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Adaptation and Validation of the Bangla Resilience Evaluation Scale

Md. Shahinoor Rahman*, and Md. Nurul Islam

Abstract

Psychological resilience is one of the most important areas of study in positive psychology. A lot of research has been done on this construct in the Bengali population. Most research to measure the resilience of the Bangladeshi population has been conducted using a translated resilience scale. Although very few studies have been conducted examining the psychometric properties of the Bangla Resilience Evaluation Scale in Bangladeshi culture, they are not at all extensive. Therefore, the present study aimed to validate the Bangla Resilience Evaluation Scale (BRES) with comprehensive psychometric properties. This study was conducted through a cross-sectional survey design, which included 786 Bangladeshi adults aged 18 to 64 years. Exploratory factor analysis (EFA) considering sub-sample-1 (n = 400) revealed a single-factor structure for the BRES, which explained 62.53% of the total variance. The fit indices for the BRES obtained through confirmatory factor analysis (CFA) on subsample-2 (n=386) were found to be good ($\chi 2/df$=3.07, GFI=.967, CFI=.964, SRMR=.042, and RMSEA=.073). The single-factor structure of the BRES was similar to the Chinese version. Good internal consistency reliability (α=.874, ω=.875), and both convergent and discriminant validity were established in the BRES through various statistical analyses. Thus, the one-factor BRES can be used as a valid and reliable measure to assess the psychological resilience of the Bangladeshi population.

Keywords: BRES, psychological resilience, factorial validity, psychometric validation, Bangla adaptation

Department of Psychology, University of Chittagong, Bangladesh
* **Corresponding E-mail:** shahinpsy@cu.ac.bd

Introduction

Research indicates that the majority of individuals encounter at least one traumatic event during their lifetime (Bryant, 2019), including the loss of a loved one, natural disaster, serious accidents (industrial or other), interpersonal violence, and trauma of war. Despite the inherently upsetting nature of traumatic events, over 80% of individuals cope effectively and experience minimal impact from the adverse effects (Qing et al., 2022). This phenomenon is known as resilience, which is defined as the ability to recover from social disadvantages or extremely adverse conditions (Shi et al., 2021). It reflects a dynamic process involving behavioral adaptation, emotional regulation, and cognitive flexibility that enables people to thrive despite adversity. In both theoretical and applied domains, resilience is increasingly recognized as a protective factor against mental health disorders, such as depression, anxiety, and post-traumatic stress (Bonanno, 2004; Connor & Davidson, 2003).

While early conceptualizations of resilience focused on trait-like personal attributes, contemporary perspectives emphasize its process-oriented and context-sensitive nature. Researchers now recognize that resilience is shaped by a complex interplay of individual, relational, and sociocultural factors. As such, accurately measuring resilience requires tools that are both theoretically sound and culturally sensitive.

Various resilience scales were developed to measure psychological resilience, with limitations such as the Connor-Davidson Resilience Scale (Connor & Davidson, 2003), which contains 25 items with 5 factors. This scale has an inconsistent factor structure across cultures and mixes resilience with other traits such as hardiness and optimism. Next, the Resilience Scale for Adults (Friborg et al., 2006) was found to contain 33 items with 6 factors. But this scale is difficult to interpret, complex, and requires a high level of literacy. Then, the Brief Resilience Scale (Smith et al., 2008) was found, which is used globally and contains 6 items with one factor. But this scale is very narrow in focus: it only measures "bounce-back" ability. It doesn't assess deeper psychological resources. Next, one is the Wagnild and Young's Resilience Scale (Wagnild & Young, 1993). It consists of 25 items with 5 factors, but the items are somewhat abstract and based on individualistic values such as independence and self-control. Then, the Scale of Protective Factors (Ponce-Garcia et al., 2016) also measures resilience, which consists of 24 items with 4 factors; its short form contains 12 items. However, it emphasizes external (environmental) factors over internal resilience resources. Next, the Predictive 6-Factor Resilience Scale (Rossouw & Rossouw, 2016) contains 16 items. This scale has limited independent validation studies and a complex model with six overlapping domains. Then, the Ego Resilience Scale (Denovan et al., 2022) contains 14 items, but the revised version contains 10 items with 2 factors; more focus on personality flexibility rather than resilience per se. Finally, the Academic Resilience Scale (Cassidy, 2016) has 30 items and three factors; it is domain-specific (academic setting) and not appropriate for general population studies.

One widely used instrument in psychological resilience is the Resilience Evaluation Scale (RES), originally developed by Meer et al. (2018). This scale overcomes key limitations in existing above-resilience scales by offering theoretical clarity (self-efficacy

and self-confidence), a brief and practical format (9 items), an internal focus relevant across domains, a strong psychometric foundation, and cross-cultural adaptability. Unlike broader multidimensional measures, the RES provides a concise, psychometrically sound assessment of core evaluative beliefs that underpin resilient behavior. This RES scale has good reliability, factorial validity, and predictive utility in both clinical and non-clinical populations across diverse cultures.

Qing et al. (2022) translated the RES into Chinese and tested it on university students in a cross-cultural study. Their tested version was highly consistent (Cronbach's α = 0.92). The original two-factor structure was not apparent in their Chinese version. Instead, exploratory factor analysis revealed a one-dimensional structure with acceptable model fit indices (RMSEA = 0.081; CFI = 0.964). This scale's positive correlation with academic self-efficacy provided further evidence of construct validity. However, the absence of configural invariance indicates cultural variability in the conceptualization of psychological resilience (Qing et al. 2022). Primasari et al. (2022) conducted a psychometric evaluation of the RES among 327 Indonesian undergraduate students. They found that high internal reliability (α > .80) and the original two-factor structure through confirmatory factor analysis. The CFI, TLI, and RMSEA indicated a good model fit (CFI = 0.98, TLI = 0.96, and RMSEA = 0.05). Convergent validity was evidenced by meaningful associations with global functioning (r=.47), self-efficacy (r=.71), self-esteem (r=.65), and adapting coping (r=.31) (Primasari et al., 2022). Aghababaeian et al. (2024) validated the RES in the Persian language in the Iranian general population. Their translated version demonstrated high internal consistency (α =.82). Their exploratory factor analysis revealed two factors similar to the original scale. The confirmatory factor analysis's goodness of fit was satisfactory (RMSEA = 0.084, CFI = 0.98, SRMR = 0.064, and TLI = 0.97). The convergent validity of the RES with the Connor-Davidson Resilience Scale was r =.65 (Aghababaeian et al. 2024).

In conclusion, it can be said that despite its promise, the RES has not yet been adapted or validated in the Bangla language. Most resilience measures used in Bangladesh are either untranslated or lack rigorous psychometric validation. For example, the Bangla version of the Resilience Scale for Adults was translated into Bangla by Prokrity et al. (2018), but the psychometric properties were not documented well. Given the RES's conciseness, clarity, and solid theoretical foundation, it is well-suited for use with Bangladeshi populations.

Objectives of the Study

The current study aimed to investigate the psychometric qualities of the Bangla Resiliene Evaluation Scale (BRES) using item analysis, EFA, CFA, reliability, and validity.

Rationale of the Study

Bangladesh is a country that is frequently affected by natural disasters (floods, cyclones), economic instability, and widespread poverty (Mahmud et al., 2021). Thus, psychological Resilience is essential for psychological well-being and growth. In Bangladesh, mental health services are still expanding. So, culturally appropriate tools are urgently required to support both research and mental health intervention. If we adapt a practical and psychometrically sound Bangla version of RES, Bangladeshi researchers, clinicians, and mental health practitioners will benefit. Furthermore, it contributes to the global literature on the cross-cultural validity of psychological constructs and promotes culturally informed resilience research in low- and middle-income countries.

Method

Participants

This study included a total of 786 Bangladeshi adults using a convenience sampling method. Their age range was from 18 to 64 years (M = 35.25, SD = 13.26). Apart from the total sample, 50 participants participated in this study separately to help determine the scale's translation reliability. To perform EFA and CFA, different data sets were used. The total sample was divided into two subsamples (one with 400 participants and the other with 386). Distributions of the sample on key variables are presented in Table 1. Inclusion criteria required participants who were above the age of 18 and had no serious illness. Participants with a history of serious illness (physical or psychiatric), and incomplete data were excluded from the study.

Table 1
Distribution of Participants by Socio-Demographics and Sub-Sample (n=786)

Demographic	Total (n=786)	Subsample 1 (n=400)	Subsample 2 (n=386)	Sig. test
	n(%)	n(%)	n(%)	
Gender				
Male	400 (50.9)	244(61.0)	236(61.1)	χ^2=.01, df=1, p=.968
Female	386 (49.1)	156(39.0)	150(38.9)	
Residence				
Urban	628 (79.9)	318(79.5)	310(80.3)	χ^2=.08, df=1, p=.777
Rural	158(20.1)	82(20.5)	76(19.7)	
Occupation				
Agriculture	16 (2.0)	8(2.0)	8(2.1)	χ^2=1.44, df=6, p=.964
Business	110(14.0)	60(15.0)	50(13.0)	

Demographic	Total (*n*=786)	Subsample 1 (*n*=400)	Subsample 2 (*n*=386)	Sig. test
	n(%)	*n*(%)	*n*(%)	
Service holder	240(30.5)	120 (30.3)	120(31.1)	χ^2=1.44, *df*=6, *p*=.964
Job seeker	30 (3.8)	16(4.0)	14(3.6)	
Student	228(29.0)	114(28.5)	114(29.5)	
Housewife	112 (14.2)	59(14.8)	53(13.7)	
Others	50 (6.4)	23(5.8)	27(7.0)	

Instruments

Three psychological assessment tools and a personal information form were used in this research. One assessment tool was used to measure psychological resilience, and the other two were used to measure the other two constructs.

Bangla Resilience Evaluation Scale (RES)

The English original Resilience Evaluation Scale (Meer et al., 2018) is a brief, self-report measure of Psychological Resilience, consisting 9 items rated on a 5-point Likert-type scale (0 = completely disagree to 4 = completely agree). This scale has two components: self-efficacy and self-confidence. For the present study, the RES was translated into Bangla following the guidelines by the International Testing Commission (Hernández et al., 2020).

Psychological Well-being (PWB) Scale

The Bangla version of the WHO-5 Well-Being Index (Faruk et al., 2021) was used in this study, which was originally developed by WHO (1998). This scale includes 5 items with a 6-point Likert-type scale (0 = none of the time, 5=All of the time). The minimum possible score in this scale is 0, while the maximum score could be 25. Higher scores indicate better psychological well-being. The cut-off point of this scale is 13, which means a score below 13 indicates poor well-being. The test-retest reliability of the scale was 0.713. The convergent and divergent validity of the scale were found to be good.

Cognitive Functioning Self-assessment Scale (CFSS)

The Cognitive Functioning Self-Assessment Scale was employed to measure the participants' cognitive impairment in this study. This scale consists of 18 items (e.g. ''I find it difficult to concentrate'') with a 5-point Likert-type scale (1=never to 5=always). The total score was calculated as the mean of the 18 items; this procedure allowed the total score to remain within the same score range of each item (1-5). A higher score indicates more cognitive impairment. The internal consistency (α) and Guttmann Split-Half reliability were 0.911 and 0.865, respectively.

Personal Information Form (PIF)

A PIF was given to all the participants along with the above questionnaire to collect data on socio-demographic variables such as gender, age, place of residence, and occupational status.

Procedure

Participants were given an informed consent form at the start of the study, which included information about the study's purpose, confidentiality and ethics, risks and benefits, and their freedom in this research. Before participating in the study, they signed a written 'informed consent form'. The overall study procedure for this study was facilitated by a trained individual with a psychology degree. After receiving the 'informed consent form' from the participants, a set of questionnaires was distributed to each participant individually. Participants were instructed to carefully read each item and respond by marking a tick (✓) on one of the answer alternatives. Finally, after finishing, all the participants were warmly thanked for their cooperation.

Cross-cultural Translation of the BRES

The RES was methodically translated into Bangla from its original English version. The multi-stage procedure suggested by Sousa and Rojjanasrirat (2011) was followed in the translation and pertinent cultural adaptation process.

First, three multilingual translators worked individually to translate English into Bangla. All translators are native Bangla speakers who speak and read English fluently.

Second, the first author, a native Bengali speaker, compared the three versions of the forward translations. Ambiguities and discrepancies in words, sentences, and meaning between the three versions were discussed in a committee constituted only by academic members from the psychology department and co-authors. After that, translators of the forward translation worked together to resolve the noted ambiguities and discrepancies, resulting in a preliminary translated version of BRES.

Third, another multilingual translator reverse-translated the previously translated Bangla version into English. Fourth, the author and co-author reviewed the back translation to the original RES to ensure conceptual, semantic, and content consistency between the two English versions.

The next and final step was to conduct an online pilot test among ten Bengali-speaking adults, representing the target group of interest for future use of the BRES. Participants were asked to answer the BRES without viewing the English version in order to facilitate cultural adaptation.

Later, they were asked to provide feedback on the instructions' clarity, answer structure, and items. Feedback indicated that the BRES was simple to understand, readable, and quick to answer.

Results

Item Analysis

The corrected item-total correlations for the BRES scale items ranged from .521 to .654 (Table 2). The 9 items from the original RES received inclusion in the BRES because they exhibited acceptable corrected item-total correlations (above .199; Hobart and Cano, 2009). Two correlational associations were performed between BRES items. One was the inter-item correlation, which indicated that each item on the scale was positively associated with the others (Table 2). The other one was the association of individual item scores with their related factor scores. Each item was highly and positively associated with its factor score, as well as with the other items assessing the same construct (Table 2). Mean inter-item correlation is .437, indicating sufficient item homogeneity without excessive redundancy. Item-total correlations ranging from .521 to .654, all are acceptable based on the criterion of.199 suggested by Hobart and Cano (2009).

Table 2

Inter-Item Correlations and Descriptive Statistics of Scale Items (n=786)

	Inter-item correlations								Descriptive statistics				r_{iT}
Item	R1	R2	R3	R4	R5	R6	R7	R8	*M*	*SD*	*Skew.*	*Kurt.*	
R1									2.46	1.04	-.19	-.63	0.607
R2	.400**								2.68	1.16	-.47	-.88	0.650
R3	.411**	.545**							2.62	1.09	-.40	-.68	0.647
R4	.339**	.517**	.454**						2.75	1.02	-.38	-.68	0.591
R5	.407**	.440**	.495**	.475**					2.54	1.08	-.42	-.51	0.608
R6	.380**	.591**	.528**	.538**	.454**				2.77	1.04	-.39	-.71	0.654
R7	.542**	.445**	.410**	.364**	.466**	.434**			2.57	1.11	-.28	-.76	0.633
R8	.467**	.349**	.429**	.293**	.317**	.325**	.428**		2.43	1.13	-.31	-.67	0.521
R9	.510**	.404**	.390**	.400**	.415**	.451**	.509**	.405**	2.59	1.05	-.30	-.49	0.610

Note. Skew. =Skewness; Kurt. =Kurtosis, riT = Item total correlations.

**p< .01.

Exploratory Factor Analysis (EFA)

To determine whether the current data are appropriate for EFA, a sampling adequacy test, known as the KMO (Kaiser-Meyer-Olkin), was used. The observed KMO value of .904 exceeded the recommended KMO value of .600 (Tabachnick & Fidell, 2013), indicating that the current data were adequate for factor analysis. The Bartlett's test of sphericity (χ^2= 1434.33, df=36, p<.01) was also calculated, which indicates the suitability of factor analysis in the present sample. Shared variance by commonalities (ranging from .316 to .516) indicated that the factor analysis can be carried out with BRES data.

Table 4

Confirmation of Number of Factors for BRES by Exploratory Factor Analysis (EFA) and Minimum Average Partial (MAP) Test (Subsample-1, N=400)

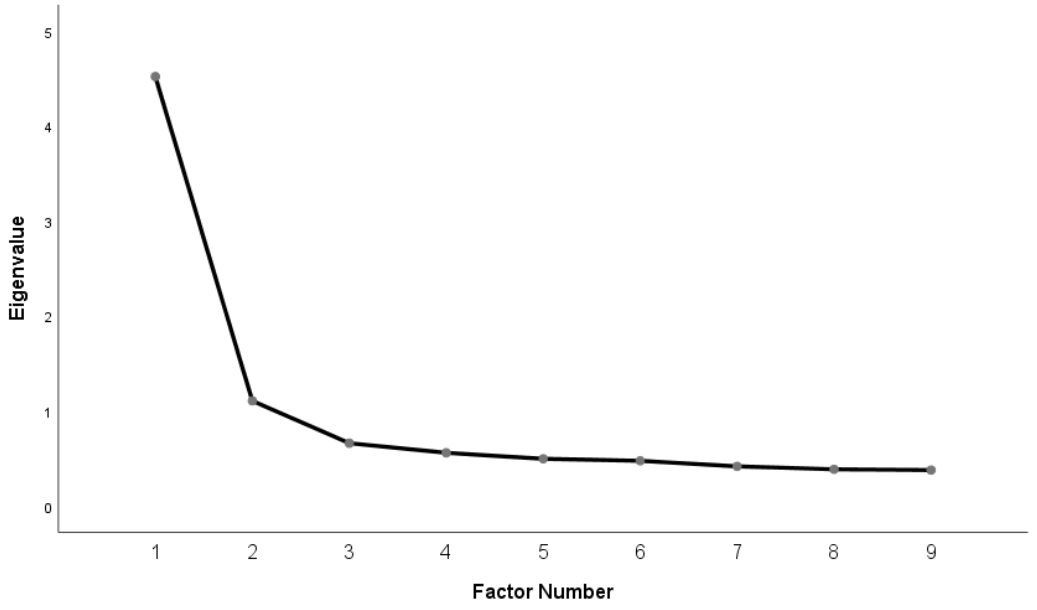
Factor structure by EFA				Confirmation of factors by MAP test		
Item	h^2	*F1*	*F2*		Average squared partial correlation	Average 4th power partial correlation
R4	.424	**.799**	-.119	.0000	.1993	.0455
R6	.516	**.775**	.015	**1.0000**	**.0351**[a]	**.0023**[b]
R2	.493	**.722**	.051	2.0000	.0403	.0042
R5	.421	**.607**	.110	3.0000	.0723	.0185
R3	.455	**.596**	.147	4.0000	.1133	.0306
R1	.447	-.060	**.827**	5.0000	.1761	.0673
R8	.316	-.038	**.641**	6.0000	.2791	.1364
R9	.439	.167	**.582**	7.0000	.4582	.3255
R7	.442	.195	**.565**	8.0000	1.0000	1.0000
Eigenvalues (>1)		4.52	1.11			
Variance by factor (%)		50.23	12.30			
Total variance (%)		62.53				
KMO		.904				
Bartlett's sphericity test		χ^2=1434.33, *df*=36, *p*<.01				

Note. KMO= Kaiser-Meyer-Olkin; h2=Communality.
Extraction method: Principal Axis Factoring; Rotation method: Direct Oblimin with Kaiser Normalization

a & b = both the smallest average squared partial correlation and the smallest average 4th power partial correlation indicate a single factor for the scale

Figure 1

A Scree Plot Depicting the Factors of BRES based on Eigenvalues



An EFA was performed on subsample 1 *(N* = 400) using principal axis factoring and the direct oblimin rotation method. Based on eigenvalues, the BRES revealed a two-factor structure. A scree plot revealed a clear two-factor structure of the BRES (Figure 1). The BRES's two-factor structure explained 62.53% of the total variance, with factors 1 and 2 accounting for 50.23% and 12.30% of the variance, respectively (Table 4). The BRES extracted 9 items into two factors, which were similar to the factor structure of the original scale. The BRES's two-factor structure revealed the loading of 5 items (items 2, 3, 4, 5, and 6) on factor 1 (self-efficacy) and 4 items (items 1, 7, 8, and 9) on factor 2 (self-confidence).

Although this scale was originally a two-factor scale, in some cultures (such as Chinese), it had a one-factor structure. Thus, we checked our data using the Minimum Average Partial (MAP) test to determine whether our BRES was unidimensional or bidimensional. In contrast, the MAP test revealed that one factor was best suited to our culture. The MAP test results revealed that the average squared partial correlation and average 4th power partial correlation were the smallest for one factor structure (see Table 4). That clearly indicates that our BRES scale is better suited for one dimension of our culture rather than two factors.

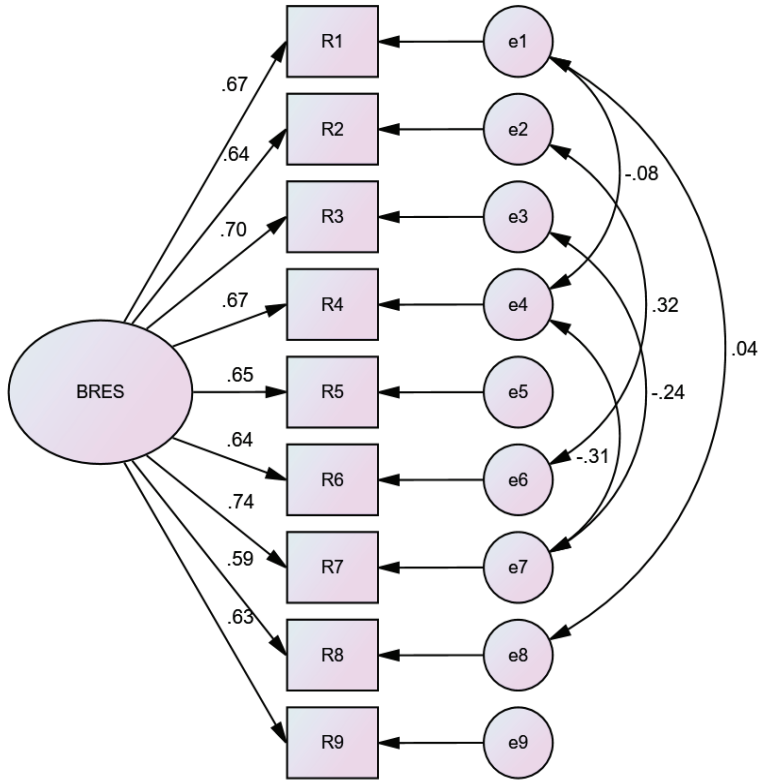
Confirmatory Factor Analysis (CFA)

Since the MAP test showed one factor structure for BRES. Whether this one-factor scale shows good fits through the CFA model with correlated error terms. The model fit index

of the single-factor structure of the BRES was revealed by the CFA result for subsample 2 (N=386): χ2/df=3.07, GFI= .967, CFI=.964, SRMR = .042, RMSEA=.073 (90% *CI*: .054, 0.94). An acceptable model fit summary was estimated in the one-factor CFA model of the BRES, according to the cutoff ratio of Chi-square and df ($\chi^2/df \leq 5$), Goodness of Fit Index (GFI ≥ .95), Comparative Fit Index (CFI ≥ .90), Standard Root Mean Square Residuals (SRMR ≤ .08), and Root Mean Square Error of Approximation (RMSEA ≤ .08) (Browne & Cudeck, 1992; Hu & Bentler, 1999; Schermelleh-Engel et al., 2002). Thus, the CFA model confirmed 9 items for the BRES based on a single independent factor. Beyond the regression values of the scale items, some correlations between error variances were considered to establish the good fit of the one-factor CFA model of the BRES. When considering correlations between error variances, correlations whose modification index value was greater than or equal to 8 were considered.

Figure 2

A One-factor CFA Model of BRES (Subsample 2, n=386)



Reliability Analysis

Two types of reliability were performed in the present study. First, reliability was a Cronbach's alpha (α) and McDonald's omega (ω) (i.e., internal consistency between the scale items) was determined in the full scale. Cronbach's alpha (α) is .874, and McDonald's omega (ω) is .875, which were obtained on the total scale score (see Table 5). Alpha and omega greater than .70 indicate good internal consistency of scale items (George & Mallery, 2019; Wuang et al., 2011), and the higher the Cronbach's alpha, the more reliable the generated scale is. Second, A two-week test-retest reliability study was also conducted for the BRES scale. The test-retest value (r=.721) demonstrated that the BRES scale was consistently applicable to over-time stability.

Table 5

Internal Consistency and Test-Retest Reliability of the BRES (n=786)

Internal consistency reliability		Test-retest reliability, *r* (2-week interval and sample size, *n*=50)
Cronbach alpha (α)	McDonald's omega (ω)	
.874	.875	.721**

Note. **$p < .01$.

Convergent and Discriminant Validity

Validity refers to the scale's strength, or the ability to measure what it is intended to measure. The validity of the BRES refers to the scale's ability to measure Bangladeshi people's psychological resilience. This study assessed the convergent and discriminant validity. Convergent validity of the BRES was administered with the Bangla version of the WHO-5 Well-Being Index (Faruk et al., 2021). The BRES total score and the Bangla WHO-5 PWB Index showed a moderate positive association ($r = .354$, $p < .01$). Discriminant validity was assessed using the Bangla-translated version of the Cognitive Impairment Scale (Rahman, 2023). A significant negative association ($r = -.166$, $p < .01$) was discovered between the total score of BRES and the Bangla Cognitive Impairment Scale. These two correlations demonstrate the convergent and discriminant validity of BRES (see Table 6).

Table 6

Correlation of BRES with other constructs considered in the study (n=786)

	Resilience scale (BRES)
Psychological Well-Being Scale	.354**
Cognitive impairment scale	-.166**

Note. **$p < .01$.

Convergent and discriminant validity are further assessed through some statistical indicators (Table 7). Most of the evaluation criteria for BRES found above the cut-off point (Hair et al., 2019), indicating a satisfactory level, except AVE. According to Hair et al. (2019), an AVE value less than 0.5 may indicate construct validity issues, implying that the latent variable explains less than half of the variance in the indicators. However, AVE values greater than 0.40 are acceptable if the composite reliability (CR) exceeds .70, as suggested by Fornell and Larcker (1981) and Maruf et al. (2021). In our data, CR is found to be .88, which is above .70. Thus, the AVE value of our data is also acceptable.

Table 7
Convergent and discriminant validity of the BRES based on data from CFA (sub-sample 2, n=386)

Evaluation criteria	Statistic	Cut-off criteria	Confirmation of validity
Composite reliability (CR)	.88	CR ≥ .70	Convergent
Average variance extraction (AVE)	.47	AVE ≥ .50	Convergent
Average shared variance (ASV)	.01	ASV < AVE	Discriminant
Maximum shared variance (MSV)	.02	MSV < AVE	Discriminant

Measurement Invariance Test

The BRES has been widely administered to people from different socio-economic-demographic backgrounds under the assumption that it measures resilience equally across different population groups. Therefore, we wanted to know whether the BRES scale is invariant for gender and residence in our Bangladeshi population. Five comparative models (i.e., configural, measurement weights, measurement intercepts, measurement residuals, and structural covariance) were considered for the invariant test measurements. For comparison of models, values of fit indices (e.g., chi-square, CFI, RMSEA) and invariant values of $\Delta CFI \leq -.01$ and $\Delta RMSEA \leq .015$ (Chen, 2007) were used. Considering all invariance results, the comparison models did not exhibit any meaningful reduction in model fit indices. Thus, the one-factor structure of BRES was invariant based on gender and residence (see Table 8).

Table 8

Measurement Invariance Test of BRES by Gender and Residence (n=786)

Variable	Model	Model fit						Model comparison*	
		χ^2	*DF*	χ^2/DF	*CFI*	*RMSEA* **(90% *CI*)**		*ΔCFI*	*ΔRMSEA*
Gender	M1	179.307	44	4.075	0.950	0.063 (.053-.072)			
	M2	186.637	52	3.589	0.951	0.057 (.049-.066)	M1-M2	-0.001	0.006
	M3	195.195	61	3.2	0.951	0.053 (.045-.061)	M2-M3	0.000	0.004
	M4	195.3	62	3.15	0.951	0.052 (.044-.061)	M3-M4	0.000	0.001
	M5	231.874	76	3.051	0.943	0.051 (.044-.059)	M4-M5	0.008	0.001
Residence	M1	183.721	44	4.175	0.947	0.064 (.054-.073)			
	M2	197.913	52	3.806	0.945	0.060 (.051-.069)	M1-M2	0.002	0.004
	M3	249.343	61	4.088	0.929	0.063 (.055-.071)	M2-M3	0.016	-0.003
	M4	249.468	62	4.024	0.929	0.062 (.054-.070)	M3-M4	0.000	0.001
	M5	376.665	76	4.956	0.887	0.071 (.064-.078)	M4-M5	0.042	-0.009

Notes. M1 = Unconstrained model; M2 = Measurement weights; M3 = Measurement intercepts; M4 = Structural covariances; M5 = Measurement residuals; Δ= Change in any variable quantity.

*Cut-off criteria for model comparison: ΔCFA: <.01 and ΔRMSEA: <.015 (Chen, 2007)

Discussion

The purpose of this present study is to assess the psychometric properties of the BRES among the Bangladeshi population by examining item characteristics, factor structure, reliability, and validity. The findings provide strong evidence that the BRES is an appropriate tool for evaluating psychological resilience in Bangladeshis.

The exploratory factor analysis initially showed a two-factor structure (Factor 1: self-efficacy and Factor 2: self-confidence), which is consistent with the original RES. These factors collectively explain 62.53% of the total variance. This finding suggested a strong construct representation. However, the MAP test indicated that a unidimensional structure was more appropriate for the Bangladeshi cultural context. This finding contradicts the original proposed two-factor structure (Meer et al., 2018). However, our findings are consistent with those of Chinese culture (Qing et al., 2022), who found only one factor loaded in their validation study. The appearance of a unidimensional structure in the Bangladeshi context may reflect cultural interpretations of resilience that emphasize holistic, integrated adaptive capacities over separate elements of self-efficacy and self-confidence. In Bangladeshi culture, psychological constructs are frequently perceived as interdependent, with less emphasis on distinguishing between specific aspects of self-perception (Dai et al., 2024).

Multiple fit indices utilizing CFA revealed a satisfactory fit of the one-factor BRES model among the Bangladeshi population. The GFI, CFI, TLI, SRMR, and RMSEA values were all acceptable, supporting the single-factor CFA model. The model fit indices of the

BRES were in contradiction with previous researchers (Browne & Cudeck, 1992; Hu & Bentler, 1999; Schermelleh-Engel et al., 2002) but in line with Meer et al. (2018). Instead of assuming that Western-developed measurement models are universally applicable, this cultural adaptation highlights the significance of empirically testing factor structures across diverse populations. The MAP test provided critical evidence for determining the most efficient and culturally appropriate factor structure. This demonstrates the significance of employing multiple analytical approaches in cross-cultural validity research.

Items in the BRES have strong internal consistency. The whole BRES scale exhibited good Cronbach alphas (α) and McDonald omegas (ω) (both greater than 0.70), in contrast to the Cronbach alphas and McDonald omegas suggested by the researcher (George & Mallery, 2019; Wuang et al., 2011). These values exceed those reported in other RES validations, including the original English/Dutch version (α = .86-.87; van der Meer et al., 2018), the Indonesian version (α = .80; Primasari et al., 2022), and the Chinese version (α = .87; Qing et al., 2022). The high internal consistency indicates that the 9 items of the BRES reliably measure a cohesive construct at each administration. The scales' test-retest reliability over 2 weeks was also found to be good. This result was consistent with previous studies (Aghababaeian et al., 2024; Meer et al., 2018; Primasari et al., 2022).

The BRES demonstrated appropriate construct validity through both convergent and discriminant validity evidence. The moderate positive correlation with the Bangla WHO-5 Well-Being Index supports the convergent validity of the BRES scale, as resilience is theoretically and empirically associated with positive mental health outcomes (Primasari et al., 2022; Meer et al., 2018). This correlation magnitude is consistent with the expectation that resilience and well-being are related but distinct constructs. Resilience represents adaptive abilities, whereas well-being reflects the current psychological state. The significant negative correlation with cognitive impairment provides evidence of discriminant validity. This finding demonstrated that the BRES measures a construct distinct from cognitive functioning. The conceptual independence of resilience (a psychosocial adaptable skill) from cognitive abilities is adequately reflected by this low connection, even if it acknowledges possible indirect links through processes like problem-solving or adaptive thinking.

Furthermore, the scale showed sufficient composite dependability, above the suggested threshold. However, the AVE little lower and remained acceptable considering the strong CR. The AVE provides a plausible variance explanation for a small nine-item resilience assessment. The fact that ASV (.01) and MSV (.02) were significantly below the AVE further supported discriminant validity. Overall, these results showed that the BRES is suitable for the Bangladeshi population and has strong construct validity.

Contemporary resilience theory views resilience as both a stable trait-like capacity and a dynamic state-like process that shifts with life experiences (Primasari et al., 2022; Qing et al., 2022). The RES and its cultural adaptations, including the BRES, measure self-perceived resilience—individuals' confidence in coping with adversity—which naturally varies with recent events and contextual changes. Because resilience reflects an ongoing

interaction between personal resources and environmental demands (van der Meer et al., 2018). This is expected for brief self-report tools like the BRES that capture current perceptions rather than fixed traits.

Limitations and Future Directions

There are several limitations to our current investigation. First and foremost, the study used non-probability convenience sampling methods rather than probability sampling. That reduces the power of this investigation. Second, demographic characteristics were not precisely controlled in this study; therefore, significant deviations from population parameters were identified in various demographics, such as gender. In the future, one could perform the same analysis using probability sampling while controlling for demographic factors. Third, we discovered weaker discriminant validity in this study. In the future, one could include a more theoretically relevant measure of discriminant validity, such as neuroticism. Finally, the sample may not generalize to all Bangladeshi groups, and the study relied solely on self-report data. Thus, further work is needed to clarify the scale's factor structure and to examine predictive validity across diverse populations.

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Bengali Resilience Evaluation Scale (BRES)

আপনি নিজের সম্পর্কে কেমন ভাবেন এবং জীবনের খারাপ পরিস্থিতিতে স্বাভাবিকভাবে কেমন প্রতিক্রিয়া করেন তা নীচের কতগুলো উক্তির মাধ্যমে বর্ণনা করা হয়েছে। অনুগ্রহ করে প্রতিটি উক্তি আপনার জন্য কতটুকু প্রযোজ্য তা টিক চিহ্ন (✓) দিয়ে নির্দেশ করুন।

ক্রমিক নং	উক্তি	সম্পূর্ণ দ্বিমত	দ্বিমত	নিরপেক্ষ	একমত	সম্পূর্ণ একমত
১	নিজের উপর আমার আত্মবিশ্বাস আছে।	০	১	২	৩	৪
২	আমি সহজেই কঠিন পরিস্থিতিতে নিজেকে খাপ খাওয়াতে পারি।	০	১	২	৩	৪
৩	লক্ষ্য অর্জনে আমি দীর্ঘ সময় ধরে কাজে লেগে থাকতে পারি।	০	১	২	৩	৪
৪	জীবনে বাধা-বিপত্তি কারণে, আমি যে অবস্থায় থেমে গিয়েছিলাম, বিপত্তি শেষে সে অবস্থা থেকে আবার সহজেই নতুন করে জীবন শুরু করতে পারি।	০	১	২	৩	৪
৫	আমি দুর্ভাগ্য বা খারাপ অবস্থা থেকে সহজেই স্বাভাবিক অবস্থায় ফিরে আসতে পারি।	০	১	২	৩	৪
৬	অপ্রত্যাশিত সমস্যাগুলোকে আমি ভালোভাবে মোকাবেলা করতে পারি।	০	১	২	৩	৪
৭	আমি নিজেকে গুরুত্ব দেই।	০	১	২	৩	৪
৮	আমি একই সাথে অনেক কিছু সামলাতে পারি।	০	১	২	৩	৪
৯	আমার নিজের উপর ভরসা আছে।	০	১	২	৩	৪

Scoring: The minimum possible score of this scale is 0, and the maximum score of this scale is 36. Higher scores indicate higher Psychological Resilience.