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Research Paper

Evaluating the Psychometric Properties of the General Self-Efficacy Scale among Indian University Students

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ABSTRACT

General self-efficacy reflects an individual's overall belief in their ability to successfully cope with a wide range of challenging situations and accomplish desired goals. As self-efficacy is a dynamic construct so the Scale which measures this construct needs continuous validation across different cultural settings and in different time periods. Therefore, the present study aimed to validate GSES through exploratory and confirmatory factor analysis among a sample of Indian university students. A cross-sectional design was employed, and data were collected from 350 university students using convenience sampling. The findings indicated that the GSES has good internal consistency (Cronbach's α = .839; McDonald's ω = .838), with corrected item-total correlations ranging from .437 to .622. EFA produced a single factor with an eigenvalue of 4.128 that explained 41.28% of the total variance, supporting a unidimensional structure that is consistent with the original scale. CFA further confirmed the one-factor model, demonstrating an acceptable model fit (χ^2/df = 2.776, GFI = .946, TLI = .913, CFI = .932, RMSEA = .071). Composite reliability was satisfactory (CR = .825). Overall, the findings support the General Self-Efficacy Scale as a reliable and valid unidimensional instrument for assessing general self-efficacy among Indian university students, making it suitable for use in psychological research and educational settings.

Keywords: *General Self-Efficacy Scale (GSES), Exploratory Factor Analysis, Confirmatory Factor Analysis, Psychometric Validation*

In Bandura's Social Cognitive Theory, self-efficacy is an important construct, defined as "people's beliefs about their capabilities to produce designated levels of performance that have an influence over events affecting their lives" (Bandura, 1977, 1986, 1997). Individuals with high self-efficacy are more likely to view difficult situations as opportunities for growth, to persevere in the face of challenges, to recover more quickly from setbacks, and to show greater resilience (Bandura, 1997).

Although self-efficacy was originally viewed as being domain-specific, researchers later proposed that people also possess a general and stable belief in their ability to cope successfully with a wide range of stressful and challenging situations (Bandura, 1997; Schwarzer & Jerusalem, 1995). This general belief is called general self-efficacy (Schwarzer

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& Jerusalem, 1995). General self-efficacy refers to confidence in successfully coping with new, difficult, and unpredictable situations, as opposed to task-specific self-efficacy. Higher general self-efficacy has been repeatedly linked to better psychological well-being, more effective coping mechanisms, increased motivation, better academic performance, better work performance, and healthier behavioral outcomes (Luszczynska et al., 2005).

Schwarzer and Jerusalem (1995) created the General Self-Efficacy Scale (GSES), a short 10-item test that measures optimistic self-beliefs about one's ability to overcome obstacles and successfully adjust to challenging circumstances, to evaluate this construct. Since its creation, the GSES has been validated in a variety of cultural contexts and demographics and translated into many languages. Research from Europe, Asia, and other regions has repeatedly shown that the scale has a largely unidimensional factor structure, construct validity, and satisfactory internal consistency (Luszczynska et al., 2005; Nilsson et al., 2015). Numerous specialized populations have also provided evidence for the GSES's psychometric validity. For instance, among people with Parkinson's disease, the scale showed outstanding reliability and a distinct one-factor structure, according to Nilsson et al. (2015). In a similar vein, De las Cuevas and Peñate (2015) discovered that in psychiatric outpatient settings, the Spanish version of the GSES demonstrated satisfactory construct validity and high internal consistency. These results show that the GSES is a valid and trustworthy test in a variety of clinical and cultural settings.

The psychometric suitability of self-efficacy measures has also been investigated in India. In their study of Indian women, Waraich and Chechi (2017) found that the GSES had excellent reliability and that confirmatory factor analysis supported its unidimensional structure. Similarly, Shrivastava et al. (2018) created and validated a self-efficacy scale for teenagers in Hindi, underscoring the need for culturally relevant evaluation instruments. However, the research now available in India remains relatively limited and has mostly focused on demographic groups, such as women and teenagers. There are presently few thorough validation studies with larger samples of Indians higher education students.

Since the psychometric qualities of psychological assessment tools may vary across cultures, languages, and demographics, they need to be continuously assessed. Before an instrument is widely used in research and practice, local validation is crucial because individual responses to scale items can be influenced by differences in educational background, social norms, and cultural interpretations (American Educational Research Association (AERA), American Psychological Association (APA), & National Council on Measurement in Education (NCME), 2014). Thus, the goal of the current study was to assess the General Self-Efficacy Scale's (GSES) psychometric qualities in an Indian population. This study aims to contribute to the availability of a psychometrically sound tool for evaluating general self-efficacy among Indian adults by offering empirical data about the validity and reliability of the GSES within the Indian context.

METHODS

Research Design

The quantitative cross-sectional research design was used to validate the psychometric properties of the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) among Indian university students by conducting exploratory and confirmatory factor analysis.

Participants and sampling

Data collection took place from March 2025 to July 2025, and over 350 samples were collected using a convenience sampling technique to reach a wide variety of students all over the country, as shown in Table 1. Different university students participated in the study, which included regular UG/PG students currently enrolled in any educational institution and who fall within the 18 Years to 25 Years age range and can understand the questions written in English. Students outside India or residing in foreign countries of Indian origin are excluded, and students who are currently diagnosed with any type of psychiatric illness and are undergoing any psychotherapy or medication are not part of the study. The participants were fully informed about the purpose of the study through a Google Form; then the participants completed a personal data sheet questionnaire and a general self-efficacy scale. Participation in the study is entirely voluntary; no personal identifiers were collected, which ensures the complete anonymity of the participants, and confidentiality was maintained. All the gathered data were only used for study purposes.

Table 1: Demographic Characteristics of the Participants (N = 350)

Demographic Variable	Category	n	%
Gender	Male	162	46.3
	Female	188	53.7
Age	18 Years to 21 Years	156	44.6
	22 Years to 25 Years	194	55.4
University Type	Central University	178	50.9
	State University	66	18.9
	Private University	106	30.3
Geographical Region	North	70	20.0
	Central	47	13.4
	East	105	30.0
	West	35	9.8
	South	47	13.4
	Northeast	46	13.1
Academic Program	Undergraduate	149	42.6
	Postgraduate	201	57.4
Academic Discipline	Arts and Humanities	197	56.3
	Science and Technology	153	43.7

Note: N = Number of Participants.

Sample Size

The adequacy of the collected sample was tested using IBM SPSS 27.0 to check whether the correlation matrix is appropriate for factor analysis, i.e., EFA and CFA. The KMO yielded .88, which is a good sampling adequacy; also, Bartlett's Test of Sphericity was significant, χ^2 (45) = 949.384, $p < .001$, which indicates the inter-item correlation matrix of the scale is sufficient for factor extraction. Overall, the present data are well suited for further analysis as shown in Table 2.

Table 2: Sampling Adequacy and Bartlett's Test of Sphericity for the GSES

Measure	Value
Kaiser–Meyer–Olkin (KMO)	.888
Bartlett's Test of Sphericity, χ^2	949.384
df	45
p	< .001

Note. KMO = Kaiser–Meyer–Olkin measure of sampling adequacy; χ^2 = chi-square statistic; *df* = degrees of freedom; *p* = significance level < .001

Measures

A Personal Data Sheet created by the researchers was used to gather the participants' demographic information, including gender, age, type of university, Geographical Region, academic program, and academic discipline. The study sample's characteristics were described using these data.

The General Self-Efficacy Scale (GSES), developed by Schwarzer and Jerusalem (1995), was used to measure the general self-efficacy of the participants. The scale contains ten items designed to measure a person's positive self-beliefs about their ability to deal with a range of challenging situations. Each item is rated on a 4-point Likert-type scale ranging from 1 (Not at all true) to 4 (Exactly true). Total scores range from 10 to 40, with higher scores indicating greater perceived self-efficacy.

Statistical analysis

Data were analysed using IBM SPSS Statistics version 27 and IBM SPSS AMOS version 26. Various statistical tests were conducted in the study, including Exploratory factor analysis (EFA) to examine the underlying factor structure of the scale, followed by confirmatory factor analysis (CFA) using AMOS to evaluate the hypothesized factor structure and model fit.

RESULTS

Table 3: Descriptive Statistics for the GSES

Scale	N	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
Total General Self-Efficacy Scale (GSES)	350	19	40	30.68	4.84	−0.02	−0.47

Note. N = sample size; M = mean; SD = standard deviation

The total GSES scores for 350 participants ranged from 19 to 40 (M = 30.68, SD = 4.84). The skewness (−0.02) and kurtosis (−0.47) values indicated an approximately normal distribution, as both values were within the acceptable range of ±1. These results suggest that the data satisfied the assumption of normality and were suitable for subsequent psychometric analyses.

Table 4: Internal consistency reliability of the GSES

Scale	Total Items	Cronbach's α	McDonald's ω
General Self-Efficacy Scale (GSES)	10	.839	.838

Note. Cronbach's α = Cronbach's alpha coefficient; McDonald's ω = McDonald's omega coefficient

With a Cronbach's alpha value of .839 and a McDonald's omega coefficient of .838, the GSES showed good internal consistency reliability. Which indicate that the scale is stable and reliable in the present sample.

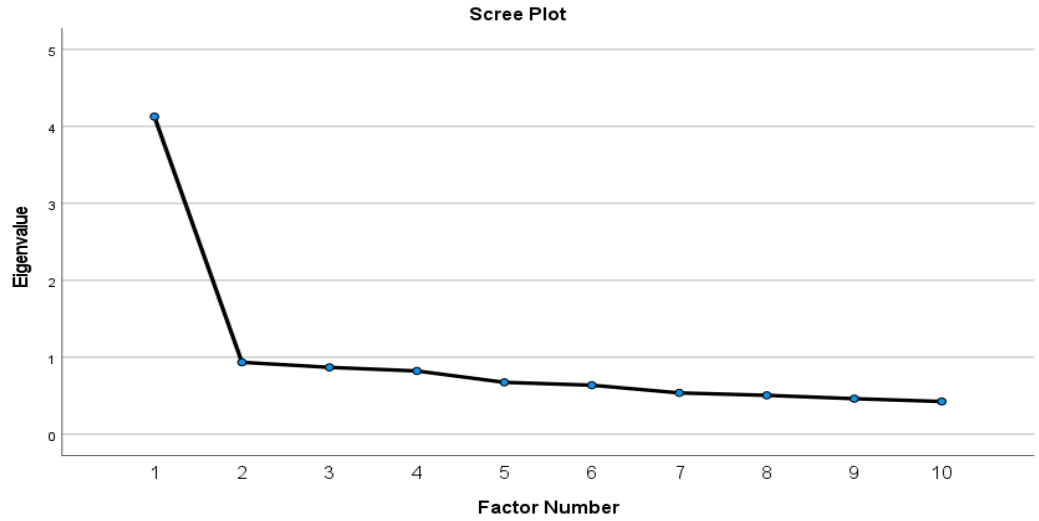
Table 5: Item Analysis and Internal Consistency Statistics for the GSES items

Item	M	SD	Corrected Item–Total Correlation	Cronbach's α if Item Deleted
GSES1	3.25	0.73	.558	.822
GSES2	2.94	0.75	.437	.833
GSES3	2.94	0.82	.471	.831
GSES4	2.97	0.73	.560	.822
GSES5	3.02	0.78	.541	.823
GSES6	3.38	0.71	.511	.826
GSES7	2.95	0.84	.521	.826
GSES8	3.00	0.75	.615	.816
GSES9	3.09	0.73	.502	.827
GSES10	3.15	0.72	.622	.816

Note. *M* = mean; *SD* = standard deviation.

All items were sufficiently correlated with the overall scale score, as shown by the corrected item total correlations, which varied from .437 to.622. With no increase over the overall reliability (α =.839), Cronbach's α if an item was removed varied from .816 to.833, indicating that each of the ten items made a significant contribution to the scale. These results confirm that all GSES items have excellent internal consistency.

Figure 1: Scree Plot of the Exploratory Factor Analysis for the GSES



Note. The point of inflection (elbow) supports the retention of a single-factor solution, which is Consistent with the Kaiser criterion (eigenvalue > 1.00).

The scree plot obtained using Principal Axis Factoring that displayed a clear point of inflection (elbow) after the first factor, indicating that only one factor should be retained. This finding supports the unidimensional structure of the original GSES, suggesting that all 10 items measure a single underlying construct of general self-efficacy. The result is consistent with the Kaiser criterion (eigenvalue > 1.00).

Table 6: Total Variance Explained by Exploratory Factor Analysis

Factor	Eigenvalue	% Variance	Cumulative %
Factor 1	4.128	41.28	41.28

Note. Factors were retained using the Kaiser criterion (eigenvalues > 1.00).

With an eigenvalue of 4.128, the EFA identified a single factor that explained 41.28% of the variance. The results support the GSES unidimensional factor structure because only one factor had an eigenvalue greater than 1.00.

Table 7: Factor Loadings and Communalities for the GSES

Item	Factor Loading	Communality (h^2)
GSES1	.610	.372
GSES2	.483	.234
GSES3	.517	.268
GSES4	.610	.372
GSES5	.594	.353
GSES6	.557	.311
GSES7	.580	.336
GSES8	.681	.464
GSES9	.559	.312
GSES10	.684	.468

Note. Extraction method = Principal Axis Factoring. Only factor loadings ≥ .40 are presented.

All 10 items had an acceptable factor loading, ranging from .483 (GSES2) to .684 (GSES10), indicating that each item contributed meaningfully to the underlying construct of general self-efficacy. Communalities varied between .234 and .468, suggesting that the retained factor accounted for enough variance in each item. Overall, these findings support the unidimensional factor structure of the GSES.

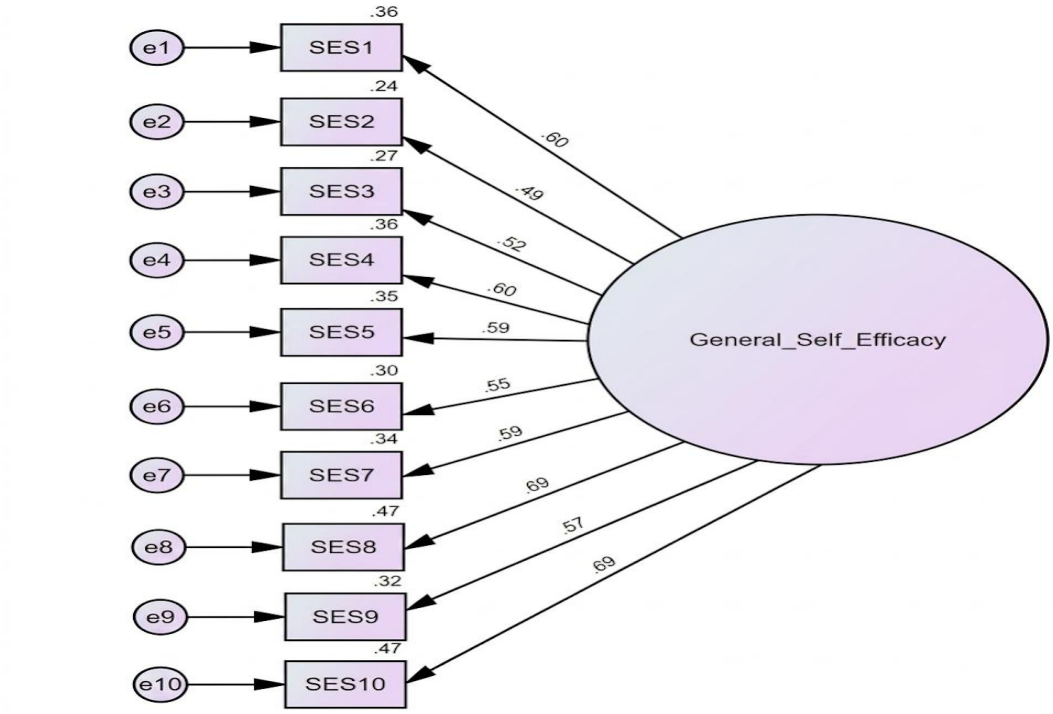
Table 8: Confirmatory Factor Analysis Model-Fit Indices for the GSES

Fit Index	Recommended Criterion	Obtained Value
χ^2	—	97.157
df	—	35
χ^2/df	< 3.00	2.776
GFI	≥ .90	.946
TLI	≥ .90	.913
CFI	≥ .90 (.95 preferred)	.932
RMSEA	≤ .08 (≤ .06 excellent)	.071
90% CI for RMSEA	—	.055–.088

Note. χ^2 = chi-square; df = degrees of freedom; GFI = goodness-of-fit index; CFI = comparative fit index; TLI = Tucker–Lewis's index; RMSEA = root mean square error of approximation.

The CFA supported the original unidimensional structure of the General Self-Efficacy Scale (GSES). The model demonstrated an acceptable overall fit to the data, χ^2 (35) = 97.157, χ^2/df = 2.776. GFI = .946, TLI = .913, and CFI = .932, indicating satisfactory model fit. The RMSEA value of .071 (90% CI = .055–.088) also indicated an acceptable level of model fit. The CFA confirmed the overall model fit and gives support to the original structure of GSES.

Figure 2: Standardized Unidimensional CFA Measurement Model of the GSES



Note. The figure shows the standardized CFA measurement model of the GSES estimated using the Maximum Likelihood method. Rectangles represent observed items, the ellipse represents the latent construct, and circles denote error terms. Values on the paths indicate standardized factor loadings, while the values above the items represent the squared multiple correlations (R^2).

Figure 2. The standardized unidimensional CFA model of the GSES. All ten items loaded positively on the latent factor with standardized factor loadings ranging from .49 (GSES2) to .69 (GSES10), indicating moderate to strong associations with the underlying construct of general self-efficacy. The squared multiple correlations (R2) ranged from .24 to .47, indicating that the latent factor explained between 24% and 47% of the variance in the individual items. Overall, the pattern of the standardized loadings supports the unidimensional factor structure of the GSES and provides evidence for its construct validity in the present sample.

Table 9: Standardized Factor Loadings and Squared Multiple Correlations for GSES Items

Factor	Item	Standardized Loading (λ)	R^2
General Self-Efficacy	**SES1**	.601	.361
	SES2	.486	.236
	SES3	.518	.268
	SES4	.603	.364
	SES5	.590	.348
	SES6	.550	.303
	SES7	.585	.342
	SES8	.686	.471
	SES9	.569	.324
	SES10	.687	.473

Note. λ = standardized factor loading; R^2 = squared multiple correlation, ($p < .001$).

The standardized factor loadings for the GSES items ranged from .486 to .687, indicating that all 10 items demonstrated acceptable to good associations with the underlying latent construct of General Self-Efficacy. The squared multiple correlations (R^2) ranged from .236 to .473, suggesting that the latent factor explained between 23.6% and 47.3% of the variance in the individual items. Overall, these findings provide further support for the adequacy of the unidimensional measurement model of the GSES.

Table 10: Construct Reliability and Convergent Validity of the GSES

Construct	Items	Standardized Loading Range	CR	AVE
General Self-Efficacy	10	.486–.687	.825	.323

Note. CR = composite reliability; AVE = average variance extracted. CR values ≥ .70 and AVE values ≥ .50.

The unidimensional GSES showed good composite reliability (CR = .825). The AVE (.323) indicated that the latent construct explained 32.3% of the variance in the observed indicators, which was below the recommended criterion of .50. The satisfactory CR indicates that the scale possesses acceptable construct reliability.

DISCUSSION

The present study examined the psychometric properties of the General Self-Efficacy Scale (GSES) among Indian university students. The results support the original unidimensional conceptualization of the GSES proposed by Schwarzer and Jerusalem (1995), indicating that the ten items assess a single underlying construct of generalized self-efficacy beliefs, which is similar to the previous studies (Luszczynska et al., 2005; Nilsson et al., 2015).

The reliability analyses demonstrated good internal consistency, with Cronbach's alpha (.839) and McDonald's omega (.838) exceeding the recommended criterion of .70. Furthermore, corrected item-total correlations ranged from .437 to .622, indicating that each item contributed meaningfully to the overall construct. None of the items increased the reliability coefficient when deleted, suggesting that all ten items should be retained. These findings are consistent with previous studies reporting satisfactory internal consistency for the GSES across different populations, including Indian samples (Waraich & Chechi, 2017), psychiatric outpatients (De las Cuevas & Peñate, 2015), individuals with Parkinson's disease (Nilsson et al., 2015), and multicultural populations (Luszczynska et al., 2005).

The confirmatory factor analysis provided additional support for the factorial validity of the GSES. The model demonstrated an acceptable fit to the data ($\chi^2/df = 2.776$, GFI = .946, TLI = .913, CFI = .932, RMSEA = .071). These findings closely align with the original development of the GSES (Schwarzer & Jerusalem, 1995) and subsequent validation studies demonstrating a single-factor structure across diverse cultural and clinical populations (Luszczynska et al., 2005; Waraich & Chechi, 2017; De las Cuevas & Peñate, 2015; Nilsson et al., 2015).

Overall, the findings indicate that the General Self-Efficacy Scale possesses satisfactory psychometric properties in the present sample of Indian university students. The evidence from reliability analysis, exploratory factor analysis, confirmatory factor analysis, and construct reliability consistently supports the use of the GSES as a reliable and valid instrument for assessing generalized self-efficacy in this population.

CONCLUSION

The findings provide evidence that the GSES is a reliable and valid unidimensional measure of general self-efficacy. The scale demonstrated good internal consistency, acceptable item characteristics, and a clear one-factor structure supported by both exploratory and confirmatory factor analyses. The satisfactory composite reliability and overall model fit indicate that the scale possesses adequate construct reliability. The scale is a psychometrically sound instrument for assessing general self-efficacy in Indian higher education students and can be used in the counselling cell of the universities.

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Conflict of Interest

The author(s) declared no conflict of interest.

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