

Psychometric Evaluation of the Thai Version of the Debriefing Experience Scale among Nursing Students: A Cross–Sectional Study

Onouma Thummapol, Thitaporn Wilson, Werayuth Srithumsuk, Jitrada Pongtharatik*

Abstract: Debriefing is a central component of simulation-based learning and is commonly evaluated using standardized instruments such as the Debriefing Experience Scale. Despite the growing adoption of simulation-based learning in Thai nursing education, no standardized Thai-language instrument currently exists to evaluate students' debriefing experiences, limiting educators' ability to measure debriefing quality within this context accurately. This study aimed to translate and psychometrically evaluate the Thai version of the Debriefing Experience Scale among 200 nursing students from five nursing faculties across Thailand. The instrument was translated using forward-and-backward translation. Exploratory and confirmatory factor analyses were used to assess the structural validity of the instrument, separately evaluating its experience and importance dimensions. The psychometric properties were verified using established fit indices, convergent validity, composite reliability, and internal consistency Cronbach's alpha.

Exploratory factor analysis identified a two-component structure for both dimensions. For the Experience dimension, the components were Learning and Making Connections and Facilitator Skill and Guidance for Analyzing Thoughts and Conducting the Debriefing. For the Importance dimension, the components were Learning and Analyzing Thoughts and Feelings and Facilitator Skill and Guidance in Conducting the Debriefing. Subsequent confirmatory factor analysis supported this two-factor model, demonstrating fit indices within acceptable ranges. Furthermore, the instrument met the recommended psychometric criteria, including internal consistency and convergent validity, confirming a well-fitting structure consistent with the underlying theoretical domains of debriefing. The instrument provides nursing educators with a culturally adapted tool for evaluating students' debriefing experiences, supporting ongoing improvement in simulation teaching practices and faculty development. Although the findings supported a two-factor structure representing students' debriefing experiences and the perceived importance of debriefing, future research should include additional validity testing, including convergent, discriminant, and predictive validity.

Keywords: Debriefing, Debriefing Experience Scale, Education, Nursing, Psychometrics, Simulation training

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Introduction

Simulation-based learning has become a central component of contemporary nursing education, providing students with a safe, structured environment

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to develop clinical competence, decision-making skills, and teamwork skills without compromising patient safety.^{1,2} Among the key components of simulation-based learning, debriefing is widely considered as the phase in which experience becomes meaningful learning.^{3,4} A well-conducted debriefing enables students to analyze their performance, receive constructive feedback, and connect theoretical knowledge with clinical practice, thereby strengthening clinical reasoning, reflective ability, and professional judgment.^{5,6} Conversely, poorly structured or inadequately facilitated debriefings may increase learner anxiety, reduce satisfaction, and limit the development of critical thinking and confidence.^{4,7} As simulation-based learning is increasingly implemented internationally,^{1,2} ensuring the quality of debriefing has become an important priority in nursing education, necessitating standardized instruments. However, the lack of a validated Thai-language version restricts educators' ability to systematically measure debriefing quality in the Thai nursing education context. Therefore, this study sought to translate and psychometrically evaluate the Thai version of the Debriefing Experience Scale (DES) among Thai nursing students.

Literature Review

The educational importance of debriefing is well supported by learning theories. For example, Kolb's Experiential Learning Theory describes learning as a continuous cycle moving through concrete experience, reflection, conceptualization, and experimentation.⁸ Within this cycle, simulation scenarios provide the experience, while debriefing facilitates reflection and conceptualization, enabling students to interpret their actions and apply improved strategies in future clinical practice.⁸ Complementing this perspective, the NLN Jeffries Simulation Theory positions debriefing as an essential pedagogical process that should be structured, learner-centered, and guided by skilled facilitators who promote

reflective dialogue and psychological safety.⁹ This theoretical foundation is reinforced by the Healthcare Simulation Standards of Best Practice, which specify that debriefings should be intentionally designed, facilitated by qualified educators, conducted in psychologically safe environments, and grounded in theory or evidence.¹⁰ Given this central role, evaluation of debriefing quality has become an important consideration for educators seeking to optimize simulation-based learning outcomes.

Several instruments have been developed to evaluate debriefing; however, many focus primarily on facilitator performance or the overall simulation process rather than the learner's experience. Instruments such as the Debriefing Assessment for Simulation in Healthcare (DASH)¹¹ and the Simulation Effectiveness Tool (SET)¹² provide valuable information regarding instructional quality but offer limited insights into how students perceive and interpret the debriefing process. The Debriefing Experience Scale, developed by Reed,¹³ uniquely measures debriefing from the learner's perspective. The scale evaluates both the debriefing experience and its perceived importance across domains, including learning, emotional reflection, facilitator skill, and guidance. By foregrounding the learner perspective, the instrument enables educators to understand better how debriefing supports learning and to identify opportunities for pedagogical improvement.

Although this instrument has been translated and validated in several cultural contexts, including Norway, Portugal, Spain, Turkey, China, and Korea,¹⁴⁻¹⁸ the instrument has not yet been translated into Thai, and its psychometric properties have not been examined in Thailand. Beyond linguistic translation, cross-cultural validation requires examination of whether an instrument measures the same construct across different educational contexts. Psychometric theory emphasizes that structural equivalence cannot be assumed when instruments developed in one sociocultural setting are applied in another.¹⁹ Reflective dialogue is influenced by social

interaction and shaped by norms related to authority, communication, and emotional expression.²⁰ Educational contexts characterized by hierarchical teacher–student relationships may influence how learners engage in reflection and express perceptions during debriefing.^{26,27} Previous validation studies have demonstrated that factor structures of translated instruments may vary across contexts even when internal consistency remains high, suggesting a contextual organization of shared constructs rather than a failure of the underlying concept.^{15,18} Examining how a widely used debriefing evaluation instrument performs in different educational contexts is therefore important not only for local validation but also for understanding the extent to which debriefing constructs are perceived consistently across settings.

Taken together, existing evidence highlights the importance of ensuring that instruments used to evaluate debriefing are both linguistically and culturally appropriate for the educational context in which they are applied. Despite the growing adoption of simulation–based learning in Thai nursing education, as previously mentioned, no standardized instrument exists in the Thai language to evaluate students’ debriefing experiences. Currently available instruments, including the DES, exist only in English¹² or other non–Thai translations,^{14–18} rendering them linguistically inaccessible to Thai–speaking students and educators. Administering instruments in a non–native language risks misinterpretation of items, culturally incongruent responses, and inaccurate measurement of the debriefing constructs the instrument was designed to assess. Further, psychometric structures established in other educational contexts cannot be assumed to transfer to the Thai setting. The absence of a psychometrically evaluated Thai–language debriefing instrument, therefore, represents a critical gap, preventing educators from accurately measuring debriefing quality and generating locally relevant evidence to support simulation–based nursing education in Thailand. This gap underscores the need to translate and psychomet-

rically evaluate the Thai version of the DES to ensure accurate, contextually appropriate measurement of students’ debriefing experiences.

Study Aim

This study aimed to translate and culturally adapt the DES into Thai and to examine its psychometric properties among Thai nursing students. Establishing the instrument’s reliability and psychometric properties will provide educators with a standardized tool for evaluating debriefing quality and supporting evidence–based simulation–based learning in nursing education.

Methods

Design: This cross–sectional study was conducted; this article follows the STROBE statement for reporting cross–sectional studies.

Sample and Setting: Nursing students were recruited between May and June 2025 from five nursing faculties across Thailand, representing four institutional sectors: the army nursing college, public universities, the Ministry of Public Health nursing colleges, and private universities. Participants were eligible if they had previously participated in at least three high–fidelity simulations that included structured debriefing sessions within the past semester. The sample size met the commonly recommended criterion for factor analysis of at least ten participants per item of the instrument.²¹ A multi–stage sampling approach was employed to select participants without bias.

In the first stage, cluster sampling was used to establish institutional representation; the four educational sectors served as primary clusters, from which five specific nursing faculties were randomly selected across different regions. In the second stage, simple random sampling was applied at the individual level. Designated faculty members at each selected institution were provided with the eligibility criterion

and used a computer-generated random number program to select students from their official registries. This process ensured an unbiased, equal, and independent chance of selection for all eligible individuals, yielding the final sample of 200 valid respondents.

Instruments: *The Debriefing Experience Scale (DES)*, developed by Reed,¹³ measures students' perceptions of the debriefing experience and the perceived importance of those experiences. The instrument contains 20 items organized conceptually into four subscales: Analyzing thoughts and feelings (4 items), Learning and making connections (8 items), Facilitator skill in conducting the debriefing (5 items), and Appropriate facilitator guidance (3 items). These four subscales are rated across two parallel operational dimensions: the Experience dimension (the actual occurrence during debriefing) and the Importance dimension (the value assigned to that occurrence by the student). Participants rated each item on two parallel 5-point Likert scales: one reflecting their debriefing experience (1 = strongly disagree to 5 = strongly agree) and the other reflecting the perceived importance of that experience (1 = not important to 5 = very important). Summing the scores within each dimension yields an overall estimate of students' debriefing experience and the importance of the dimensions.

The original Debriefing Experience Scale demonstrated strong internal consistency across both dimensions. For the experience dimension, the original subscale Cronbach's alpha (α) levels were 0.89 for learning and making connections, 0.80 for analyzing thoughts and feelings, 0.80 for facilitator skill in conducting debriefing, and 0.84 for appropriate facilitator guidance, with an overall dimension alpha of 0.93. For the importance dimension, the original subscale alphas were 0.61 for analyzing thoughts and feelings, 0.85 for learning and making connections, 0.75 for facilitator skill in conducting the debriefing, and 0.65 for appropriate facilitator guidance, with an overall dimension alpha of 0.91.¹³

The translation and cultural adaptation process followed established cross-cultural validation guidelines.¹⁹ Two independent, bilingual nursing experts whose first language was Thai and who possessed native-like fluency in English, performed the forward translation of the original English instrument into Thai. The research team compared both versions and reconciled minor linguistic discrepancies to produce a synthesized Thai draft.

A separate bilingual panel consisting of two professional translators, both fluent in Thai and English, then conducted a backward translation into English to verify semantic accuracy. This back-translated version was reviewed and approved for semantic, conceptual, and cultural equivalence by the original instrument developer, Dr. Shelly J. Reed.¹³ The pre-final instrument was subsequently evaluated for content relevance by a panel of three simulation education experts. These experts were certified healthcare simulation educators specializing in simulation pedagogy and holding leadership roles within regional simulation interest groups.

Finally, the pre-final version of the instrument was pilot tested with a convenience sample of 30 nursing students. These students were seniors from a Thai nursing faculty who met the inclusion criteria of having participated in at least three high-fidelity simulations and structured debriefing sessions within the past semester. During the pilot test, the nursing students were asked to review each item for clarity, comprehensibility, and contextual relevance using a structured feedback form. Overall, participants reported that the items were clear and understandable within the Thai nursing education context. Minor phrasing modifications were made to two items in the Analyzing thoughts and feelings subscale to improve readability and ensure that the cultural nuances of emotional reflection were naturally understood in the Thai language context.

Data Collection: Recruitment of participating institutions was initiated by contacting each institution's faculty coordinators, who identified eligible students from academic registries based on prior simulation experience and conducted the random selection. These coordinators then distributed an email invitation to the selected students, which contained a secure link to an electronic questionnaire hosted on Google Forms.

The online questionnaire comprised two distinct sections designed to gather all study variables. The first section collected participant demographic characteristics and simulation exposure variables, including age, academic year, institutional sector, current grade point average, number of prior debriefing sessions attended, recency of their last debriefing, and average simulation group size. The second section consisted of the final 20-item Thai version of the Debriefing Experience Scale, evaluating both the experience and importance dimensions.

Completing the electronic form took approximately 15 minutes. To protect data integrity and mitigate response bias, data were collected completely anonymously. During the data screening process, responses exhibiting "non-varied patterns," defined specifically as invariant or identical ratings across all Likert-scale items (e.g., selecting "5" for all 20 questions), were operationalized as non-engaged responding and strictly excluded from the final analytic sample.

Data Analysis: Data were analyzed using Jamovi statistical software (Version 2.6).²² Prior to analysis, data were screened for response quality, including the detection of invariant response patterns and the examination of normality assumptions. The invariant response patterns were excluded from data analysis. Content validity was assessed using the content validity index (CVI) based on expert ratings. Construct validity was evaluated through exploratory and confirmatory factor analyses (EFA and CFA). Crucially, because actual clinical exposure (Experience) and perceived value (Importance)

represented distinct evaluative domains, the 20-item Experience scale and the 20-item Importance scale were factor-analyzed separately in independent matrices. For EFA, principal component analysis (PCA) was used to identify the instrument's underlying factor structure. Sampling adequacy was confirmed using the Kaiser–Meyer–Olkin (KMO) measure (> 0.50) and Bartlett's test of sphericity ($p < 0.05$). Factors were extracted using PCA with Varimax rotation based on eigenvalues > 1 , scree plot inspection, and item loadings > 0.40 .²⁴ A first-order CFA was then performed using maximum likelihood estimation to evaluate the factor structure identified in EFA. Model fit was evaluated using χ^2/df (< 2), goodness-of-fit index (GFI > 0.90), adjusted goodness-of-fit index (AGFI > 0.90), comparative fit index (CFI > 0.90), and root mean square error of approximation (RMSEA < 0.05). Average variance extracted (AVE) ≥ 0.50 and composite reliability (CR) > 0.70 . Modification indices were reviewed and applied only when supported by conceptual justification to improve model fit. Finally, reliability was examined using Cronbach's alpha coefficients for the finalized subscales.

Ethical Considerations: This study was approved by the Assumption University Institutional Review Board before data collection (IRB no. 67/2024, April 8, 2025), and data were collected from May to June 2025. To protect nursing students, a vulnerable participant group, and eliminate power asymmetries, all recruitment, consent delivery, and data collection were managed by independent institutional coordinators, ensuring that primary investigators had no access to submission tracking. A digital invitation was first linked to an electronic information sheet and an informed consent form. Participants provided consent by selecting the mandatory "I consent to participate" checkbox, which was required to unlock the questionnaire. Students were explicitly assured that declining the invitation or abandoning the form would carry no academic penalties or impact on their course grades. Absolute anonymity was maintained because no identifying data, including names, institutional IDs, email addresses,

or IP addresses, was collected. Completed responses were encrypted and saved in a restricted-access, password-protected storage system available only to members of the research team.

Results

Participant characteristics

A total of 222 responses were received. Twenty-two responses (9.91%) were excluded due to invariant response patterns across all items (e.g., identical ratings across the scale), suggesting non-engaged responding. The final analytic sample consisted of 200 nursing students (90.09%). The mean age was 21.92 (SD = 2.79) years, and most participants (64.5%) were in the junior year of a bachelor's program. Institutional affiliations included the army nursing college (43.5%), public universities (37.5%), Ministry of Public Health nursing colleges (11.0%), and private universities (8.0%). The mean grade point average was 3.23 (SD = 0.54). Regarding simulation exposure, 42.0% had participated in one to three debriefing sessions, and 58.0% had participated in more than three sessions. Most participants reported that their most recent debriefing occurred within one to three months before the study. The mean simulation group size was 8.96 (SD = 2.69), with 39.5% participating in groups of five or fewer.

Content validity

This was assessed through the CVI, derived from ratings provided by the three experts in nursing education. Each item was rated for relevance using a 4-point scale, ranging from 1 (not relevant) to 4 (highly relevant), with scores of 3 or 4 classified as indicating relevance. Both the item-level and scale-level CVIs reached 1.00, indicating complete agreement among the experts regarding the content's relevance.

Construct validity

Exploratory Factor Analysis: Data suitability for factor analysis was confirmed by Kaiser–Meyer–Olkin (KMO) values of 0.958 for the Experience scale and 0.959 for the Importance scale, and by highly significant Bartlett's tests of sphericity ($p < 0.001$) for both dimensions. Inter-item correlations ranged from 0.63 to 0.88, demonstrating strong internal associations. Multicollinearity was not considered a threat to the stability of the factor structures, as no correlation exceeded the conservative threshold of 0.90.²³ Because actual clinical exposure (Experience) and perceived value (Importance) are distinct evaluative domains, independent EFAs were conducted using principal component analysis (PCA) with varimax rotation within separate matrices. The statistical criteria supported a two-factor solution for both dimensions, explaining 79.5% of the total variance for the Experience scale and 87.7% for the Importance scale (Table 1).

Table 1. Exploratory factor analysis results

Statistic	Experience scale items	Importance scale items
1. Calculation of correlation matrix		
1.1 KMO	0.958	0.959
1.2 Bartlett's test of sphericity	* $p < 0.001$	* $p < 0.001$
2. Factor extraction		
2.1 Eigenvalue	14.317	15.151
2.2 Scree plot	Clear separation between slope and plateau at 2	Clear separation between slope and plateau at 2
2.3 Percent of variance cumulative	79.50	87.70
3. Factor rotation		
3.1 Factor loading	≥ 0.692	≥ 0.633
3.2 Number of variables described in each component	Three or more variables	Three or more variables

Note. KMO = Kaiser–Meyer–Olkin measure of sampling adequacy * p = significance value

The retention of two factors was empirically justified by eigenvalues > 1 and a visual inspection of the scree plots, which revealed a distinct elbow and a clear separation between the slope and the plateau at the second component for both scales. Although a four-factor solution was initially examined during the exploratory phase to test a more granular structure, it was ultimately rejected due to factor

under-determination (factors containing fewer than three variables), poor item loadings (< 0.40), and a lack of sound theoretical interpretability in context. Under the finalized two-factor models, all 20 items across both independent matrices demonstrated strong factor loadings above the threshold (minimum loadings of 0.692 for Experience and 0.633 for Importance), necessitating no item deletions (Table 2).

Table 2. Factor loadings for Experience and Importance scale items (N = 200)

Item	Variable	Experience scale items		Importance scale items	
		Factor loadings		Factor loadings	
		1	2	1	2
1	Debriefing helped me in connecting with my learning การอภิปรายหลังสถานการณ์จำลองช่วยให้ฉันสามารถเชื่อมโยงการเรียนรู้ได้	0.824		0.790	
2	Debriefing was helpful for processing the simulation experience การอภิปรายหลังสถานการณ์จำลองมีประโยชน์ในการประมวลผลหลังปฏิบัติสถานการณ์จำลอง	0.834		0.791	
3	Debriefing gave me the opportunity to learn การอภิปรายหลังสถานการณ์เปิดโอกาสในการเรียนรู้ให้กับฉัน	0.841		0.836	
4	Debriefing helped me understand the meaning of simulation การอภิปรายหลังสถานการณ์จำลองช่วยให้ฉันเข้าใจถึงความหมายของสถานการณ์จำลอง	0.816		0.808	
5	My questions during simulation were answered in debriefing คำถามของฉันจากการเข้าสถานการณ์จำลองถูกตอบระหว่างการอภิปรายหลังสถานการณ์จำลอง	0.769		0.795	
6	I became more self-aware during debriefing ฉันมีความตระหนักรู้ในตนเองมากขึ้นในระหว่างการการอภิปรายหลังสถานการณ์จำลอง	0.846		0.770	
7	Debriefing helped me to clarify problems การอภิปรายหลังสถานการณ์จำลองช่วยให้ฉันมีความกระจ่างในข้อสงสัย	0.815		0.807	
8	Debriefing helped me in making connections between theory and real situations การอภิปรายหลังสถานการณ์จำลองช่วยให้ฉันเชื่อมโยงระหว่าง ทฤษฎี และสถานการณ์ในชีวิตจริง	0.837		0.768	

Table 2. Factor loadings for Experience and Importance scale items (N = 200) (Cont.)

Item	Variable	Experience scale items		Importance scale items	
		Factor loadings		Factor loadings	
		1	2	1	2
9	Debriefing helped me with analyzing my thoughts การอภิปรายหลังสถานการณ์จำลองช่วยให้ฉันสามารถวิเคราะห์ ความคิดของฉันได้		0.692	0.664	
10	Facilitator promoted perspectives of the healthcare team's behavior ผู้อำนวยความสะดวกกระตุ้นให้เกิดมุมมองต่างๆ และสร้างพฤติกรรมของ ทีมดูแลสุขภาพ		0.726		0.633
11	The environment during debriefing was relaxed and comfortable สิ่งแวดล้อมในการอภิปรายหลังสถานการณ์จำลองทางมีความผ่อนคลายและ รู้สึกสบาย		0.762		0.648
12	Unpleasant feeling during simulation was solved by debriefing ความรู้สึกไม่สบายใจจากการเข้าสถานการณ์จำลองได้รับการแก้ไขในระหว่าง การอภิปรายหลังสถานการณ์จำลอง		0.756		0.659
13	Facilitator gave me enough time to reflect before providing feedback ผู้อำนวยความสะดวกเปิดโอกาสให้ฉันได้สะท้อนคิดก่อนที่จะให้การสะท้อนกลับ		0.806		0.769
14	During debriefing, the facilitator discussed with appropriate amount of content ผู้อำนวยความสะดวกพูดในปริมาณที่เหมาะสมระหว่างอภิปรายหลังสถานการณ์ จำลอง		0.834		0.789
15	Debriefing gave me an opportunity for reflecting towards my performance in simulation การอภิปรายหลังสถานการณ์จำลองเปิดโอกาสให้ฉันสะท้อนคิดถึงการปฏิบัติ ของตนเองในระหว่างสถานการณ์จำลอง		0.799		0.771
16	I had sufficient time to complete debriefing ฉันมีเวลาเพียงพอในการอภิปรายหลังสถานการณ์จำลอง		0.836		0.764
17	The facilitator was skillful in the simulation context ผู้อำนวยความสะดวกมีความเชี่ยวชาญในบริบทสถานการณ์จำลอง		0.727		0.770
18	The facilitator provided an appropriate amount of instruction during debriefing ผู้อำนวยความสะดวกให้คำแนะนำในปริมาณที่เหมาะสมระหว่างอภิปราย หลังสถานการณ์จำลอง		0.791		0.713

Table 2. Factor loadings for Experience and Importance scale items (N = 200) (Cont.)

Item	Variable	Experience scale items		Importance scale items	
		Factor loadings		Factor loadings	
		1	2	1	2
19	The facilitator provided constructive evaluation during debriefing ผู้อำนวยความสะดวกมีการประเมินเชิงสร้างสรรค์ระหว่างอภิปราย หลังสถานการณ์จำลอง		0.792		0.767
20	The facilitator provided sufficient guidance during debriefing ผู้อำนวยความสะดวกให้แนวทางที่เพียงพอระหว่างอภิปรายหลังสถานการณ์ จำลอง		0.755		0.713

Note. Only factor loadings ≥ 0.40 are displayed.

Retained factors were theoretically named based on item cluster semantic themes, establishing two broader domains optimized for the population: The Thai Debriefing Experience Scale comprises two factors: 1) Learning and making connections (Items 1–8; loadings ≥ 0.769), representing the Learner Domain (active reflection and theory-to-practice integration). 2) Facilitator skill and guidance for analyzing thoughts and conducting the debriefing (Items 9–20; loadings ≥ 0.692), representing the Instructor Domain (psychological safety and guidance). The Importance Scale comprises two components: 1) Learning and analyzing thoughts and feelings (Items 1–9; loadings ≥ 0.664), representing the Learner Domain (perceived value of cognitive processing). 2) Facilitator skill and

guidance in conducting the debriefing (Items 10–20; loadings ≥ 0.633), representing the Instructor Domain (perceived weight of facilitator expertise and evaluation).

Confirmatory Factor Analysis (CFA): This evaluated the structural fit of the emerged dimensions. Given population constraints, splitting the sample (N = 200) was impractical because the required sample sizes for stable estimation exceeded the available population.^{23,24} Consequently, the total sample was used sequentially for both EFA and CFA. To address potential sample-reuse bias, post-hoc modifications based on modification indices (MI) were guided by theoretical relevance rather than statistical fit alone. Following these adjustments, the Thai-DES demonstrated an excellent construct fit (Table 3; Figures 1–2).

Table 3. Goodness-of-fit indices for confirmatory factor analysis

DES	χ^2/df	RMSEA	GFI	AGFI	CFI	AVE	CR
Experience							
Learning and making connections	1.33	0.041	0.99	0.99	0.99	0.81	0.97
Facilitator skill and guidance for analyzing thoughts and conducting the debriefing	1.45	0.048	0.99	0.97	0.99	0.65	0.95
Importance							
Learning and analyzing thoughts and feelings	1.28	0.039	0.99	0.99	0.99	0.87	0.98
Facilitator skill and guidance in conducting the debriefing	1.20	0.032	0.99	0.99	0.99	0.75	0.97

Note. RMSEA = Root mean square error of approximation, GFI = Goodness of fit index, AGFI = Adjusted goodness of fit index, CFI = Comparative fit index, AVE = Average variance extracted; CR = Composite reliability

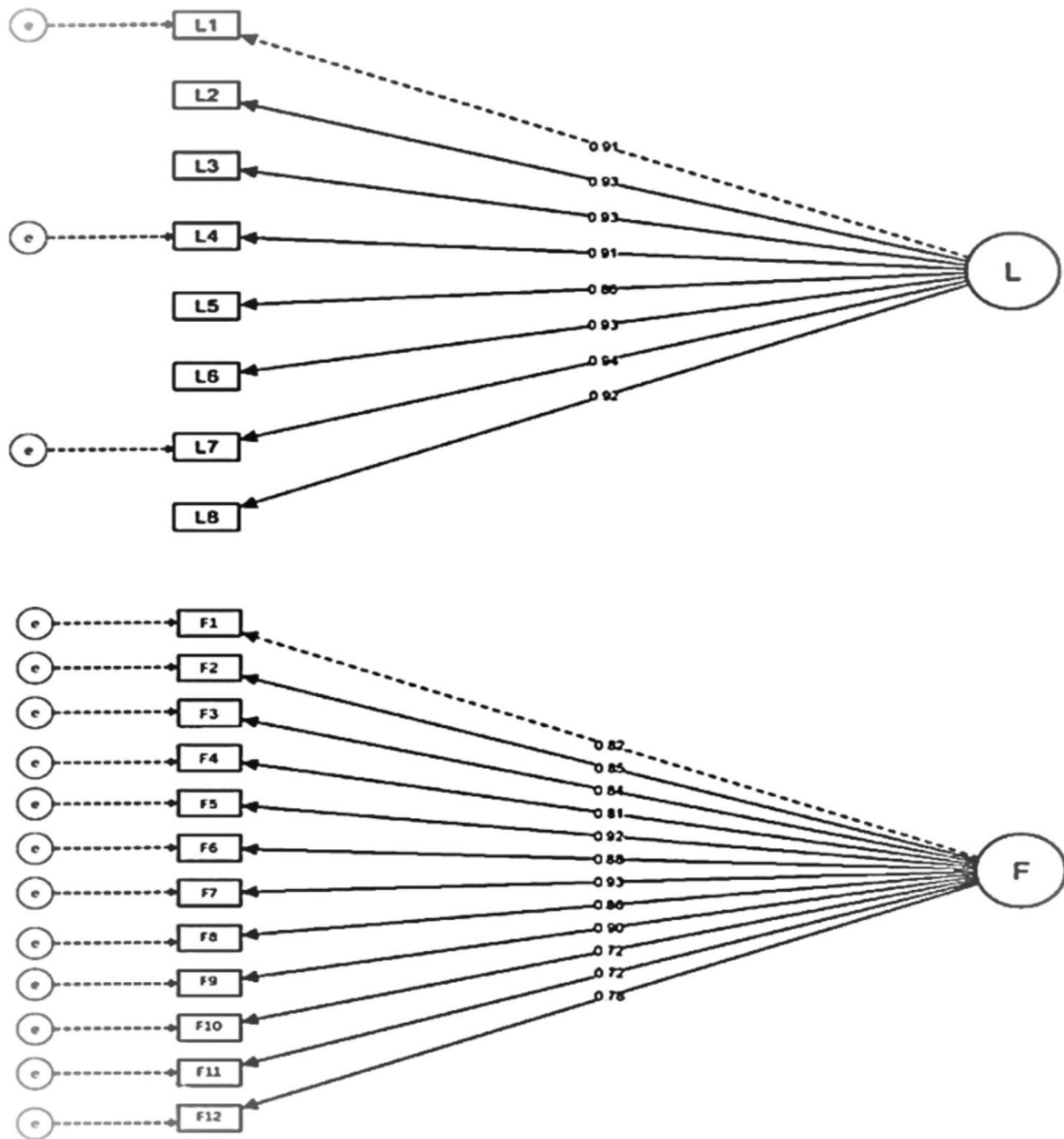


Figure 1. Confirmatory factor analysis model for experience dimension

Note. L = Learning and making connections; F = Facilitator skill and guidance for analyzing thoughts and conducting the debriefing

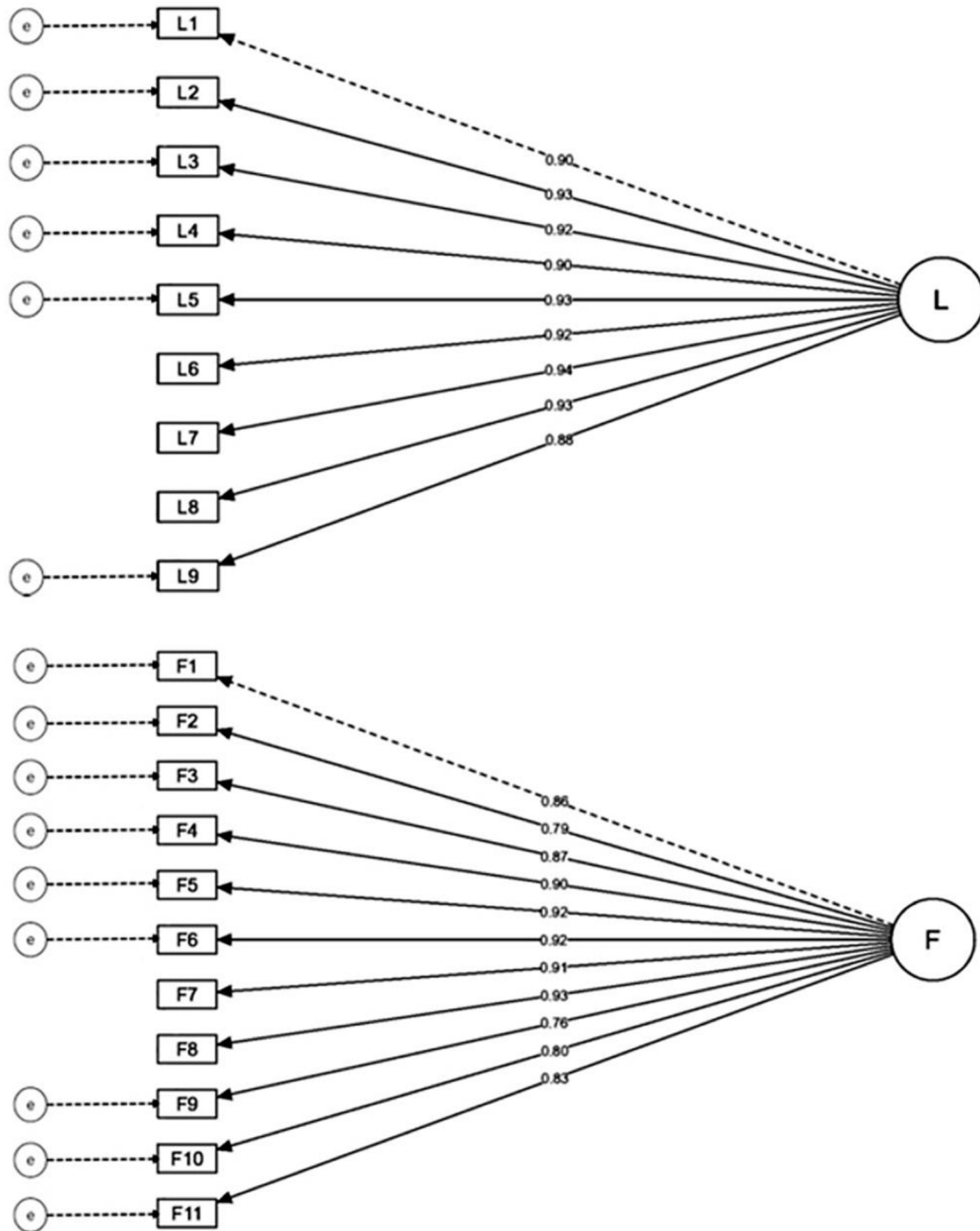


Figure 2. Confirmatory factor analysis model for importance dimension

Note. L = Learning and analyzing thoughts and feelings; F = Facilitator skill and guidance in conducting the debriefing

For the Experience dimension, the structure exhibited excellent fit: Learning and making connections yielded $\chi^2/df = 1.33$, RMSEA = 0.041, GFI = 0.99, AGFI = 0.99, and CFI = 0.99; Facilitator skill and guidance for analyzing thoughts and conducting the debriefing yielded $\chi^2/df = 1.45$, RMSEA = 0.048, GFI = 0.99, AGFI = 0.97, and CFI = 0.99. Convergent validity and construct reliability were supported, with average variance extracted (AVE) ranging from 0.65 to 0.81 (exceeding the 0.50 threshold) and composite reliability (CR) ranging from 0.95 to 0.97 (exceeding the 0.70 threshold).

For the Importance dimension, the model fit was also strong: Learning and analyzing thoughts and feelings yielded $\chi^2/df = 1.28$, RMSEA = 0.039, GFI = 0.99, AGFI = 0.99, and CFI = 0.99; Facilitator skill and guidance in conducting the debriefing yielded $\chi^2/df = 1.20$, RMSEA = 0.032, GFI = 0.99, AGFI = 0.99, and CFI = 0.99. The subscales demonstrated strong convergent validity, with AVE values ranging from 0.75 to 0.87 and CR values from 0.97 to 0.98. Minor model modifications based on MI were applied by freeing residual error covariances only between item pairs within the same factor that exhibited clear semantic overlaps, preserving the theoretical integrity of the original measurement model.²³

Reliability

The Thai Debriefing Experience Scale showed strong internal consistency, with Cronbach's alpha coefficients of $\alpha = 0.98$ for both the Experience and Importance scales, indicating excellent internal consistency across items. Subscale reliability ranged from $\alpha = 0.92$ to $\alpha = 0.98$.

Discussion

This study provides initial evidence supporting the reliability and internal structure of the Thai version of the Debriefing Experience Scale among nursing students engaged in simulation-based learning. The instrument demonstrated high internal consistency

in both dimensions, with Cronbach's alpha values comparable to those reported in the original DES and previous international studies.¹³⁻¹⁸ Expert review also supported the conclusion that the translated items were contextually relevant and suitable for use in Thai nursing education. These findings suggest that the Thai-DES may be useful for evaluating students' perceptions of debriefing in simulation-based nursing education. However, the findings should be interpreted with caution because this study focused mainly on internal consistency and factor structure and did not examine broader aspects of construct validity.

One important finding was that the instrument demonstrated a two-factor structure for both the Experience and Importance dimensions, rather than the original four-factor structure proposed by Reed.¹³ In the original instrument, the four domains included Learning and making connections, Analyzing thoughts and feelings, Facilitator skill in conducting the debriefing, and Facilitator guidance. In the present study, several of these domains appeared to overlap and cluster together into broader categories. For example, items related to facilitator guidance, emotional reflection, and reflective thinking were grouped into a single factor. Similarly, students appeared to view learning and emotional reflection as closely connected aspects of the debriefing experience.

These findings may suggest that students in this context experience debriefing as a more integrated process, where reflection, emotional support, feedback, and facilitator interaction occur together rather than as separate components. However, these findings should not be interpreted as evidence that Thai students fundamentally think or learn differently. Factor analysis only reflects statistical relationships among questionnaire items within a particular sample and context. Differences in factor structure may instead reflect variations in educational environment, communication patterns, simulation practices, or interpretation of translated items.

The findings are also consistent with some previous international adaptation studies. While

validations conducted in Korea, Spain, and Turkey generally retained structures similar to the original DES,^{14,16,17} other studies reported alternative factor patterns. For example, the Portuguese version showed difficulty maintaining clear separation between domains,¹⁵ and the Chinese adaptation identified different clustering patterns among reflective and facilitator-related items.¹⁸ These studies suggest that translated instruments may organize related concepts differently across educational settings while still measuring similar underlying constructs.

The factor structure observed in this study may also reflect characteristics of reflective learning within Thai educational culture. Previous literature has suggested that educational settings that emphasize respect for instructors, interpersonal harmony, and relational communication may influence how students participate in reflective discussions and perceive the facilitator's role.^{20,25} In such contexts, emotional reflection, facilitator feedback, and learning processes may naturally be experienced together during debriefing. Students may therefore view facilitator guidance and emotional support as inseparable parts of meaningful learning and reflection.

At the same time, cultural explanations should be interpreted cautiously. Methodological differences, translation nuances, simulation design, or characteristics of the study sample may also influence differences in factor structure. Therefore, the present findings should be considered preliminary evidence of contextual variation in the organization of debriefing experiences rather than definitive evidence of cultural differences.

This study contributes to the growing body of research on cross-cultural adaptation of simulation evaluation instruments. The findings highlight the importance of examining psychometric performance within local educational settings rather than assuming that instruments will function identically across cultures. According to psychometric theory, translated instruments may retain conceptual equivalence even when factor structures differ across contexts.^{19,28} Therefore,

evaluation of factor structure should be considered one part of an ongoing validation process rather than complete evidence of validity.

Future research should continue to examine the psychometric properties of the Thai-DES using larger, independent samples from different healthcare disciplines and educational settings. Additional studies evaluating measurement invariance, test-retest reliability, convergent validity, and relationships with learning outcomes would strengthen understanding of how the instrument performs across contexts. Comparative international studies may also help further explain how students interpret and experience debriefing in different educational and cultural environments.

Limitations

Several limitations should also be acknowledged. First, broader forms of validity evidence, including convergent, discriminant, predictive, and known-groups validity, were not examined. Second, using the same dataset for both exploratory and confirmatory factor analyses may introduce bias in model fitting. However, this was necessitated by specific sample size constraints in the Thai nursing education context. Third, the study relied on self-report responses, which may have been influenced by social desirability or response bias. Differences in simulation activities, facilitator approaches, and institutional environments may also have affected students' responses.

Implications for Nursing Practice

The findings of this study suggest that the Thai version of the Debriefing Experience Scale may be a useful tool for evaluating nursing students' perceptions of debriefing within simulation-based learning activities. The availability of this culturally adapted instrument may help educators better understand how students experience reflection, facilitator support, and feedback during simulation debriefing. Regular

evaluation of debriefing experiences may also support ongoing improvement in simulation teaching practices and faculty development.

Our findings also indicate that students may view facilitator guidance, emotional reflection, and learning as closely connected aspects of the debriefing process. For educators, this highlights the importance of creating supportive learning environments where students feel comfortable engaging in reflection and discussion. Facilitators should be encouraged to use structured reflective questioning, provide constructive feedback, and promote psychologically safe debriefing environments that support student participation and self-reflection.

At the curriculum level, the findings reinforce the importance of considering cultural and educational context when applying simulation and debriefing frameworks developed in other countries. Although internationally developed instruments and debriefing approaches provide valuable guidance, direct transferability across contexts cannot always be assumed. Adapting facilitation approaches, communication styles, and reflective activities to fit local learning environments may help improve learner engagement and the overall effectiveness of simulation-based education.

The Thai version of the Debriefing Experience Scale may also support institutional efforts to improve institutional quality through simulation-based learning. Nursing programs may use the instrument to evaluate debriefing practices, identify areas for faculty development, and monitor students' learning experiences over time. In addition, the availability of an evaluated Thai-language instrument may support future multi-site educational research and collaboration in simulation-based nursing education within Thailand.

From a research perspective, the study highlights the importance of continuing psychometric evaluation of translated educational instruments. Future research should validate these findings with independent samples to further strengthen the structural integrity of the Thai-DES. Specifically, employing a second-order

CFA is recommended to statistically confirm whether the identified factors adequately represent the overarching meta-domains of Experience and Importance. Moreover, additional forms of validity evidence should be examined, including convergent and predictive validity, as well as measurement invariance across educational settings and healthcare disciplines. Further research exploring students' experiences of debriefing through qualitative approaches may also provide a deeper understanding of how reflective learning is shaped across different educational and cultural contexts.

Conclusions

This study translated, culturally adapted, and psychometrically evaluated the Thai version of the Debriefing Experience Scale among nursing students participating in simulation-based learning. The findings demonstrated excellent internal consistency and provided preliminary evidence for the instrument's internal structure. Exploratory and confirmatory factor analyses supported a two-factor structure for both the Experience and Importance dimensions, which differs from the instrument's original four-factor model.

The findings suggest that students in this context may experience debriefing as a more integrated process in which learning, reflection, facilitator guidance, and emotional support are closely interconnected. However, these findings should be interpreted with caution because the study examined only selected psychometric properties and did not evaluate broader aspects of validity.

Overall, this appears to be a promising instrument for evaluating students' perceptions of debriefing in Thai nursing education. The study highlights the importance of examining translated instruments within their local educational and cultural contexts rather than assuming that psychometric structures will remain identical across settings. Further research with larger, independent samples is needed to strengthen the evidence regarding the instrument's validity and applicability across healthcare education contexts.

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Conceptualization, Method and design: OT, WS, JP

Data collection, Drafting the manuscript: TW, WS, OT

Data analysis and interpretation: WS, JP, TW
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Declaration of AI Use

AI writing assistance tools were used to support language editing, paraphrasing, and grammar checking. All AI-generated content was critically reviewed, revised, and verified by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the study and its report.

Conflict of Interest

The authors declare no conflict of interest relevant to this study.

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การประเมินคุณสมบัติทางจิตวิทยาการวัดของแบบประเมินประสบการณ์การอภิปรายสะท้อนผลหลังสถานการณ์จำลองฉบับภาษาไทยในนักศึกษาพยาบาล : การศึกษาแบบภาคตัดขวาง

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บทคัดย่อ: การอภิปรายสะท้อนผลหลังสถานการณ์จำลองเป็นองค์ประกอบสำคัญของการเรียนรู้โดยใช้สถานการณ์จำลอง และได้รับการประเมินโดยใช้แบบวัดมาตรฐาน เช่น แบบประเมินประสบการณ์การอภิปรายสะท้อนผลหลังสถานการณ์จำลอง (Debriefing Experience Scale) แม้ว่าการเรียนรู้โดยใช้สถานการณ์จำลองจะได้รับการนำมาใช้อย่างแพร่หลายในการศึกษาพยาบาลของไทย แต่ปัจจุบันยังไม่มีเครื่องมือมาตรฐานที่เป็นภาษาไทยสำหรับประเมินประสบการณ์การสรุปบทเรียนของนักศึกษา ส่งผลให้อาจารย์ผู้สอนขาดความสามารถในการวัดคุณภาพการสรุปบทเรียนได้อย่างถูกต้องในบริบทนี้ การศึกษานี้มีวัตถุประสงค์เพื่อแปลและประเมินคุณสมบัติทางจิตวิทยาการวัดของแบบประเมินประสบการณ์การอภิปรายสะท้อนผลหลังสถานการณ์จำลองฉบับภาษาไทย (Thai-DES) ในนักศึกษาพยาบาลไทย จำนวน 200 คน แบบประเมิน Thai-DES ได้รับการแปลโดยใช้กระบวนการแปลไปและกลับ (forward-backward translation) การศึกษาในวเคราะห์องค์ประกอบเชิงสำรวจและเชิงยืนยันเพื่อประเมินความตรงเชิงโครงสร้างของแบบประเมิน Thai-DES โดยพิจารณามิตัดานประสบการณ์และความสำคัญแยกจากกัน ทั้งนี้ได้ตรวจสอบคุณภาพทางจิตวิทยาการวัดผ่านดัชนีความสอดคล้อง ค่าความตรงเชิงลู่เข้า ค่าความเชื่อมั่นเชิงองค์ประกอบ และค่าสัมประสิทธิ์แอลฟาของครอนบาค

ผลการวิเคราะห์องค์ประกอบเชิงสำรวจพบโครงสร้างสององค์ประกอบในทั้งสองมิติ โดยผลการวิเคราะห์องค์ประกอบเชิงยืนยันสนับสนุนโมเดลสองปัจจัยดังกล่าวซึ่งสอดคล้องกับข้อมูลเชิงประจักษ์ตามเกณฑ์มาตรฐาน นอกจากนี้ แบบวัดยังมีคุณสมบัติทางจิตวิทยาการวัดผ่านเกณฑ์มาตรฐาน โดยมีค่าความเที่ยงตรงภายใน รวมถึงค่าความตรงเชิงลู่เข้าและความเชื่อมั่นองค์ประกอบ ซึ่งแสดงให้เห็นถึงความสมบูรณ์เชิงโครงสร้างของแบบประเมิน Thai-DES ผลการวิจัยแสดงให้เห็นถึงความเชื่อมั่นในระดับสูง ความตรงตามเนื้อหาที่ดี และความตรงเชิงโครงสร้างที่เหมาะสม แม้ผลการศึกษาจะสนับสนุนโครงสร้างสององค์ประกอบที่สะท้อนประสบการณ์และการรับรู้ความสำคัญของการอภิปรายสะท้อนผลหลังสถานการณ์จำลอง แต่ยังไม่แนะนำให้การศึกษาความตรงเพิ่มเติม ทั้งความตรงเชิงโครงสร้างแบบลู่เข้า ความตรงเชิงจำแนก และความตรงเชิงพยากรณ์ แบบประเมิน Thai-DES เป็นเครื่องมือที่ได้รับการปรับให้เหมาะสมกับบริบททางวัฒนธรรมสำหรับอาจารย์พยาบาลในการประเมินประสบการณ์การอภิปรายสะท้อนผลหลังสถานการณ์จำลองในบริบทของประเทศไทย ซึ่งสนับสนุนการพัฒนาการจัดการเรียนการสอนโดยใช้สถานการณ์จำลองและการพัฒนาศักยภาพของอาจารย์ผู้สอนอย่างต่อเนื่อง

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คำสำคัญ: การอภิปรายสะท้อนผลหลังสถานการณ์จำลอง แบบประเมินประสบการณ์การอภิปรายสะท้อนผลหลังสถานการณ์จำลอง การศึกษา การพยาบาล การตรวจสอบคุณสมบัติทางจิตวิทยาการวัด การเรียนรู้โดยใช้สถานการณ์จำลอง

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