC values above .40 indicate strong item discrimination, while values in the range of .30–.40 are considered acceptable [47, 49]. In this context, it is understood that all items of the scale are psychometrically functional and appropriately represent the target construct (Table 2).

Item Discrimination Analysis

To determine the item discrimination of the IDRS-SF, the mean item scores of participants in the top 27% (upper group, n = 92) and bottom 27% (lower group, n = 92) based on total scores were compared. Independent samples t-tests were applied in the analyses.

Table 3. Comparison of the upper and lower 27% groups (n:92)

Item	Group	X	Sd.	t	p	Item	Group	X	Sd.	t	p
i1	**Upper**	4.0	.00	74.696	.000	**i5**	**Upper**	3.8	.42	37.529	.000
	Lower	1.92	.27				**Lower**	1.3	.47		
i2	**Upper**	4.0	.00	74.696	.000	**i6**	**Upper**	4.0	.00	47.335	.000
	Lower	1.93	.26				**Lower**	1.7	.47		
i3	**Upper**	4.0	.00	50.645	.000	**i7**	**Upper**	4.0	.00	51.997	.000
	Lower	1.8	.42				**Lower**	1.8	.41		
i4	**Upper**	4.0	.00	60.583	.000	**i8**	**Upper**	4.0	.00	46.913	.000
	Lower	1.3	.44				**Lower**	1.6	.48		

Analyses were performed with sample A (n:340).

When the findings are examined, it is seen that the upper group means are significantly higher than the lower group means for all items. The t-values for upper-lower group comparisons range from 37.529 to 74.696, and the group differences were determined to be statistically significant for all items ($p < .001$). These results show that all items of the scale successfully differentiate between high and low scoring groups. Overall, the findings reveal that the scale has a strong discriminatory property at the item level. Both the very high t-values and the significant p-values of all items support the fact that the scale items work consistently with the measured construct (Table 3).

Construct validity

Data obtained from a sample of 363 individuals were subjected to CFA for structural validation of the IDRS-SF (Figure 2). CFA is used to test the accuracy of the previously determined factor structure [50].

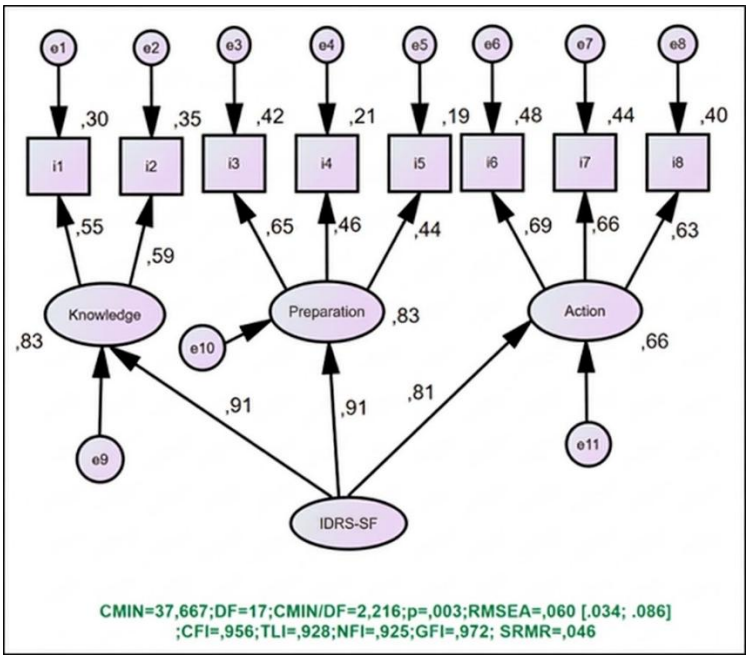


Figure 2. IDRS-SF Construct Validity

Confirmatory factor analysis (CFA) of the three-factor (Knowledge, Preparation, Action) and second-level single-factor structure of the IDRS-SF was tested using the maximum likelihood method (Figure 1). The fit indices obtained from the CFA (CMIN = 37.667; sd = 17; CMIN/DF = 2.216; $p < .01$; RMSEA = .060, 90% CI [.034–.086]; CFI = .96; TLI = .93; NFI = .93; GFI = .97; RMR/SRMR = .046) revealed that the model showed an acceptable level of fit [43, 51]. When the standardized factor loadings were examined, it was observed that the factor loadings of the items measuring the Knowledge dimension ranged between .55 and .59. Factor loadings for items related to the preparation dimension ranged from .44 to .65; and for items related to the action dimension, they ranged from .63 to .69. All factor loadings were found to be statistically significant ($p < .001$). When the second-level factor model was examined, it was observed that the IDRS-SF explained the Knowledge ($\beta = .91$), Preparedness ($\beta = .91$), and Action ($\beta = .81$) factors at a high level; the explained variance ratios for these factors were 83%, 84%, and 66%, respectively. This result supports the idea that individual disaster resilience can be considered as a holistic structure organized around these three sub-dimensions. Modification indices were examined, but no need was found to add a significant error covariance that could be theoretically justified. It was also determined that the error variances of all items in the model were within acceptable limits.

Reliability

The reliability of IDRS-SF was evaluated by examining Cronbach's alpha, Spearman–Brown split-half reliability coefficient, Guttman Split-Half, and McDonald's Omega (ω) values. In split-half reliability, the correlation between the two halves is expected to be as high and significant as possible.

Table 4. Reliability findings of the IDRS-SF

Factor	Cronbach α	Split-half	Guttman	Omega (ω)
F1. Knowledge	.49	.59	.32	.49
F2. Preparation	.54	.51	.44	.52
F3. Action	.70	.65	.61	.70
IDRS-SF	.76	.71	.75	.74

r: Spearman Brown Coefficient

The internal consistency of IDRS-SF was evaluated using Cronbach's alpha, Spearman–Brown split-half, Guttman split-half, and McDonald's omega coefficients (Table 4). According to the analysis results, in the Knowledge sub-dimension, Cronbach α = .49, Guttman split-half = .32, Spearman–Brown split-half = .59, and McDonald's ω = .49 were found. In the Preparation sub-dimension, Cronbach α = .54, Guttman split-half = .44, Spearman–Brown split-half = .51, and McDonald's ω = .52 were found; and in the Action sub-dimension, Cronbach α = .70, Guttman split-half = .61, Spearman–Brown split-half = .65, and McDonald's ω = .70 were determined. In the evaluation conducted on a total scale basis, Cronbach α = .76, Guttman split-half = .75, Spearman–Brown split-half = .71, and McDonald's ω = .74 show that the scale exhibits a good level of internal consistency at the total score level. Due to the small number of items, the reliability coefficients obtained at the sub-dimension level were not found to be sufficient. However, it is understood that the IDRS-SF is a reliable measurement tool at the total score level [52, 53, 54].

Test-retest reliability and external validity

The time measurement invariance and external validity of IDRS-SF were examined. The analyses at this stage were performed with Sample B (n:230).

Test-Retest Reliability

Test-retest reliability analysis was performed to evaluate the stability of the IDRS-SF over time. The scale was administered again to the same group of participants three weeks after the first application, and the Intraclass Correlation Coefficient [ICC(2,1)] was calculated based on the Two-Way Random Effects Model (Absolute Agreement) [55, 56]. In addition, Pearson product-moment correlation coefficients were also evaluated [49, 57].

Table 5. Test-Retest Reliability Results

Factor	ICC(2,1)	95% CI	*p*	Pearson *r*	Stability
F1. Knowledge	.80	[.73-.84]	< .001	.74	Good
F2. Preparation	.79	[.70-.83]	< .001	.73	Good
F3. Action	.80	[.72-.83]	< .001	.77	Good
IDRS-SF	.82	[.77-.87]	< .001	.79	Good

Analyses were performed with sample B (n:230). Intraclass correlation coefficients (ICC) were computed using the Two-Way Random-Effects Model (Absolute Agreement) approach. Interpretation criteria follow Koo and Li [56]: ICC < .50 = poor, .50–.75 = moderate, .75–.90 = good, and > .90 = excellent reliability

To evaluate the long-term stability of the IDRS-SF, test-retest reliability was calculated, and Intraclass Correlation Coefficient (ICC) values were obtained using the Two-Way Random Effects Model (Absolute Agreement) approach. Analyses were performed with sample B (n = 230). When the findings were examined, the ICC for the Knowledge subscale was .80, 95% CI [.73–.84], for the Preparation subscale was .79, 95% CI [.70–.83], and for the Action subscale was .80, 95% CI [.72–.83], and the calculated ICC for the total score of the scale was .82, 95% CI [.77–.87], indicating that the IDRS-SF generally offers a good level of test-retest reliability [56]. Furthermore, Pearson correlation analyses revealed significant and strong relationships at the Knowledge (r = .74), Preparation (r = .73), Action (r = .77), and total score (r = .79) levels ($p < .001$). Considering these findings together, it can be said that the IDRS-SF produces consistent measurements in applications conducted at different times and is a reliable measurement tool (Table 5).

External Validity (Criterion / Convergent Validity)

Criterion-related validity is assessed by examining the relationship of a developed scale with a valid and reliable measurement tool known to measure similar or related constructs [58]. In this context, BPSS [28, 29] and BPRS [30, 31] were used to determine the external validity of IDRS-SF.

Table 6. Criterion Validity Results of IDRS-SF

	1	2	3	4	5	6
F1. Knowledge	**1**					
F2. Preparation	.458**	**1**				
F3. Action	.513**	.429**	**1**			
4. IDRS-SF	.763**	.795**	.840**	**1**		
5. BPSS	.259**	.200**	.314**	.323**	**1**	
6. BPRS	.263**	.271**	.218**	.308**	.394**	**1**

**Correlation is significant at the 0.01 level (2-tailed); Analyses were performed with sample B (n:230). The scales used were: Individual Disaster Resilience Scale-Short Form (IDRS-SF); Perceived Social Support Scale (PSSS); and Psychological Resilience Scale (PSRS).

The criterion validity of the Disaster Resilience Scale (DRS) was assessed through its relationships with perceived social support and psychological resilience. Analyses were performed on sample B (n = 230). The results showed that the total DRS-DR score was significantly and positively correlated with the Brief Perceived Social Support Scale (BPSS) ($r = .323$, $p < .01$). Similarly, a significant and positive correlation was found between the total DRS-DR score and the Brief Psychological Resilience Scale (BPSS) ($r = .308$, $p < .01$). These findings indicate that as individual disaster resilience increases, levels of perceived social support and psychological resilience also increase. When examined at the sub-dimension level, the Knowledge sub-dimension showed low-level but significant positive correlations with BPSS ($r = .259$, $p < .01$) and BPSS ($r = .263$, $p < .01$). The Preparation sub-dimension similarly showed significant positive correlations with the BPSS ($r = .200$, $p < .01$) and BPRS ($r = .271$, $p < .01$). The Action sub-dimension, on the other hand, showed significant relationships with the BPSS ($r = .314$, $p < .01$) and BPRS ($r = .218$, $p < .01$). When these findings are evaluated together, it can be said that the IDRS-SF shows a significant relationship with psychological constructs that are both consistent with the internal structure and theoretically related, and therefore has a good level of criterion validity (Table 6).

Discussion

This study aimed to adapt the "Disaster Resilience Scale for Individuals – Short Form" developed by Matsukawa et al. [1] to Turkish culture as the Individual Disaster Resilience Scale-Short Form (IDRS-SF) and to examine its psychometric properties in order to assess individuals' preparedness, behavior, and adaptation capacities in the face of disasters. This study revealed that the model fit index of the IDRS-SF showed an acceptable level of fit [43, 51]. It

demonstrates that the three-factor structure of the IDRS-SF is also valid in the Turkish sample, that the items represent the relevant factors meaningfully and adequately, and that the model generally shows a good/acceptable level of fit [59, 60, 61]. The model fit indices of the original scale show an acceptable level of fit [1]. It was determined that the model fit indices of the individual disaster resilience scales developed by DiTirro [62], Yayla and Kıvanç [63], and Şen [64] showed an acceptable level of fit. Furthermore, the model fit indices of the elderly disaster resilience scale developed by Atalay and Zeybek [65] also showed an acceptable level of fit.

In this study, the IDRS-SF scale exhibits good internal consistency at the total score level, with Cronbach α = .76, Guttman split-half = .75, Spearman–Brown split-half = .71, and McDonald's ω = .74. Furthermore, the fact that the Cronbach α coefficient for the sub-dimensions of the scale remains below .70 can be explained by the limited number of items in each sub-dimension. This is because the Cronbach α coefficient is sensitive to the number of items in the scale and tends to produce lower values as the number of items decreases [66, 67]. While a reliability coefficient above .70 is desirable for a Likert-type scale, it should ideally be close to 1 [53, p. 109; 68, p. 49]. The Cronbach α value was not calculated for the original scale. The Cronbach α of the elderly disaster resilience scale by Atalay and Zeybek [65] is .925. The Cronbach α of the individual disaster resilience scale by DiTirro [62] is .895. The fact that the Cronbach α value of the individual disaster resilience scale by Şen [64] is greater than .70 indicates that the scales used are reliable. The Cronbach α of the individual disaster resilience assessment scale by Yayla and Kıvanç [63] is .839.

In this study, the calculated ICC for the total IDRS-SF score was .82, with a 95% CI [.77–.87], indicating that IDRS-SF generally offers a good level of test-retest reliability [56]. Furthermore, Pearson correlation analyses revealed significant and strong relationships at the Knowledge (r = .74), Preparedness (r = .73), Action (r = .77), and total score (r = .79) levels ($p < .001$). In the study by Matsukawa et al. [1], the correlation coefficient between the scores of the original (24 items) and abbreviated (8 items) versions of the Individual Disaster Resilience Scale was found to be very high and statistically significant (r = 0.973, N = 10.000, p = 0.000, 95% CI [0.974, 0.972]).

This study showed that the total score of the Individual Disaster Resilience Scale (IDS-S) was significantly and positively correlated with the Brief Perceived Social Support Scale (BPSS) ($r = .323$, $p < .01$). Similarly, a significant and positive correlation was found between the total score of the IDS-S and the Brief Psychological Resilience Scale (BPRS) ($r = .308$, $p < .01$). The external validity of the Individual Disaster Resilience Scale developed by Matsukawa et al. [1], which was also the focus of this study, was not evaluated. Similarly, the external

validity of the Individual Disaster Resilience Scale was not evaluated in the studies by Atalay and Zeybek [65], Yayla and Kıvanç [63], DiTirro [62] and Şen [64].

Limitations

While this research presents important findings, it has some limitations. Firstly, it was observed that the reliability coefficients (Cronbach α and McDonald's ω) of the sub-dimensions of the IDRS-SF were relatively low, especially in the Knowledge and Preparation sub-dimensions. This situation may increase the risk of measurement error when using the sub-dimensions individually; therefore, it is recommended that future studies evaluate the scale primarily based on the total score. Researchers using the scale should consider this. Secondly, confirmatory factor analysis (CFA) was only tested on a single sample, and multiple group confirmatory factor analysis (MG-CFA), which allows for testing the structural validity of the scale according to different demographic variables (e.g., gender, disaster experience, age groups), was not applied. Therefore, the lack of verification of measurement invariance is a significant methodological limitation of the study. Third, the study was conducted only on the general adult population, and clinical groups, professionals with high disaster experience (e.g., healthcare workers, search and rescue teams), or individuals with varying levels of disaster experience were not assessed separately. This makes it difficult to determine the scale's performance in different groups. Finally, since the data collection process relied on an online self-report form may involve social desirability and perceptual bias, the use of observational or performance-based measures, teacher/expert assessments, or qualitative data sources could broaden the scope in the future. Given these limitations, while the Turkish form of the IDRS-SF appears to be a valid and reliable instrument within the framework of the current findings, testing the scale with different samples, methods, and analysis techniques will provide stronger evidence in the field.

Conclusion

This study aimed to adapt the short form of the Individual Disaster Resilience Scale developed by Matsukawa et al. [1], into Turkish and to examine its psychometric properties. As a result of comprehensive validity and reliability analyses, it was determined that the IDRS-SR offers a three-dimensional structure that reliably and validly measures individual disaster resilience in Turkish-speaking adults. In the first stage of the study, content validity analyses were performed, and all items were confirmed to be adequate in terms of content according to Aiken's V coefficients. Item analysis revealed that all items exhibited high discrimination, and item-total correlations and 27% upper-lower group comparisons indicated a strong internal

consistency of the scale. Confirmatory Factor Analysis (CFA) determined that the three-factor measurement model, consisting of Knowledge, Preparedness, and Action dimensions, exhibited acceptable fit indices. These findings suggest that individuals' cognitive knowledge levels regarding disasters, their preparedness tendencies, and their capacity to act during a disaster are structured as separate but related dimensions in the Turkish sample as well. Reliability analyses of the scale's total Cronbach α, McDonald's ω, Guttman, and split-half coefficients revealed that the IDRS-SF is a reliable measurement tool with sufficient internal consistency. Furthermore, the ICC values calculated within the scope of test-retest reliability showed that the scale's temporal stability was at a "good" level. In terms of criterion validity, the fact that the IDRS-SF showed positive and significant relationships with perceived social support and psychological resilience supported the scale's external criterion validity. Overall, this study reveals that the IDRS-SF is a psychometrically valid and reliable tool for measuring individual disaster resilience in Turkish culture. The scale evaluates individuals' characteristics regarding pre-disaster preparedness, behavior during a disaster, and post-disaster recovery processes in a multidimensional way, and serves as an important measurement tool that will contribute to disaster management, community mental health, public policy, and risk reduction efforts.

Author contributions

Kemal Torpuş: formal analysis; investigation; methodology; project administration; supervision; writing—original draft; and writing—review and editing. Gürkan Yılmaz: conceptualization; investigation; visualization; writing—original draft; and writing—review and editing. Yalçın Kanbay: conceptualization; formal analysis; methodology; writing—original draft; and writing—review and editing. Mehmet Kanat: conceptualization; visualization; writing—original draft; and writing—review and editing. Galip Usta: formal analysis; investigation; methodology; visualization; writing—original draft; and writing—review and editing.

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Data availability

The data can be provided upon reasonable request.

Disclosure statement

No potential conflict of interest was reported by the authors.

Declarations

Competing interests

The authors declare no competing interests.

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Guidelines for the Individual Disaster Resilience Scale – Short Form (IDRS-SF): The Individual Disaster Resilience Scale – Short Form (IDRS-SF) is an adapted measurement tool designed to assess the level of individual resilience to disasters in individuals aged 18 and over. During the adaptation process, content validity, translation-back-translation procedures, confirmatory factor analysis (CFA), internal consistency analyses (Cronbach α, McDonald's Omega), test-retest reliability (ICC), and item analysis were examined; as a result, it was determined that the scale offers a psychometrically valid and reliable structure within Turkish culture. The scale consists of three sub-dimensions and eight items, with a Cronbach α reliability coefficient of .76, a Guttman coefficient of .75, and a McDonald's Omega ω coefficient of .74. The Knowledge Dimension (items 1–2) assesses individuals' level of knowledge about disasters, risk awareness, and self-knowledge regarding pre-disaster actions. Statements in this dimension relate to having knowledge about types and effects of disasters and knowing appropriate behaviors. The Preparedness Dimension (items 3–5) measures the precautions individuals take before a disaster occurs, their preparedness behaviors, and their level of planning regarding how to act in a disaster situation. This dimension focuses on preparedness processes such as personal preparedness materials, family communication plans, and emergency strategies. The Action Dimension (items 6–8) assesses an individual's capacity for action and behavioral responses during and after a disaster. The statements in this dimension encompass actions aimed at panic control, rapid decision-making, and ensuring safety through appropriate behaviors during a disaster. The IDRS-SF consists of items answered using a 4-point Likert scale (1 = Not Appropriate, 2 = Somewhat Not Appropriate, 3 = Somewhat Appropriate, 4 = Appropriate), and there are no reverse-scored items on the scale. The total scale score is obtained by summing all items, and the raw score of the scale ranges from 8 to 32. Higher scores indicate higher levels of individual resilience to disasters.

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745 Appendıx 1. Individual Disaster Resilience Scale

	Individual Disaster Resilience Scale	**Not Appropriate**	**Somewhat Not Appropriate**	**Somewhat Appropriate**	**Appropriate**
	Knowledge				
1	I have sufficient knowledge about natural disasters such as earthquakes, tsunamis, and floods.				
2	Community-based interventions before a disaster also contribute to the post-disaster recovery process.				
	Preparation				
3	I discuss with my family and close relatives what I will do if a disaster occurs.				
4	I usually stock up on drinking water and emergency food supplies.				
5	The social support provided is sufficient for me to rebuild my life after a disaster.				
	Action				
6	I can take immediate action to save lives during an earthquake.				
7	I can undertake various tasks at a gathering center.				
8	I can accept changes in my environment after a disaster				

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