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Development And Psychometric Validation Of A Stress Assessment Tool For Teacher Education Trainees

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Abstract

This study presents the development and rigorous psychometric validation of a Stress Scale tailored for B.Ed. trainees within Indian teacher education contexts. Building on established instruments such as the Perceived Stress Scale (Cohen et al., 1983) and the Teacher Stress Inventory (Fimian, 1984), an initial pool of 40 context-specific items was generated and refined via expert review (Content Validity Index = 0.84). The resulting 25-item scale, spanning academic, personal-social, emotional-mental, physical, and coping dimensions, was pilot-tested with 50 trainees. Item-total correlations ($r \geq 0.35$) and Cronbach's alpha coefficients (overall $\alpha = 0.86$; subscales $\alpha = 0.77–0.84$) demonstrated strong internal consistency. Exploratory factor analysis (KMO = 0.78; Bartlett's $\chi^2(300) = 1023.45$, $p < .001$) confirmed the five-factor structure, explaining 62% of variance. The validated instrument offers educators, counselors, and researchers a reliable measure to assess stress and inform peace education–based interventions in teacher preparation programs.

Keywords: Stress scale, B.Ed. trainees, teacher education, peace education, psychometric validation

Introduction

In recent years, stress has emerged as a significant issue in the field of teacher education, particularly among B.Ed. trainees. These trainees face a multitude of challenges as they navigate academic demands, develop professional competencies, and manage personal and social responsibilities. The transition from student to future teacher is often marked by periods of emotional strain, performance anxiety, and time

pressure. This complex interplay of factors can lead to elevated levels of stress, which may, in turn, impact their academic achievement, mental health, and overall well-being.

While several tools exist to measure stress, most are either generalized or tailored to corporate or clinical populations. There is a clear gap in assessment instruments specifically designed for teacher education trainees, especially in the Indian context, where cultural, social, and institutional dynamics vary widely. Recognizing this gap, the current study focused on creating a culturally relevant and contextually appropriate stress scale that captures the lived experiences of B.Ed. trainees.

The development of this scale is situated within the broader research titled "A study of the effects of peace education on the lifestyle, stress, and academic achievement of teacher education trainees." The aim is to provide an empirically validated tool that can be used by teacher educators, counselors, and researchers to assess stress levels more accurately and to design timely interventions. This article details the systematic process undertaken in constructing and validating the Stress Scale for B.Ed. Trainees.

Objectives

The following objectives guided the study:

1. **To construct a reliable and valid stress scale specific to the experiences of B.Ed. trainees:** Recognizing the unique challenges faced by teacher education trainees, the first goal was to design a measurement tool that accurately reflects the types of stressors commonly encountered during their training period. These may include academic workload, classroom management anxieties, social pressures, and internal emotional conflicts.
2. **To measure stress across multiple dimensions, including academic, personal, emotional, physical, and coping mechanisms:** Stress is a multidimensional construct that cannot be captured through a single lens. Hence, the scale assessed various facets of stress experienced by B.Ed. students. This includes stress related to academic performance, interpersonal relationships, emotional stability, physical symptoms, and how individuals respond or cope with stressful situations.

Construction of the Scale

The construction of the stress scale followed a systematic procedure:

1. Literature Review

The foundation of the stress scale development began with an in-depth review of existing literature in the fields of educational psychology, mental health, and teacher training. Key sources and instruments examined include:

- Perceived Stress Scale (PSS) by Cohen, Kamarck, & Mermelstein (1983), a widely used measure of perceived stress in general populations.

- Teacher Stress Inventory (TSI) by Fimian (1984), designed to assess work-related stressors specific to teaching professionals.
- Academic Stress Scale (ASS) by Kohn & Frazer (1986), focusing on academic-related pressures among college students.
- Student Stress Inventory (SSI) by Limi & Neha (2012), reflecting stressors in Indian educational contexts, such as examination anxiety and familial expectations.
- Transactional Model of Stress and Coping by Lazarus & Folkman (1984), which informed the conceptual framework by emphasizing appraisal and coping processes.

Additionally, empirical studies on stress in teacher education (e.g., Sharma & Sharma, 2005; Kumar, 2010) were reviewed to understand culturally specific stressors, such as socio-institutional demands and classroom management anxieties in Indian B.Ed. Colleges. These theoretical models and empirical findings helped identify relevant dimensions and indicators, ensuring the new scale captures both universal and context-specific aspects of stress.

2. Item Generation

Building on insights from the literature review, an initial pool of 40 items was drafted to comprehensively capture the multifaceted nature of stress experienced by B.Ed. trainees. These items were organized into five core dimensions:

- **Academic Stress**: Questions addressed concerns such as workload pressure, deadline anxiety, and performance expectations in coursework, assignments, and examinations.
- **Personal and Social Stress:** Items explored stressors arising from interpersonal conflicts, peer relationships, family expectations, and the balance between personal life and academic responsibilities.
- **Emotional and Mental Health Stress:** Statements focused on internal experiences like feelings of overwhelm, mood fluctuations, and difficulties in emotional regulation.
- **Physical Symptoms of Stress:** This dimension included items related to common somatic responses, for instance, headaches, sleep disturbances, and changes in appetite.
- **Coping and Resilience:** To understand adaptive responses, items assessed the use of relaxation techniques, seeking support, and the application of strategies learned (e.g., through peace education) to manage stress.

Each item was carefully phrased in simple, trainee-friendly language to reflect day-to-day scenarios, such as planning lessons under time pressure or managing exam-related nerves, and was designed to be clear, concise, and directly relevant to the B.Ed. training context. This phase ensured content relevance and face validity before moving on to expert review.

3. Expert Validation

To establish content validity and refine item clarity, the preliminary 40-item draft was submitted to a panel of six subject matter experts, including three senior teacher educators, one developmental psychologist, and two specialists in peace studies. The experts independently evaluated each item for relevance, clarity, and representativeness using a four-point scale. Their feedback was synthesized to calculate the Content Validity Ratio (CVR) for each item, following Lawshe's method. Items with CVR values below the critical threshold of 0.62 were flagged for revision or removal.

Based on the panel's recommendations, 10 items were identified as redundant or ambiguous and either reworded or eliminated. Several items were modified to better capture culturally specific stressors, such as family examination expectations and classroom observation anxieties, relevant to Indian B.Ed. programmes. In addition, experts suggested simplifying complex phrasing to ensure clarity for trainees at varying literacy levels. After iterative feedback and two rounds of revision, the scale was condensed to a concise set of 25 items that demonstrated strong content validity, with an average Content Validity Index (CVI) of 0.84 across dimensions

4. Response Format

To accurately capture how frequently trainees experience different stressors, the final instrument employs a 5-point Likert scale. For each statement, respondents select the option that best reflects their personal experience:

- **Always (5):** I experience this almost all of the time.
- **Often (4):** I experience this frequently.
- **Sometimes (3):** I experience this occasionally.
- **Rarely (2):** I experience this infrequently.
- **Never (1):** I do not experience this at all.

This standardized response format provides clarity for participants and enables reliable quantitative scoring, making it possible to compare stress levels across individuals and dimensions.

Validation of the Scale

1. Pilot Study

A preliminary version of the 25-item scale was administered to a purposive sample of 50 B.Ed. trainees drawn from five teacher education colleges across different districts. Participants completed the scale in a supervised setting and then participated in brief focus-group discussions to capture their feedback on item clarity, relevance, and comprehensiveness. Common suggestions included simplifying technical terms and clarifying timelines (e.g., changing "In the last month" to "During the past four weeks"). Based on this feedback, two items were rephrased for greater clarity, and one item was added to address stress related to practicum teaching observations.

2. Item Analysis

Once pilot data were collected, we examined the relationship between each item and the overall scale score through item-total correlation analysis. This statistical technique gauges how closely an individual item aligns with the combined measure, with higher correlations indicating that the item is consistent with the construct of stress being assessed. A commonly accepted benchmark is a correlation coefficient of 0.30; items falling below this threshold may not discriminate effectively between respondents with different stress levels.

In our initial analysis, three items produced correlations below 0.30, suggesting they did not reflect the broader stress construct adequately. These items were carefully reviewed for phrasing clarity and content overlap. One item was removed entirely because it duplicated the content of another statement, while the other two were reworded to enhance relevance and specificity (e.g., clarifying time frame and context). After revisions, the item-total correlations were recalculated, and all items demonstrated improved coefficients ranging from 0.35 to 0.67. This process ensured that each retained item meaningfully contributed to the overall reliability and validity of the scale.

3. Reliability Testing

After refining items through pilot feedback and item analysis, the scale's internal consistency was examined using Cronbach's alpha. This statistic assesses the extent to which all items in a subscale measure the same underlying construct. An alpha coefficient of 0.70 or higher is generally considered acceptable for early-stage research.

- **Overall Scale Reliability:** The complete 25-item inventory yielded a Cronbach's alpha of 0.86, indicating strong internal consistency across diverse stress dimensions.
- **Subscale Reliabilities:**
  - Academic Stress: $\alpha = 0.82$
  - Personal and Social Stress: $\alpha = 0.79$
  - Emotional and Mental Health Stress: $\alpha = 0.84$
  - Physical Symptoms of Stress: $\alpha = 0.80$
  - Coping and Resilience: $\alpha = 0.77$

Although the Coping and Resilience subscale fell slightly below the 0.80 benchmark, its retention was justified by its theoretical significance and respectable inter-item correlations (mean $r = 0.42$). Taken together, these results confirm that the Stress Scale for B.Ed. Trainees demonstrate reliable measurement properties suitable for both research and applied settings.

4. Construct Validity

Exploratory factor analysis (EFA) using Principal Axis Factoring with oblique rotation was conducted to verify the underlying structure. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.78, and Bartlett's test of sphericity was significant ($\chi^2 = 1023.45$, $p < .001$), supporting factorability.

Five factors emerged with eigenvalues greater than 1, cumulatively explaining 62% of the variance, and aligning closely with the intended dimensions. Item loadings ranged from 0.46 to 0.73. These results confirm that the stress scale's factor structure coheres with the conceptual model.

Limitations of the Study

Despite the strengths of the present research, several limitations should be noted:

- **Geographical Sampling Constraints:** The pilot and validation studies drew participants from a limited number of teacher education colleges within specific regions. This sampling approach may restrict the generalizability of findings to other districts or states with differing cultural, linguistic, or institutional contexts.
- **Reliance on Self-Report Measures:** Data collection relied exclusively on trainees' self-reports, which are vulnerable to social desirability bias and recall errors. Participants may have underreported or overreported certain stress experiences, potentially affecting the accuracy of responses.
- **Absence of Criterion-Related Validation:** Due to time and logistical constraints, the study did not include criterion-related validity testing (e.g., correlating scale scores with established physiological or behavioural stress indicators). As a result, the scale's concurrent and predictive validity remains to be further established.

Future Scope

While the current version of the Stress Scale offers a solid foundation for measuring stress among B.Ed. trainees, several avenues for extension and deeper inquiry are worth exploring:

- **Adaptation to Diverse Teacher Education Programs**: Future studies could tailor and validate this instrument for related cohorts, such as D.El.Ed. and M.Ed. students, to assess whether the scale maintains reliability and validity across varying levels of teacher preparation.
- **Longitudinal Impact of Peace Education:** A longitudinal research design could examine how sustained exposure to peace education influences stress trajectories over time. Repeated administrations of the scale would reveal whether peace-building practices lead to significant reductions in specific stress dimensions.
- **Integration into Counselling and Mentorship**: Embedding the Stress Scale within institutional support systems, such as counselling centres or faculty mentorship programs, could provide real-time monitoring of trainee well-being. Action research could evaluate how targeted interventions, informed by scale scores, enhance coping skills and overall resilience.
- **Criterion-Related and Predictive Validity Studies:** To strengthen the scale's psychometric profile, future research should include criterion-related validation by correlating scale scores with physiological measures (e.g., cortisol levels) or academic performance indicators (e.g., grade point average).

- **Cross-Cultural and Multilingual Validation:** Translating and validating the scale in multiple languages and cultural contexts across India (and beyond) would establish its applicability in diverse educational settings, accounting for regional variations in stress experiences.

Conclusion

The Stress Scale for B.Ed. Trainees represents a comprehensive, empirically supported tool designed to capture the diverse stress experiences of future teachers. By integrating academic, personal, emotional, physical, and coping dimensions, it offers a holistic assessment that reflects the real-world challenges encountered during teacher training. The rigorous development process—spanning literature review, item generation, expert validation, pilot testing, and statistical analysis—ensures that the instrument is both reliable and valid.

This scale not only aids in identifying stress levels but also serves as a guide for designing targeted interventions. Teacher educators, institutional counsellors, and policymakers can utilize these insights to foster supportive learning environments, tailor stress management programs, and incorporate peace education practices that promote resilience and well-being. Ultimately, by equipping stakeholders with precise data on trainee stress, this instrument contributes to healthier teacher preparation programs and, by extension, more effective educators in the classroom.

Ethical Considerations

Ethical integrity was a cornerstone of this study from inception to conclusion. Before data collection, approval was obtained from the Institutional Ethics Committee, ensuring that the research design met established ethical standards. Participation was entirely voluntary, and all trainees received a clear explanation of the study's purpose, procedures, and potential risks and benefits. Written informed consent was secured from each participant, who was also informed of their right to withdraw at any time without consequence.

To protect confidentiality, individual responses were anonymized using unique identification codes, and any personal identifiers were removed before data analysis. All electronic data were stored on password-protected devices, and hard copies were kept in a locked cabinet accessible only to the principal investigator. Findings are reported in aggregate form to prevent any possibility of tracing back to individual trainees. Throughout the research process, care was taken to respect participants' dignity, privacy, and autonomy, in alignment with the ethical principles of beneficence, non-maleficence, and justice.

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