

Critical Thinking Disposition among Vietnamese Pharmacy Students: Validation and Predictors

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Abstract

This study validated the Critical Thinking Disposition Scale (CTDS) and examined predictors of critical thinking among Vietnamese pharmacy students. A cross-sectional study of 833 students used a validated instrument, with Confirmatory Factor Analysis confirming a robust two-factor structure ($CFI = 0.968$, $RMSEA = 0.068$). Students showed a moderate overall disposition ($M = 33.81$, $SD = 4.51$), with higher Reflective Skepticism than Critical Openness. Bayesian Model Averaging and regression identified fifth-year status and enjoyment of pharmacy studies as statistically significant correlates within the evaluated dataset ($R^2 = 3.91\%$). Fifth-year students scored significantly higher ($p < 0.001$), whereas fourth-year students did not differ from third-year students. *GPA* and gender were not significant predictors. The findings suggested that intensive experiential clinical learning in the final year may foster critical thinking development. Earlier integration of active learning and clinical simulation may help reduce developmental gaps and promote more balanced critical thinking profiles.

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Received 06/01/2025
Accepted 22/01/2026
Published 28/10/2026

Keywords

Critical thinking;
Pharmacy students;
Academic progression;
CTDS; Nguyen Tat
Thanh University.

1 Introduction

The profession of pharmacy has now become greatly different in the era of evidence-based medicine whereby instead of drug-focused practice, it has been turning into a patient-centred clinical action. The evolution of pharmacy has arrived at a critical “inflection point” where pharmacists must move beyond their traditional roles to address the complexity of modern health care and the rapid integration of technology [1]. Such a change demands a comprehensive knowledge of drugs and an improved set of cognitive skills such as Critical Thinking (CT). CT is defined as a self-corrective process of collecting, analyzing and assessing clinical

circumstances [2]. However, cognitive abilities alone are insufficient; they must be driven by Critical Thinking Disposition (CTD) which is the inborn urge or inclination to solve problems [3]. Dispositional competencies are needed for clinical reasoning skills to be successfully used in practice.

The Critical Thinking Disposition Scale (CTDS), created by Sosu (2013) [3], has become a popular tool in higher education and health because of its clear form and psychometric robustness. However, its applicability in Vietnamese classrooms has not yet been investigated. To measure student performance against international norms in the context of global pharmacy education reform, cross-cultural stability should be established.

<https://doi.org/10.55401/c1aecn22>



Đại học Nguyễn Tất Thành

One area of contention in health education is the impact of academic success and CT. Although academic progression and performance are related to cognitive development in some pharmacy populations [4], some studies question whether high grades are simply synonymous with high CT skill when faced with a complex problem and suggest that they may be separate constructs [5]. Furthermore, there is an increasing requirement to make sure that not only do students learn new information, but they also acquire the cognitive agility required for clinical “readiness” due to the global shift toward competency-based models of pharmacy education [1]. The development and orientation of CT skill in the pharmacy curriculum has not received much attention in Viet Nam, despite the growing popularity of competency-based education. Instead of measuring the natural progression of CTD over different academic cohorts, existing studies have focused on particular pedagogical interventions. The key question is whether the rigorous specialized training in the last years of the pharmacy curriculum encourages a curious mindset.

In order to close this gap, this study (1) validated the CTDS to measure the CT proficiency of Nguyen Tat Thanh University pharmacy students, and (2) used multivariate regression analysis to examine the predictive influence of academic development on students' thinking dispositions.

2 Research Methodology

2.1 Study Design and Participants

A descriptive cross-sectional design was carried out from December 6, 2022, to January 1, 2023, at Nguyen Tat Thanh University, Ho Chi Minh City, Viet Nam. Pharmacy students in the 3rd, 4th, and 5th year voluntarily and anonymously took part in this study. Data were collected using a self-administered, printed Vietnamese questionnaire. The minimum sample size was calculated using Cochran's formula for an infinite population ($Z = 1.96$, $e = 0.05$), which recommended at least 385 participants. The number of complete and valid responses was 833.

2.2 Measures

The data collection tool was a structured questionnaire which included two parts as follows: Socio-demographic: consisted of items about gender, the accumulated *GPA*. Moreover, environmental and psychological factors were also controlled in the survey by collecting data about participants' financial status, current living conditions, and interest in pharmacy.

CTDS: the original instrument consists of 11 items structured into two aspects: *Critical Openness* (7 items) and *Reflective Skepticism* (4 items). Participants rated their agreement on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) [3]. Psychometric properties of the scale were also re-examined in this study to derive construct validity in the Vietnamese context. Following scale refinement (detailed in Section 3.2), the final 9-item version was utilized for scoring, yielding a theoretical range of 9 to 45 (categorized as Low: ≤ 28 , Moderate: 29-36, and High: ≥ 37).

2.3 Data Collection Procedures

Instrument Adaptation: the CTDS had been translated into Vietnamese. To ensure linguistic correctness and cultural appropriateness, we tested this version in a pilot test on 10 pharmacy students. Based on the feedback about the item comprehension of the students, we made certain adjustments to the survey tool to produce the final version of the survey.

Data Collection Process: the research was carried out on the Nguyen Tat Thanh University campuses in Districts 4 and 7. The use of the face-to-face approach of administering the questionnaire enabled addressing any uncertainties of the participants on the spot, which further maintained the validity of the data. The recruitment of the students was carried out during the break times and after lecture classes, and it only took a maximum of 10 minutes of their time.

2.4 Data Analysis

Statistical analyses were performed using R software (version 4.3.3). Outliers were screened using Mahalanobis distance ($p < 0.001$). Descriptive statistics included *frequencies*, *percentages*, *means*, and *SDs*.

Construct validity was assessed in two stages. Exploratory Factor Analysis (*EFA*) with Parallel Analysis explored the underlying structure; items with low loadings or significant cross-loadings were removed. Confirmatory Factor Analysis (*CFA*) with Robust Maximum Likelihood (MLR) estimation validated the factor structure. Model fit was evaluated using Comparative Fit Index (*CFI*), Tucker-Lewis Index (*TLI*), Root Mean Square Error of Approximation (*RMSEA*), and Standardized Root Mean Square Residual (*SRMR*) [6]. Reliability and convergent validity were examined via Cronbach's alpha, Composite Reliability (*CR*), and Average Variance Extracted (*AVE*).

Pearson correlation tested relationships between constructs.

Bayesian Model Averaging (*BMA*) with the bicreg function filtered possible predictors (gender, *GPA*, financial pressure, residence, academic year) and selected the best model based on posterior probabilities. Significant variables were entered into a multiple linear regression model. Relative importance was assessed using the Lindeman, Merenda, and Gold (LMG) metric via the relaimpo package. All tests were two-tailed with significance set at $p < 0.05$.

2.5 Ethical Consideration

The ethical standards identified in the Declaration of Helsinki were followed strictly in the study protocol. The Scientific Council of the Faculty of Pharmacy, Nguyen Tat Thanh University reviewed and gave approval to the research proposal. Participants were fully informed of the study objectives and methods. The voluntary filling and submission of the questionnaire was implied consent. All data were kept and processed following confidentiality and anonymity.

3 Results

3.1 Socio-demographics of Participants

A total of 892 responses were initially recorded. Following a data screening process, 59 outliers were identified and removed. Consequently, the final analytical sample consisted of 833 pharmacy students with a mean age of 21.0 years ($SD = 1.6$). Females

constituted the majority of the sample (79.7%), which is in line with the average gender representation of the pharmaceutical industry in Viet Nam. The sample was fairly represented by the third (30.8%), the fourth (33.9%), and the fifth (35.3%) academic years. The cumulative *GPA* mean was noted to be 2.90 ($SD = 0.40$). Even though the majority of students were enjoying their major (90.0%), a significant number of students felt that the curriculum was rigorous (86.6%) and that they felt that the financial pressure was pressing (66.0%). On the issue of accommodation, a majority of the respondents lived in rented rooms (58.6%) with 37.2% living with their families.

Table 1 Demographic Characteristics of the Study Population ($N = 833$)

Characteristics	Classification	Number of students ($N = 833$)	Rate (%)
Gender	Female	664	79.7
	Male	169	20.3
Age	<i>SD</i>	21	(1.6)
Year of study	Third-year	257	30.8
	Fourth-year	282	33.9
	Fifth-year	294	35.3
<i>GPA</i>	<i>SD</i>	2.9	(0.4)
Religion	Yes	242	29.1
Financial pressure	Yes	550	66.0
Perceived rigorous curriculum	Yes	721	86.6
Enjoy studying pharmacy	Yes	750	90.0
Current Residence	Rented room	488	58.6
	With family	310	37.2
	Other	35	4.2

3.2 Psychometric Properties of the Instrument

Construct Validity

EFA on the initial 11-item scale removed two items (Q6 and Q7) due to significant cross-loadings (> 0.4) and conceptual ambiguity. The refined 9-item structure was validated using Confirmatory Factor Analysis (*CFA*), which demonstrated satisfactory fit: $\chi^2(26) = 125.07$, $p < 0.001$; $CFI = 0.968$; $TLI = 0.955$; $RMSEA = 0.068$ (90% CI: 0.058-0.077); $SRMR = 0.036$. Although *RMSEA*

slightly exceeded the strict cutoff of 0.06, it remained within the acceptable range (< 0.08), and combined with excellent *CFI*/*TLI* values (> 0.95), the overall model fit was deemed adequate [6]. The validated model confirmed two distinct factors: Critical Openness (5 items) and Reflective Skepticism (4 items).

Reliability and Convergent Validity

Table 2 Factor Loadings, Reliability, and Validity of the Revised *CTDS* ($N = 833$)

Construct and Items	Std. Loading (λ)	Cronbach's alpha	CR	AVE
Critical Openness (5 items)		0.876	0.87	0.58
Q1	0.65			
Q2	0.76			
Q3	0.82			
Q4	0.83			
Q5	0.78			
Reflective Skepticism (4 items)		0.915	0.92	0.73
Q8	0.81			

Q9	0.87			
Q10	0.85			
Q11	0.88			
Total Scale (9 items)	--	0.920	--	--

Note: all factor loadings were statistically significant at $p < 0.001$. Items Q6 and Q7 were removed during scale refinement. The final two-factor structure demonstrated excellent model fit: $\chi^2(26) = 125.07$, $p < 0.001$; $CFI = 0.968$; $TLI = 0.955$; $RMSEA = 0.068$ (90% CI: 0.058-0.077); $SRMR = 0.036$. CR = Composite Reliability; AVE = Average Variance Extracted.

As shown in Table 2, all standardized factor loadings were significant ($p < 0.001$) and ranged from 0.65 to 0.88. The scale demonstrated high internal consistency, with Cronbach's alpha of 0.876 (Critical Openness), 0.915 (Reflective Skepticism), and 0.920 for the overall scale. CR estimates (0.87 and 0.92) exceeded the recommended threshold of 0.70. AVE values (0.58 and 0.73) were above the 0.50 criterion, confirming convergent validity. Discriminant validity was established as the square root of AVE for each construct approximated or exceeded their inter-construct correlation ($r = 0.78$).

3.3 Descriptive Statistics and Correlations

Table 3 Means, Standard Deviations, and Intercorrelations for *CTDS* Constructs ($N = 833$)

Variable	Items	M	SD	Range	1	2	3
1. Critical Openness	5	3.67	0.54	1.00-5.00	1		
2. Reflective Skepticism	4	3.87	0.55	1.00-5.00	0.69***	1	
3. Total <i>CTDS</i> Score	9	33.81	4.51	9.00-45.00	0.94***	0.90***	1

Note: M = Mean; SD = Standard Deviation. *** $p < 0.001$. Reliability coefficients (Cronbach's alpha) are presented in Table 2. *CTDS* = Critical Thinking Disposition Scale. The Total *CTDS* Score is calculated as the sum of all 9 items (Range potential: 9-45).

Table 3 presents the descriptive profile of the revised *CTDS*. The overall mean score was 33.81 ($SD = 4.51$), within the moderate classification range. A paired-samples *t*-test revealed significantly higher scores for Reflective Skepticism ($M = 3.87$, $SD = 0.55$) compared to Critical Openness ($M = 3.67$, $SD = 0.54$), $t(832) = 11.23$, $p < 0.001$, Cohen's $d = 0.37$. Skewness values (-0.42 to -0.44) and positive kurtosis (1.42-2.34) indicated slight concentration at the upper end of the

scale, with Shapiro-Wilk tests confirming significant deviation from normality (all $p = 0.001$), justifying the use of robust estimation in the factor analysis.

Pearson correlations showed a strong positive relationship between the two subscales ($r = 0.69$, $p < 0.001$), and both subscales correlated strongly with the total score ($r = 0.94$ and 0.90 , $p < 0.001$), confirming their contribution to the overall construct.

3.4 Distribution of Disposition Levels by Academic Year

As shown in Figure 1, the moderate level was most common across all cohorts (68-71)%. Notably, fifth-year students exhibited a substantial shift, with High disposition more than doubling to 22.4% (compared to 9.9% in fourth-year), while Low disposition dropped to its lowest point at 8.5%. This pattern suggests a non-linear developmental trajectory, with a plateau in the fourth year followed by late-stage acceleration in the final year.

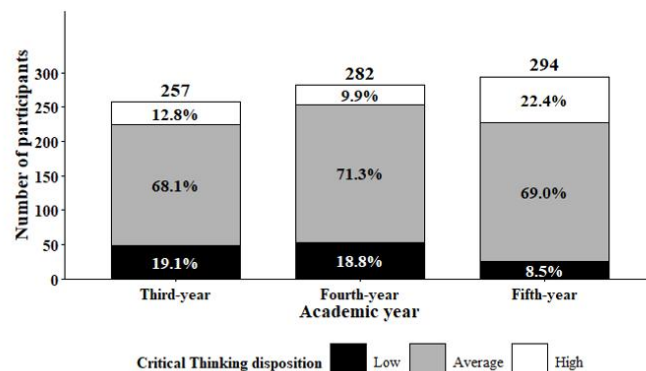


Figure 1 Distribution of CTD levels stratified by academic year

3.5 Predictors of CTD

Table 4 Multiple Regression Analysis Predicting CTD ($N = 833$)

Predictors	B (Unstandardized)	SE	p-value	Relative Importance (LMG %)
(Intercept)	32.01	0.50	< 0.001	-
Enjoyment (Yes)	1.35	0.51	0.009	22.04
Year 5	1.63	0.32	< 0.001	77.96

Summary of the model: $R^2 = 0.039$, *Residual standard error* = 4.458, *posterior probability* = 31.4%.

Reference group: Year 3.

Equation: $CTDS \text{ Score} = 32.01 + 1.35(\text{Enjoyment}) + 1.63(\text{Year 5})$.

In order to identify the determinants of CTD, there are potential predictors that were first keyed into the *BMA* analysis. They were Gender, Age, Religion, Academic Year, *GPA*, Enjoyment of Pharmacy, Perceived Curriculum Load, Financial Pressure and Residence status.

After the model of *BMA* prediction with the most probable posterior (31.4%), the statistically significant correlates selected were Academic Year (Fifth year) and Enjoyment of Pharmacy. All other demographic and background factors (e.g. gender, *GPA*, financial pressure, Year 4, etc.) were not included in the final equation as they did not have any significant predictive value ($PIP < 50\%$).

In particular, the outcome of the regression analysis showed that the year of study ($p < 0.001$) in the fifth year was a positive significant factor, which predicted the scores of CTD among students. Additionally, students who enjoyed their pharmacy studies had

significantly higher scores compared to those who did not ($p = 0.009$). However, the fourth year was statistically not significantly different from the reference group and was excluded from the model.

The latter model attributed 3.91% of variance that influenced the disposition of the students in terms of CT. The 96.09% that would be left would be affected by other unobserved factors that were beyond the confines of this research. In terms of relative contribution, the fifth-year variable used had the strongest contribution of 77.96% of the total variance explained (R^2) followed by the Enjoyment variable of 22.04 %.

4 Discussion

The results affirm the Vietnamese version of the *CTDS* (9-item version) as a psychometrically sound tool, supported by good model fit ($CFI = 0.968$, $TLI = 0.955$, $RMSEA = 0.068$) and high internal consistency ($\alpha = 0.92$). These results support the generalizability of Critical Openness and Reflective Skepticism factors to Asian educational settings and are consistent with the original bi-dimensional model [3] and recent validations in Asian contexts [7].

Students demonstrated a moderate positive disposition ($M = 33.81$) on a 45-point scale indicating that students are developing the cognitive maturity to make difficult clinical decisions. The use of Western scales for Vietnamese students needs cultural adaptation, as evidenced by the elimination of two items (Q6 and Q7) in the validation process.

Reflective Skepticism scores ($M = 3.87$) were significantly greater than Critical Openness ratings ($M = 3.67$). This is likely because pharmacy programs focus on clinical accuracy and error detection [8] which may inadvertently restrict the cognitive flexibility needed for openness. This is in agreement with findings in other Asian healthcare settings that traditional pedagogy tends to focus on standard answers rather than divergent thinking [7] and global observations that pharmacy students are good at analytical tasks but have difficulties in synthesizing disparate concepts [4].

Fifth year status ($B = 1.63, p < 0.001$) and enjoyment of pharmacy studies ($B = 1.35, p = 0.009$) were identified as significant predictors by Bayesian Model Averaging. While the regression model accounted for a modest proportion of variance ($R^2 = 3.91\%$), this value is consistent with established methodological benchmarks in behavioral research. According to Cohen [10], an R^2 of 3.91% represents a small but meaningful effect size, while Ozili [11] affirmed that R^2 values below 10% are acceptable in social science modeling when predictors are statistically significant. Nevertheless, this also means that approximately 96% of the variance remains unexplained by our model, reflecting the inherent complexity of cognitive dispositions. This positions our findings within the expected range for studies examining complex psychological constructs [9, 12]. Therefore, while fifth-year status and enjoyment were statistically significant predictors, they should be interpreted as modest correlates – not primary determinants – with the remaining variance likely attributable to unmeasured factors (e.g., personality, learning environment, teaching quality) that warrant further investigation.

Fifth-year status was a strong positive predictor ($B = 1.63, p < 0.001$), probably representing a move toward intensive experiential learning. This is consistent with longitudinal studies showing that the application-oriented learning increases considerably in the second half of the pharmacy programs during the clerkships [13] and that CT is more evident when students engage in complex, authentic problem solving rather than rote memorization [14].

The developmental plateau in fourth-year students may reflect a structural curriculum tension: heavy theoretical loads often force surface-level memorization, whereas fifth-year clinical clerkships immerse students in real-time reasoning and therapeutic decision-making under uncertainty [13].

The predictive role of enjoyment ($p = 0.009$) supported the theory of intrinsic motivation and is congruent with findings that associate CTD with academic resilience in healthcare students [15]. Students who were passionate about their subject may develop a positive attitude and view clinical challenges as puzzles, rather than stressors.

GPA and gender were not significant predictors, in line with previous research [4, 5, 14] and supporting the idea that CT is distinct from traditional measures of grades. CT is about manipulation and assessment of knowledge. High grades are about retention of knowledge. There were no gender differences, which supports the view that cognitive disposition is independent of biological sex and consistent with findings in the nursing and health professions [16].

There are some limitations worth mentioning. First, the convenience sampling approach at one university limits the generalizability of the findings to the wider context of Viet Nam. Second, the cross-sectional design allows for the possibility of “survival bias,” so causal claims about the influence of the curriculum on students’ cognitive development cannot be made. Third, the low explained variance ($R^2 = 3.91\%$) indicates that the model captured specific demographic and motivational correlates rather than a comprehensive predictive framework, leaving the vast majority of variance to unobserved pedagogical,

environmental, and personality factors [9-11]. Finally, self-report data are subject to social desirability bias, and future research should incorporate objective, performance-based measures.

5 Conclusion

The findings of this study suggested that the *CTDS* is a valid and reliable instrument to evaluate CTD within the framework of Vietnamese pharmacy education. Students exhibited a moderate propensity for CT and a strong bias toward skepticism over openness. Fifth-year academic standing and enjoyment of pharmacy studies were identified as modest yet statistically significant correlates within the evaluated dataset ($R^2 = 3.91\%$). These results indicate that while final-year experiential learning and intrinsic motivation contribute to dispositional development, the

overwhelming majority of variance is driven by latent educational and individual factors [9-11]. Neither standard academic measures such as *GPA*, nor gender or any other demographic characteristics, were important predictors. Active learning and early clinical exposure must be incorporated in the pharmacy curriculum to bridge the developmental gap of the middle years and graduate well-rounded pharmacists.

Future pedagogical interventions need to address Critical Openness as well as analytical rigor so that program graduates will be rigorous in verification and flexible and creative in their clinical work.

Acknowledgments

We acknowledge Nguyen Tat Thanh University, Ho Chi Minh City, Viet Nam for supporting this study.

References

1. Rhoney, D. H., Singleton, S., Nelson, N. R., Anderson, S. M., & Hubal, R. (2021). Forces driving change in pharmacy education: Opportunities to take academic, social, technological, economic, and political into the future. *JACCP: Journal of the American College of Clinical Pharmacy*, 4(5), 639-651. <https://doi.org/10.1002/jac5.1407>.
2. Facione, P. A. (1990). *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction (The Delphi Report)*. The California Academic Press.
3. Sosu, E. M. (2013). The development and psychometric validation of a Critical Thinking Disposition Scale. *Thinking Skills and Creativity*, 9, 107-119. <https://doi.org/10.1016/j.tsc.2012.09.002>.
4. Ramia, E., Maasri, A., & Abdallah, J. (2022). Critical thinking among pharmacy students: Do age, sex and academic variants matter?. *Pharmacy Education*, 22, 236-248. <https://doi.org/10.46542/pe.2022.221.236248>.
5. Shirazi, F., & Heidari, S. (2019). The Relationship Between Critical Thinking Skills and Learning Styles and Academic Achievement of Nursing Students. *Journal of Nursing Research*, 27(4), e38. <https://doi.org/10.1097/jnr.0000000000000307>.
6. Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>.
7. Wang, X., Sun, X., Huang, T., He, R., Hao, W., & Zhang, L. (2019). Development and validation of the critical thinking disposition inventory for Chinese medical college students (CTDI-M). *BMC Medical Education*, 19(1), 200. <https://doi.org/10.1186/s12909-019-1593-z>.
8. Persky, A. M., Medina, M. S., & Castleberry, A. N. (2019). Developing Critical Thinking Skills in Pharmacy Students. *American Journal of Pharmaceutical Education*, 83(2), 7033. <https://doi.org/10.5688/ajpe7033>.

9. Abelson, R. P. (1985). A variance explanation paradox: When a little is a lot. *Psychological Bulletin*, 97(1), 129-133. <https://doi.org/10.1037/0033-2909.97.1.129>.
10. Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Lawrence Erlbaum Associates.
11. Ozili, P. K. (2022). The acceptable R-square in empirical modelling for social science research. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4128165>.
12. Landa-Blanco, M., & Cortés-Ramos, A. (2021). Psychology students' attitudes towards research: the role of critical thinking, epistemic orientation, and satisfaction with research courses. *Heliyon*, 7(12), e08491. <https://doi.org/10.1016/j.heliyon.2021.e08504>.
13. Smith, L., Krass, I., Sainsbury, E., & Rose, G. (2010). Pharmacy students' approaches to learning in undergraduate and graduate entry programs. *American Journal of Pharmaceutical Education*, 74(6), 106. <https://doi.org/10.5688/aj7406106>.
14. Guamanga, M. H., Saiz, C., Rivas, S. F., & Almeida, L. S. (2024). Analysis of the contribution of critical thinking and psychological well-being to academic performance. *Frontiers in Education*, 9, 1423441. <https://doi.org/10.3389/educ.2024.1423441>.
15. Vosoughi, S., & Ahmadi, M. (2025). Critical thinking disposition or proactive personality as predictors of academic resilience in nursing students. *BMC Medical Education*, 25(1), 1195. <https://doi.org/10.1186/s12909-025-07795-3>.
16. Barry, A., Parvan, K., Jabbarzadeh Tabrizi, F., Sarbakhsh, P., Safa, B., & Allahbakhshian, A. (2020). Critical thinking in nursing students and its relationship with professional self-concept and relevant factors. *Research and Development in Medical Education*, 9(1), 7. <https://doi.org/10.34172/rdme.2020.007>.

Xu hướng tư duy phản biện ở sinh viên dược Việt Nam: thẩm định thang đo và các yếu tố dự báo

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Tóm tắt Nghiên cứu nhằm thẩm định Thang đo Khuynh hướng Tư duy phản biện (CTDS) và xác định các yếu tố dự báo tư duy phản biện ở sinh viên dược Việt Nam. Nghiên cứu cắt ngang được thực hiện trên 833 sinh viên bằng công cụ đã được thẩm định; phân tích nhân tố khẳng định (CFA) xác nhận cấu trúc hai yếu tố phù hợp ($CFI = 0,968$; $RMSEA = 0,068$). Sinh viên có khuynh hướng tư duy phản biện ở mức trung bình ($M = 33,81$; $SD = 4,51$), trong đó “Hoài nghi phản tư” cao hơn “Cởi mở phản biện”. Phân tích trung bình mô hình Bayes và hồi quy xác định năm học thứ năm và mức độ yêu thích ngành dược là các yếu tố tương quan có ý nghĩa thống kê trong phạm vi dữ liệu khảo sát ($R^2 = 3,91\%$). Sinh viên năm thứ năm có điểm cao hơn có ý nghĩa thống kê ($p < 0,001$), trong khi sinh viên năm thứ tư không khác biệt so với năm thứ ba. GPA và giới tính không có ý nghĩa. Kết quả gợi ý rằng học tập lâm sàng thực hành chuyên sâu ở năm cuối có thể thúc đẩy sự phát triển tư duy phản biện. Do đó, cần tích hợp sớm hơn các phương pháp học tập chủ động và mô phỏng lâm sàng vào chương trình đào tạo.

Từ khóa Tư duy phản biện; sinh viên dược; tiến trình đào tạo; thang đo CTDS; Trường Đại học Nguyễn Tất Thành.

