



Vietnamese general self-efficacy scale for undergraduate nursing students: Translation, Cultural Adaptation, and Psychometric Evaluation

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ABSTRACT

Introduction: The General Self-Efficacy Scale (GSE) has been used in Vietnam, but evidence on its measurement properties among undergraduate nursing students is limited. **Objectives:** To translate and culturally adapt the GSE into Vietnamese and evaluate selected measurement properties in undergraduate nursing students. **Methods:** This two-phase methodological study followed a cross-cultural adaptation procedure and evaluated content validity, structural validity, internal consistency, test–retest reliability, measurement error, floor and ceiling effects, and construct validity. The main analysis included 263 students at a public nursing university in northern Vietnam; 67 completed a second assessment after 15 days. **Results:** Expert review and cognitive interviews supported the relevance and comprehensibility of the Vietnamese GSE (VN-GSE). Item-level content validity indices ranged from 0.78 to 1.00; the scale-level average index was 0.97. Confirmatory factor analysis supported the hypothesized one-factor model. Cronbach's alpha was 0.911, McDonald's omega was 0.912, and the test–retest intraclass correlation coefficient was 0.912. The standard error of measurement was 1.57 and the smallest detectable change was 4.37. No floor or ceiling effect was observed. Only one of two prespecified construct validity hypotheses was supported. **Conclusion:** The VN-GSE showed promising content validity, structural validity, and reliability in this sample. Further evidence of construct validity is needed to support stronger interpretations of its scores among Vietnamese undergraduate nursing students.

Keywords: General self-efficacy; nursing students; psychometrics; reliability; validity; Vietnam

INTRODUCTION

Self-efficacy has been widely examined in nursing education because undergraduate nursing students are expected to develop confidence in learning and performing skills before providing patient care. A recent systematic review reported that self-efficacy is relevant to skill performance in

undergraduate nursing students, particularly in skill-based learning contexts ¹.

Self-efficacy has also been associated with clinical competence and the clinical learning environment among nursing students ². In addition, general self-efficacy has been examined in relation to stress, self-directed learning, and study skills self-

efficacy in this population³. These findings suggest that self-efficacy is a relevant construct in nursing education research.

Self-efficacy refers to individuals' belief in their ability to organize and perform actions required to achieve desired outcomes⁴. General self-efficacy extends this idea beyond a specific task or setting and reflects a broad belief in one's ability to cope with difficult or demanding situations⁵. This distinction is important because academic or clinical self-efficacy measures are appropriate when the focus is a specific course, skill, or clinical competency. In contrast, general self-efficacy concerns a broader perceived coping capability.

The General Self-Efficacy Scale (GSE), developed by Schwarzer & Jerusalem⁶ is one of the most widely used instruments for assessing general self-efficacy. The scale includes 10 items rated on a four-point response format, with total scores ranging from 10 to 40. The scale focuses on persistence, problem-solving, coping with unexpected events, and confidence in managing difficulties. The GSE is intended to measure a general belief in handling challenges across situations rather than confidence in a specific academic, clinical, or professional task.

The GSE has been translated and evaluated in several countries. Early cross-cultural work supported the one-factor structure of the German, Costa Rican, and Chinese versions and reported good internal consistency⁷. A larger study across 25 countries also supported the generalizability of self-efficacy as a broadly applicable construct⁸. More recent evidence from Chile indicates that the GSE can be used as a measure of general self-

efficacy, but its internal structure and item-level performance should still be examined within each linguistic and cultural context⁹. Therefore, translated versions should not be assumed to function adequately in a new population without local evaluation.

In Vietnam, the GSE has been used in studies involving university students, indicating a practical need for a Vietnamese measure of general self-efficacy^{10, 11}. However, these studies were not designed to provide a systematic translation, cultural adaptation, and psychometric evaluation of the Vietnamese GSE. In addition, one study used a five-point response format rather than the original four-point format¹¹, while another interpreted the scale in relation to academic self-efficacy rather than general self-efficacy¹⁰. These differences limit confidence in the interpretation and comparison of GSE scores across studies involving Vietnamese students.

For undergraduate nursing students in Vietnam, evidence is needed to determine whether a Vietnamese version of the GSE is understandable, conceptually appropriate, structurally sound, and reliable. Therefore, this study aimed to translate, culturally adapt, and evaluate selected measurement properties of the Vietnamese version of the General Self-Efficacy Scale among undergraduate nursing students. Specifically, the study examined content validity, structural validity, internal consistency, test-retest reliability, measurement error, floor and ceiling effects, and hypothesis testing for construct validity.

METHODS

Design: This methodological study was conducted in two phases. Phase 1 involved

translation and cultural adaptation of the General Self-Efficacy Scale (GSE) into Vietnamese. Phase 2 evaluated selected measurement properties of the Vietnamese version of the GSE (VN-GSE), including content validity, structural validity, internal consistency, test-retest reliability, measurement error, floor and ceiling effects, and hypothesis testing for construct validity. The translation process followed the cross-cultural adaptation procedure proposed by ¹². The psychometric evaluation was informed by COSMIN recommendations for studies of self-report measurement instruments ¹³.

Setting and participants: The study was conducted at a public nursing university in northern Vietnam from October 2025 to March 2026. Participants were undergraduate nursing students enrolled in the full-time Bachelor of Nursing program. Students were eligible if they were present during data collection, agreed to participate voluntarily, and were able to complete the questionnaire independently. Questionnaires with incomplete VN-GSE responses were excluded from the psychometric analyses.

Sampling and sample size: A stratified cluster sampling approach was used. Students were stratified by academic year, and two classes from each academic year were randomly selected. All eligible students in the selected classes were invited to participate. Of 417 students approached, 56 declined participation and 98 did not complete the questionnaire. The remaining 263 students completed the questionnaire and were included in the main psychometric analyses, yielding a response rate of 63.1%.

For test-retest reliability, one third-year class and one fourth-year class were randomly selected for a second VN-

GSE administration 15 days after the first administration. Sixty-seven students completed both assessments. During this interval, the research team did not implement any educational or psychological intervention intended to modify students' general self-efficacy.

Translation and cultural adaptation: The GSE was translated and culturally adapted following Beaton et al. (2000). Two independent forward translations from English into Vietnamese were completed by one translator with a nursing background and one English-language expert not involved in the psychometric evaluation. The translations were compared and synthesized into a preliminary Vietnamese version. Two independent back-translations were then completed by bilingual translators who had not seen the original GSE. The back-translations were compared with the original scale to identify discrepancies in wording, meaning, and conceptual equivalence.

An expert committee reviewed the original scale, forward translations, synthesized Vietnamese version, and back-translations. The committee considered semantic equivalence, conceptual equivalence, cultural appropriateness, clarity, and consistency with general self-efficacy. Revisions were made to produce the prefinal VN-GSE for content validity assessment and cognitive interviewing.

Content validity: Content validity was assessed qualitatively and quantitatively, addressing relevance, comprehensiveness, and comprehensibility ¹³. First, five nursing education experts reviewed the prefinal VN-GSE. The panel included three experts with doctoral degrees and two with master's degrees; all had at least five years of

experience in nursing education, clinical nursing, health research, or instrument evaluation. They reviewed item relevance, construct coverage, wording clarity, instructions, and response options.

Second, individual face-to-face cognitive interviews were conducted with eight undergraduate nursing students. Each interview lasted approximately 15–20 minutes and used verbal probing. Students restated each item, explained their response choices, identified unclear wording, and commented on whether the items reflected general coping capability rather than academic, clinical, or professional self-efficacy.

Third, quantitative content validity was assessed by a separate panel of nine experts in nursing education and clinical nursing practice. The panel included four experts with doctoral degrees and five with master's degrees; all had more than 10 years of relevant experience. Each item was rated on a four-point relevance scale. I-CVI, S-CVI/Ave, and S-CVI/UA were calculated from relevance ratings.

Instruments: The VN-GSE consists of 10 items rated on a four-point Likert scale, ranging from “not at all true” to “exactly true.” Total scores range from 10 to 40, with higher scores indicating higher general self-efficacy.

The Vietnamese Rosenberg Self-Esteem Scale (RSES) was used as a comparator for hypothesis testing for construct validity¹⁴. The scale includes 10 items rated from “strongly disagree” to “strongly agree,” with higher scores indicating higher self-esteem. VN-GSE scores were hypothesized to correlate positively with self-esteem scores.

The Stress subscale of the Vietnamese DASS-21 was used as a second comparator¹⁵. The subscale includes seven items rated from “did not apply to me at all” to “applied to me very much, or most of the time,” with higher scores indicating higher stress. VN-GSE scores were hypothesized to correlate negatively with stress scores.

Data collection: Data were collected using anonymous, self-administered questionnaires. Students in selected classes were informed about the study purpose, voluntary participation, confidentiality, and their right to withdraw without penalty. For test-retest reliability, responses from the two administrations were matched using study codes rather than names or student identification numbers.

Data analysis:

All analyses were conducted in R version 4.5.1. CFA was performed using the lavaan package, and reliability analyses were performed using the psych package. Content validity was evaluated using I-CVI, S-CVI/Ave, and S-CVI/UA. An I-CVI ≥ 0.78 , S-CVI/Ave ≥ 0.90 , and S-CVI/UA ≥ 0.80 were considered acceptable¹⁶.

Structural validity was examined using CFA of the hypothesized one-factor model. Because VN-GSE items used a four-point ordinal response format, CFA was conducted using polychoric correlations with WLSMV estimation. Model fit was evaluated using χ^2/df , CFI, TLI, RMSEA, and SRMR. Fit indices were interpreted together using commonly reported thresholds for acceptable fit: $\chi^2/df < 3$, CFI and TLI ≥ 0.90 , and RMSEA and SRMR ≤ 0.08 ¹⁷. Average variance extracted ≥ 0.50 and composite reliability ≥ 0.70 were considered acceptable^{18, 19}. No

post hoc correlated residuals were added to the hypothesized one-factor model.

AVE and CR were calculated from standardized factor loadings as supplementary CFA-based indices. Internal consistency was assessed using Cronbach's alpha and McDonald's omega total. Internal consistency of the comparator instruments was assessed using Cronbach's alpha. Test-retest reliability was assessed using ICC(2,1), based on a two-way random-effects model, absolute agreement, and single measurement²⁰. Measurement error was assessed using the standard error of measurement and the smallest detectable change. SEM was calculated as $SD_{\text{baseline}} \times \sqrt{1 - ICC}$, and SDC was calculated as $1.96 \times \sqrt{2} \times SEM$.

RESULTS

Participant characteristics and score distribution:

The final analytic sample included 263 undergraduate nursing students. Most participants were female (91.3%). By academic year, 10.6% were first-year students, 24.0% were second-year students, 57.4% were third-year students, and 8.0% were fourth-year students. The VN-GSE total score ranged from 10 to 40, with a mean score of 27.02 (SD = 6.37). The minimum possible score of 10 was observed in 1.1% of participants, and the maximum possible score of 40 was observed in 4.9%. No floor or ceiling effect was observed.

Content validity:

All 10 VN-GSE items were retained after expert review. No item was removed or added. Revisions mainly involved wording and phrasing to improve clarity and appropriateness for undergraduate nursing students. Cognitive interviews showed that the instructions, items, and four response options were understandable. Students interpreted the items as reflecting general coping capability rather than academic or clinical self-efficacy. Minor wording suggestions were incorporated into the final survey version. In the quantitative content validity assessment, I-CVI values ranged from 0.78 to 1.00. The S-CVI/Ave was 0.97, and the S-CVI/UA was 0.80.

Structural validity:

CFA supported the hypothesized one-factor model, with all model fit indices meeting the prespecified criteria. Supplementary CFA-based indices were also acceptable (Table 1).

Hypothesis testing for construct validity was conducted using Spearman correlation coefficients between VN-GSE scores and scores on the RSES and DASS-21 Stress subscale. Floor and ceiling effects were considered present if more than 15% of participants obtained the minimum or maximum possible VN-GSE score.

Ethical considerations: The study was approved by the institutional biomedical research ethics committee (approval number blinded for review). All participants received information about the study purpose, procedures, voluntary participation, confidentiality, and the right to withdraw without penalty. Participation was based on informed consent. Data were anonymized and used only for research purposes.

Table 1. CFA and Supplementary CFA-Based Indices of the VN-GSE

Index	Result	Recommended threshold
χ^2/df	1.55	< 3.00
CFI	0.998	≥ 0.90
TLI	0.997	≥ 0.90
RMSEA	0.046	≤ 0.08
90% CI of RMSEA	0.018–0.069	Upper bound ≤ 0.08
SRMR	0.045	≤ 0.08
AVE	0.59	≥ 0.50
CR	0.93	≥ 0.70

Note. VN-GSE, Vietnamese General Self-Efficacy Scale; CFA, confirmatory factor analysis; χ^2/df , chi-square divided by degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; RMSEA, root mean square error of approximation; CI, confidence interval; SRMR, standardized root mean square residual; AVE, average variance extracted; CR, composite reliability.

Internal consistency: The VN-GSE showed high internal consistency. Cronbach's alpha was 0.911, and McDonald's omega total was 0.912. Corrected item-total correlations ranged from 0.584 to 0.730. Cronbach's alpha if item deleted ranged from 0.899 to 0.908, with all values lower than the alpha for the total scale (Table 2). Cronbach's alpha was 0.81 for the RSES and 0.86 for the DASS-21 Stress subscale.

Table 2. Item analysis and internal consistency of the VN-GSE

Item	Corrected item-total correlation	Cronbach's α if item deleted
SE1	0.584	0.908
SE2	0.629	0.905
SE3	0.681	0.902
SE4	0.728	0.899
SE5	0.723	0.899
SE6	0.657	0.903
SE7	0.682	0.901
SE8	0.730	0.899
SE9	0.663	0.903
SE10	0.684	0.901

Note. VN-GSE, Vietnamese General Self-Efficacy Scale; α , Cronbach's alpha. Cronbach's alpha for the total VN-GSE = 0.911; McDonald's omega total = 0.912.

Test-Retest Reliability and Measurement Error

A total of 67 students completed the VN-GSE at both administrations, 15 days apart. The ICC(2,1) was 0.912, with a 95% CI of 0.89–0.95. The SEM was 1.57, and the SDC was 4.37 (Table 3).

Table 3. Test-Retest reliability and measurement error of the VN-GSE

Index	Result
ICC(2,1)	0.912
95% CI of ICC	0.89–0.95
F	66.75
p	< 0.001
SEM	1.57
SDC	4.37

Note. VN-GSE, Vietnamese General Self-Efficacy Scale; ICC(2,1), intraclass correlation coefficient using a two-way random-effects model, absolute agreement, and single measurement; CI, confidence interval; SEM, standard error of measurement; SDC, smallest detectable change.

Hypothesis testing for construct validity

Of the two prespecified hypotheses, one was supported. VN-GSE scores were positively correlated with RSES scores. VN-GSE scores were negatively correlated with DASS-21 Stress scores, as hypothesized, but the association was not statistically significant (Table 4).

Table 4. Hypothesis testing for construct validity of the VN-GSE

Comparison	Prespecified hypothesis	Spearman's r	p
VN-GSE with RSES	Positive correlation	0.177	0.004
VN-GSE with DASS-21 Stress	Negative correlation	–0.066	0.285

Note. VN-GSE, Vietnamese General Self-Efficacy Scale; RSES, Rosenberg Self-Esteem Scale; DASS-21, Depression Anxiety Stress Scales-21.

DISCUSSION

This study translated, culturally adapted, and evaluated selected measurement properties of the Vietnamese General Self-Efficacy Scale among undergraduate nursing students. In this sample, the VN-GSE showed acceptable content validity indices, support for a one-factor structure, high internal consistency, good

reproducibility over a 15-day interval, and no evidence of floor or ceiling effects. However, the evidence for construct validity from hypothesis testing was insufficient, as only one of the two prespecified hypotheses was supported.

The translation and cultural adaptation process indicated that the VN-GSE was understandable and conceptually

appropriate for the target population. Expert review and cognitive interviews showed that students interpreted the items as reflecting general coping capability rather than academic or clinical self-efficacy. This distinction is important because the original GSE was developed to assess generalized self-efficacy rather than confidence in a specific course, clinical procedure, or professional task⁶. The content validity indices further supported the relevance and comprehensibility of the Vietnamese items in this sample.

The CFA findings supported compatibility of the data with the hypothesized one-factor model. This finding is consistent with previous cross-cultural studies indicating that the GSE generally functions as a unidimensional measure of general self-efficacy across countries and language groups^{7,8}. The AVE and CR values provided supplementary information supporting the proposed one-factor structure; however, these indices should be interpreted as complementary to, rather than independent of, the CFA findings when evaluating construct validity^{18,19,21}. Because alternative factor structures were not examined, the present findings support the compatibility of the data with a one-factor model but do not establish that this model is superior to other plausible representations.

The VN-GSE demonstrated high internal consistency, with both Cronbach's alpha and McDonald's omega slightly above 0.90. These estimates are comparable to, or slightly higher than, those reported in previous international studies of the GSE^{5,8}. Nevertheless, high internal consistency should not be interpreted as evidence that all items contribute unique information. The present study did not specifically assess potential item redundancy using inter-item correlations, residual correlations,

or indicators of local dependence. Further research should therefore examine whether some VN-GSE items provide overlapping information.

The test-retest findings indicated good reproducibility of VN-GSE scores over the 15-day interval. The ICC(2,1) exceeded commonly used thresholds for good reliability²⁰. In the present sample, the SEM and SDC estimates suggest that changes of less than approximately four to five points may be attributable to measurement error rather than true change. However, this estimate is specific to the current sample and should not be interpreted as a minimal important change. Longitudinal and intervention studies are needed to determine the magnitude of VN-GSE score change that can be considered educationally or psychologically meaningful.

Evidence from hypothesis testing for construct validity was more limited. As hypothesized, VN-GSE scores were positively correlated with self-esteem; however, the association was weak ($r = 0.177$), indicating only limited convergence between the two constructs in this sample. The correlation between VN-GSE scores and DASS-21 Stress was negative, as expected, but was very small and not statistically significant ($r = -0.066$, $p = 0.285$). Thus, the hypothesis concerning stress was not supported. These findings may reflect conceptual differences between general self-efficacy, self-esteem, and perceived stress, as well as sample characteristics, measurement error, or contextual influences. The present study, however, cannot determine which of these explanations accounts for the observed relationships.

These results warrant particular caution when interpreting construct validity. COSMIN guidance considers hypothesis-testing evidence sufficient when at least 75%

of prespecified hypotheses are confirmed¹³. In the present study, only one of the two hypotheses was supported, corresponding to 50% of the prespecified hypotheses. Moreover, although the association with self-esteem was statistically significant, its weak magnitude limits the strength of the convergent validity evidence. Therefore, the hypothesis-testing component of construct validity cannot be considered sufficient on the basis of the current data. This conclusion should be distinguished from the structural validity findings: the CFA supported compatibility with the proposed one-factor structure, whereas hypothesis testing addresses relationships between VN-GSE scores and theoretically related constructs. Evidence supporting one measurement property does not compensate for limited evidence regarding another.

The construct validity assessment was also based on only two comparator constructs, resulting in a relatively narrow examination of the theoretical network surrounding general self-efficacy. Previous studies among nursing students have examined general self-efficacy in relation to perceived competence, resilience, stress, self-directed learning, and study-related self-efficacy^{3,22}. These relationships were not examined in the present study and therefore should not be inferred from the current findings. Future studies should evaluate a broader range of theoretically related constructs and prespecified hypotheses to provide a more comprehensive assessment of the construct validity of the VN-GSE.

The distinction between general and domain-specific self-efficacy also remains important when interpreting VN-GSE scores. The present findings do not support interpreting the VN-GSE as a measure of academic self-efficacy, clinical self-efficacy, professional competence,

or educational performance. In nursing education, domain-specific self-efficacy instruments have been developed for particular educational and clinical contexts, including clinical and simulation-based learning²³. Such instruments may therefore be more appropriate when the research question concerns confidence in a specific course, clinical skill, simulation scenario, or performance domain. Overall, the present findings support the proposed one-factor structure and indicate good reliability of the VN-GSE in Vietnamese undergraduate nursing students. However, because only one of the two prespecified construct-validity hypotheses was supported and the confirmed association was weak, evidence for construct validity remains preliminary. Additional hypothesis-testing evidence is required before the construct validity of the VN-GSE can be considered adequately established for routine use in nursing education research.

Several limitations should be acknowledged. First, the study was conducted at one public nursing university in northern Vietnam, limiting generalizability to other institutions and regions. Second, the response rate was moderate, and the characteristics of non-participants were unavailable; therefore, non-response bias cannot be excluded. Third, more than half of the participants were third-year students, so the findings may primarily reflect measurement performance among students in the middle stage of the nursing curriculum. Fourth, the sample was predominantly female, limiting conclusions about measurement performance across gender groups. Fifth, measurement invariance by gender, academic year, or other subgroups was not examined. Sixth, cross-cultural validity and differential item functioning were not directly evaluated; therefore,

equivalence between the VN-GSE and the original or other language versions cannot yet be assumed. Finally, responsiveness and minimal important change were not evaluated.

Future research should evaluate the VN-GSE in larger and more diverse samples of Vietnamese nursing students across institutions and regions. Studies should examine measurement invariance across academic year and gender and test broader construct validity hypotheses with both direction and magnitude specified a priori. Longitudinal and intervention studies are also needed to evaluate responsiveness and meaningful score change. If future studies use the VN-GSE in nursing education research, they should empirically examine its relationships with relevant educational constructs rather than assuming applicability from structural validity and reliability alone.

CONCLUSION

The current findings provide preliminary support for the VN-GSE among Vietnamese undergraduate nursing students. In this sample, the scale showed acceptable content validity indices, support for a one-factor structure, high internal consistency, good short-term reproducibility, and no floor or ceiling effects. However, the evidence for construct validity from hypothesis testing was insufficient. Additional evidence of construct validity is required before stronger inferences regarding score interpretation can be made.

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