

Psychometric Evaluation and Efficacy of a Stress Management Training Module for University Students

Dr. Samuel Osei Mensah¹, Anita Wijayanti²

1Department of Mental Health and Wellbeing, University of Ghana, Legon

2Center for Student Mental Health Research, Universitas Indonesia

Doi <https://doi.org/10.55640/ijssl-02-02-01>

ABSTRACT

University life often presents significant stressors that can adversely affect students' academic performance, psychological well-being, and overall health. Effective stress management interventions are crucial to support this demographic. This article describes the development and psychometric validation of a stress management training module designed specifically for university students. The module's development followed a rigorous research and development (R&D) methodology [26, 27], incorporating expert reviews for content validity [4, 18] and pilot testing for practicality and initial efficacy. Data from the pilot study were analyzed to assess the module's impact on perceived stress levels using a standardized instrument [22]. The findings indicate that the developed module possesses strong content validity and demonstrates promising initial efficacy in reducing stress among university students. This validated module offers a structured and systematic approach to equip students with essential coping mechanisms [2], contributing to their mental health resilience and academic success.

Keywords: stress management, university students, psychometric evaluation, mental health, training module, intervention efficacy, coping strategies.

INTRODUCTION

The transition into university life marks a significant developmental period, often characterized as emerging adulthood, where individuals navigate increased independence, academic pressures, and new social environments [3, 25]. While a period of growth, it is also a time of heightened vulnerability to psychological distress, with stress being a pervasive issue among university students globally [15, 17]. Academic demands, financial burdens, social adjustments, future uncertainties, and the constant pressure to succeed contribute to elevated stress levels [14, 16, 21]. Unmanaged stress can manifest in various negative outcomes, including diminished academic performance, sleep disturbances, anxiety, depression, and in severe cases, suicidal ideation [14, 16, 20]. Therefore, implementing effective stress management strategies is paramount for fostering student well-being and academic achievement [6, 19].

Stress management training modules offer a structured and systematic approach to teach individuals coping skills and adaptive behaviors [7]. The concept of modular instruction, where learning content is broken down into manageable, self-contained units, has long been recognized for its flexibility and

effectiveness in facilitating learning [1, 24]. Modules are designed to be comprehensive yet focused, allowing for targeted skill development [12, 23]. Previous research has highlighted the efficacy of stress management interventions in reducing stress levels among various populations, including students [8, 11, 30]. However, the effectiveness of any intervention, particularly educational or psychological modules, hinges on its rigorous development and validation [4, 5, 27]. Validation ensures that the module measures or achieves what it intends to, is reliable, and is appropriate for the target audience [4, 5].

Despite the evident need, there is a continuous demand for culturally relevant and psychometrically sound stress management resources tailored to the specific context of university students. While various interventions exist, a comprehensive validation process that assesses both content relevance and preliminary efficacy is often overlooked. This study aims to address this gap by describing the systematic development and psychometric evaluation of a stress management training module for university students. The primary objective was to validate the module's content and assess its initial impact on reducing stress levels among university students, thereby

providing a robust tool for mental health support in higher education institutions.

METHODS

Research Design

This study employed a research and development (R&D) design, specifically adapting a five-stage model [26, 27], to develop and validate the stress management training module. The phases included: ⁽¹⁾ preliminary research and needs analysis; ⁽²⁾ module development and design; ⁽³⁾ expert validation (content and construct); ⁽⁴⁾ pilot testing and revision; and ⁽⁵⁾ preliminary efficacy evaluation. This comprehensive approach ensured that the module was theoretically sound, practical, and effective.

Participants

For the need's analysis and pilot testing phases, a convenience sample of university students was recruited. The needs analysis involved qualitative data collection (e.g., focus group discussions, interviews) from approximately 30 students to identify common stressors and preferred learning styles. For the pilot testing of the module and its preliminary efficacy evaluation, a different group of 50 university students (undergraduate, various faculties) were selected based on self-reported moderate to high stress levels. Participants were informed of the study's purpose and provided informed consent in accordance with ethical guidelines for psychological research [13]. Inclusion criteria included being currently enrolled in a university, aged between 18-24 years, and voluntarily agreeing to participate. Exclusion criteria included a diagnosed severe mental health disorder requiring clinical intervention, to ensure the module's focus on general stress management rather than clinical treatment.

Module Development and Design

The stress management training module was developed based on a review of existing literature on stress, coping mechanisms, and effective psychological interventions [7, 28]. Key theoretical frameworks, such as cognitive-behavioral therapy (CBT) and relaxation techniques, informed the content [7]. The module comprised several core components:

1. **Understanding Stress:** Defining stress, its physiological and psychological manifestations, and common stressors faced by university students [15].
2. **Cognitive Restructuring:** Identifying and challenging negative thought patterns contributing to stress.
3. **Emotional Regulation:** Techniques for managing difficult emotions (e.g., mindfulness, emotional expression).

4. **Practical Coping Strategies:** Teaching specific techniques such as time management, goal setting, problem-solving, and healthy lifestyle practices (sleep, nutrition, exercise) [2].
5. **Relaxation Techniques:** Introduction to deep breathing, progressive muscle relaxation, and guided imagery.
6. **Social Support and Communication Skills:** Emphasizing the importance of seeking support and effective communication [29].

The module was designed to be interactive, incorporating exercises, self-reflection prompts, case studies, and discussion points. The language used was clear, concise, and appropriate for a university student audience. Each session was structured to be approximately 60-90 minutes long, with activities integrated to enhance engagement. The module was developed over a period of 6 months, undergoing iterative revisions based on internal team feedback.

Validation Process

Content and Construct Validity:

The module underwent rigorous expert validation to establish its content and construct validity. A panel of five experts comprising psychologists, educational technologists, and mental health professionals with experience in student counseling and module development were invited to review the module. Experts were provided with evaluation forms adapted from established frameworks [4, 18], assessing various aspects such as:

- **Relevance:** How well the content aligned with the learning objectives and the needs of university students.
- **Accuracy:** Factual correctness of information presented.
- **Clarity:** Understandability and conciseness of language.
- **Completeness:** Coverage of essential stress management topics.
- **Practicality:** Feasibility of implementing the module in a university setting.
- **Theoretical Soundness:** Adherence to established psychological theories of stress and coping.

Experts rated each item on a Likert scale (e.g., 1=Not Relevant to 5=Highly Relevant) and provided open-ended comments for improvement. A Content Validity Ratio (CVR) was calculated for each item and for the overall module to quantify expert agreement on item essentiality [4]. Items with a CVR below a predetermined threshold (e.g., 0.70 for 5 experts) were revised or removed.

Pilot Testing and Reliability:

Following expert validation and subsequent revisions, the refined module was pilot tested with a group of 50 university students. The pilot test served two main purposes:

- **Feasibility and Usability:** To assess the module's practicality, the flow of sessions, student engagement, and any logistical challenges during implementation.
- **Preliminary Efficacy and Reliability (of outcome measure):** To gather pre- and post-intervention data on stress levels using a standardized instrument. The Perceived Stress Scale (PSS-10) [22] was chosen for its widespread use and established psychometric properties. The reliability of the PSS-10 within this specific sample was assessed using Cronbach's Alpha [5]. Students completed the PSS-10 before the first session of the module and again immediately after the completion of the entire module. Qualitative feedback from pilot participants was also collected through questionnaires and brief interviews to gauge their perceptions of the module's usefulness, clarity, and overall impact.

Data Analysis

Quantitative data from the expert reviews (CVR) and the PSS-10 scores from the pilot test were analyzed using descriptive and inferential statistics. Paired-samples t-tests were employed to compare pre- and post-intervention PSS-10 scores to determine the preliminary efficacy of the module in reducing perceived stress levels [9]. Qualitative data from expert comments and student feedback were analyzed using thematic analysis to identify recurring themes and suggestions for further refinement. All statistical analyses were performed using SPSS software.

Results

Module Content and Structure

The developed stress management training module consists of 6 sessions, each focusing on a distinct aspect of stress management. Each session is approximately 90 minutes long, integrating theoretical explanations with practical exercises. The final module includes a participant workbook, facilitator guide, and supplementary resources (e.g., relaxation audio files, stress symptom checklists).

Expert Validation Findings

The expert validation process yielded highly positive feedback, affirming the module's content and construct validity. The average Content Validity Ratio (CVR) for the entire module was 0.92, well above the acceptable threshold for expert agreement, indicating that the experts considered the module's content highly relevant and essential for stress management training. Specific comments from experts

focused on the module's comprehensive coverage of key stress management techniques, the clarity of instructional language, and its practical applicability for university students. Suggestions for minor refinements included adding more culturally specific examples and incorporating peer-to-peer discussion activities, which were subsequently integrated into the module.

Pilot Testing and Preliminary Efficacy

The pilot test involved 50 university students (Mean age = 20.3 years, SD = 1.8; 60% female, 40% male). The module was well-received by the participants, with 92% reporting that they found the content relevant to their experiences and 88% stating that the strategies taught were practical and applicable.

Reliability of Outcome Measure:

The internal consistency reliability of the Perceived Stress Scale (PSS-10) in this sample was high, with a Cronbach's Alpha coefficient of 0.86 for the pre-test and 0.89 for the post-test, indicating its suitability for measuring perceived stress in this population [5].

Preliminary Efficacy:

A paired-samples t-test was conducted to compare perceived stress levels before and after the intervention. The results showed a statistically significant reduction in perceived stress scores from pre-intervention ($M=24.52$, $SD=4.21$) to post-intervention ($M=18.78$, $SD=3.95$), $t(49)=8.76$, $p<0.001$. The mean difference was 5.74 with a 95% confidence interval of [4.43, 7.05]. This indicates a substantial decrease in stress levels following participation in the module.

Qualitative Feedback from Pilot Participants:

Student feedback further supported the module's effectiveness. Common themes emerging from the qualitative data included:

- **Increased Awareness:** Students reported a better understanding of their own stress triggers and symptoms.
- **Acquisition of Coping Skills:** Many students highlighted specific techniques (e.g., deep breathing, cognitive reframing, time management) that they found particularly helpful and intended to use regularly [2].
- **Sense of Empowerment:** Students expressed feeling more equipped to handle future stressors.

- **Engaging Format:** The interactive nature of the module, including group discussions and practical exercises, was positively reviewed.

DISCUSSION

The systematic development and validation of the stress management training module for university students have yielded promising results, confirming its psychometric soundness and preliminary efficacy. The rigorous R&D approach, involving rigorous expert review and pilot testing, ensured that the module is not only theoretically grounded but also practical and relevant to the target population [26, 27].

The high Content Validity Ratio (CVR) obtained from expert evaluation underscores the module's strong relevance, accuracy, clarity, and completeness. This expert consensus is crucial for establishing the credibility and quality of educational interventions [4, 18]. The incorporation of feedback from mental health professionals and educational technologists ensured that the module aligns with best practices in stress management and instructional design.

The pilot testing phase provided invaluable insights into the module's usability and initial effectiveness. The significant reduction in perceived stress levels among participants after completing the module is a critical finding, suggesting its potential as an effective intervention. This aligns with previous research demonstrating the positive impact of stress management training on student populations [6, 8, 11]. The module provides university students with concrete, actionable strategies, empowering them to actively manage their stress rather than passively enduring it [2, 19]. The perceived stress scale (PSS-10), a widely used and reliable instrument [22], captured this reduction effectively.

The positive qualitative feedback from students further reinforces the quantitative findings. Students' reports of increased self-awareness, acquisition of practical coping skills, and a greater sense of empowerment highlight the module's direct impact on their psychological well-being. This suggests that the module effectively addresses the multidimensional nature of stress experienced by university students [15, 17]. The interactive and engaging format was particularly appreciated, emphasizing the importance of active learning in stress management interventions.

This validated module serves as a valuable resource for university counseling centers, student affairs departments, and educational institutions striving to enhance student mental health. By providing a structured curriculum, it can be systematically implemented to reach a broad student population, proactively addressing stress before it escalates into more severe psychological issues [10]. The module also aligns with the broader goal of fostering life skills development during the emerging adulthood period [3, 25].

Limitations and Future Directions

Despite the positive findings, this study has several limitations. First, the pilot study employed a convenience sample and a pre-post design without a control group, which limits the ability to draw definitive causal conclusions about the module's efficacy [9]. Future research should incorporate a randomized controlled trial (RCT) design to more robustly assess the module's effectiveness compared to a control condition or alternative interventions. Second, the follow-up period for measuring efficacy was immediate post-intervention. Longitudinal studies are needed to evaluate the long-term sustainability of stress reduction and the continued application of learned coping skills. Third, while content validity was thoroughly established, further research could explore other forms of validity, such as predictive validity (e.g., predicting academic performance) and convergent/discriminant validity with related constructs. Furthermore, the study focused on a general university student population. Future research could explore the module's applicability and efficacy across diverse student subgroups (e.g., international students, students with disabilities, specific faculties) and in different cultural contexts. Adaptation of the module to address specific cultural nuances, as suggested by experts, could further enhance its reach and effectiveness [18]. Exploring digital or blended learning formats for module delivery could also increase accessibility and scalability [12]. Finally, investigating the role of facilitators' training and fidelity of module delivery on outcomes would be beneficial.

CONCLUSION

This study successfully developed and psychometrically validated a comprehensive stress management training module tailored for university students. The rigorous R&D process, including expert validation and pilot testing, demonstrated the module's strong content validity and promising preliminary efficacy in reducing perceived stress levels. By equipping university students with essential coping mechanisms and a deeper understanding of stress, this module represents a significant contribution to promoting student mental health and academic resilience. Future research should build upon these findings to establish the long-term effectiveness and broader applicability of this validated intervention in diverse higher education settings.

REFERENCES

1. Alsagoff, S. A. (1981). The introduction of individual teaching with special focus on teaching modules and

- learning modules. *Jurnal Pendidik dan Pendidikan*, 3(1), 54-62.
2. Ambarsarie, R., Yunita, E., & Sariyanti, M. (2021). *Buku Saku Coping Stres pada Mahasiswa Generasi Z*. Unit Penerbitan dan Publikasi FKIP Universitas Bengkulu.
 3. Arnett, J. J. (2018). Conceptual foundations of emerging adulthood. In *Emerging adulthood and higher education* (pp. 11-24). Routledge.
 4. Azwar, S. (2018). *Metode penelitian psikologi edisi II*. Pustaka Pelajar.
 5. Azwar, S. (2016). Reliabilitas dan validitas aitem. *Buletin Psikologi*, 3(1), 19-26. <https://doi.org/10.22146/bpsi.13381>
 6. Bana, P., Primanata, D., Dewi, H. S. C. P., & Erta, E. (2023). Pelatihan Manajemen Stres Pada Mahasiswa Untuk Meningkatkan Kesehatan Mental Selama Perkuliahan Hybrid. *Lambung Inovasi: Jurnal Pengabdian Kepada Masyarakat*, 8(2), 351-358. <https://doi.org/10.36312/linov.v8i2.1326>
 7. Chen, D. D. (2016). *Stress management and prevention: Applications to daily life*. Routledge. <https://doi.org/10.4324/9781315695594>
 8. Chinaveh, M. (2013). The Effectiveness of Multiple Stress Management Intervention on the Level of Stress, and Coping Responses Among Iranian Students. *Procedia - Social and Behavioral Sciences*, 84(2001), 593-600. <https://doi.org/10.1016/j.sbspro.2013.06.610>
 9. Cook, T. D., Campbell, D. T., & Shadish, W. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin Company, Boston, New York.
 10. Darden, C. A., & Ginter, E. J. (1996). Life-skills development scale-adolescent form: The theoretical and therapeutic relevance of life... *Journal of Mental Health Counseling*, 18(2), 137-142.
 11. Hakim, G. R. U., Tantiani, F. F., & Shanti, P. (2017). Efektifitas pelatihan manajemen stres pada mahasiswa. *Jurnal Sains Psikologi*, 6(2), 75-79. <http://dx.doi.org/10.17977/um023v6i22017p076>
 12. Hamid, S. N. M., Lee, T. T., Taha, H., Rahim, N. A., & Sharif, A. M. (2021). E-Content Module For Chemistry Massive Open Online Course (Mooc): Development And Students' Perceptions. *Journal of Technology and Science Education*, 11(1), 67-92. <https://doi.org/10.3926/jotse.1074>
 13. HIMPSI. (2010). *Kode Etik Psikologi Indonesia*. Pengurus Pusat Himpunan Psikologi Indonesia, 11-19. <http://himpsi.or.id/phocadownloadpap/kode-etik-himpsi.pdf>
 14. Idham, A. F., Sumantri, M. A., & Rahayu, P. (2019). Ide dan Upaya Bunuh Diri pada Mahasiswa. *Intuisi*, 11(3), 177-183. <https://doi.org/10.15294/intuisi.v11i3.20705>
 15. Immanuel, A. S., Marheni, A., Indrawati, K. R., & Ni Luh Indah Desira Swandi, M. P. D. B. (2022). Kajian Stres pada Mahasiswa: Sumber Stress dan Kontribusi Strategi Koping. *Jurnal Ilmu Perilaku*, 5(2), 138-158.
 16. Lalenoh, G. A., Zega, I. B. P., Yuni, I. F., Florensa, M. V. A., & Ningsih, M. T. A. S. (2021). Hubungan Tingkat Stres dengan Ide Bunuh Diri pada Mahasiswa [The Relationship Between Stress Levels and Suicide Ideation in College Students]. *Nursing Current: Jurnal Keperawatan*, 9(1), 89-101. <https://doi.org/10.19166/nc.v9i1.3466>
 17. Lestari, T., Ramdaniyati, R., Andini, R. A. M., & Cahyono, A. B. F. (2023). Stres pada Mahasiswa di Era VUCA: Ditinjau dari Kesalehan dalam Konteks Sosial. *Journal of Psychology Students*, 2(1), 26-38. <https://doi.org/10.15575/jops.v2i1.25605>
 18. Mahfar, M., Noah, S. M., & Senin, A. A. (2019). Development of Rational Emotive Education Module for Stress Intervention of Malaysian Boarding School Students. *SAGE Open*, 9(2), 1-9. <https://doi.org/10.1177/2158244019850246>
 19. Moesarofah, M. (2021). Manajemen Stres dalam Mereduksi Stres Mahasiswa di Masa Learn from Home. *Jurnal Pengabdian Masyarakat IPTEKS*, 7(1), 46-51. <https://doi.org/10.32528/jpmi.v7i1.4914>
 20. Muslim, M. A., Rahmawati, N. A., & Billah, Z. M. T. (2024). Faktor Penyebab Bunuh Diri Pada Mahasiswa. *SYARIAH: Jurnal Ilmu Hukum*, 1(2), 261-266. <https://doi.org/10.62017/syariah.v1i2.585>
 21. Nabila, N., & Sayekti, A. (2021). Manajemen stres pada mahasiswa dalam penyusunan skripsi di Institut Pertanian Bogor. *Jurnal Manajemen Dan Organisasi*, 12(2), 156-165.
 22. Purnami, C. T. (2020, June). Instrumen "Perceive Stress Scale" Online. Suatu Alternatif Alat Pengukur Tingkat Stress Secara Mudah Dan Cepat. In *Seminar Nasional Pengabdian Kepada Masyarakat UNDIP 2020* (Vol. 1, No. 1), pp. 311-314.
 23. Rasik, W. R. M., & Ismail, M. S. H. (2019). Model Pembinaan Modul Sidek Di Dalam Modul. *International Journal of Education, Psychology and Counseling*, 4(26), 66-76. <https://doi.org/10.13140/RG.2.2.10958.61763>
 24. Russell, J. D. (1974). *Modular Instruction: A Guide to the Design, Selection, Utilization and Evaluation of Modular Materials*. Burgess Publishing Co., 7108 Ohms Lane, Minneapolis, Minnesota.
 25. Santrock, J. W. (2012). *Life-Span Development Perkembangan Masa Hidup Edisi Ketigabelas*. Erlangga.
 26. Siregar, T. (2023). Stages of Research and Development Model Research and Development (R&D). *DIROSAT: Journal of Education, Social Sciences*

- & Humanities, 1(4), 142-158.
<https://doi.org/10.58355/dirosat.v1i4.48>
27. Sumarni, S. (2019). Model Penelitian dan Pengembangan (R&D) Lima Tahap (MANTAP). Project Report. Fakultas Ilmu Tarbiyah dan Keguruan, Yogyakarta.
28. Taylor, S. E. (2018). Health psychology 10th edition. In International Encyclopedia of the Social & Behavioral Sciences: Second Edition.
29. Wang, L., Norman, I., Edleston, V., Oyo, C., & Leamy, M. (2024). The effectiveness and implementation of Psychological First Aid as a therapeutic intervention after trauma: an integrative review. Trauma, Violence, & Abuse, 15248380231221492.
<https://doi.org/10.1177/15248380231221492>
30. Yahaya, S. N., Yusof, R., & Alias, S. R. (2011). The Construction, Validity, Reliability and Effectiveness of Drug Rehabilitation Module on Self-Concept of Female Addicts and Motivation Achievement of Male Addicts in Malaysia. International Journal of Humanities and Social Science, 1(10), 217-228.