



## Relationship between basic psychological needs satisfaction, academic motivation, and self-regulated learning strategies among nursing students in selected universities in Vietnam

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### ABSTRACT

**Objectives:** This study aims to examine the relationship between basic psychological needs satisfaction, academic motivation, and self-regulated learning strategies among undergraduate nursing students in two selected public universities in Vietnam. **Methods:** A cross-sectional, correlational study was conducted among 388 nursing students from two public universities in southern Vietnam from February to June 2025. Data were collected using validated tools, including the Basic Psychological Need Satisfaction and Frustration Scale, the Academic Motivation Scale, and the Motivated Strategies for Learning Questionnaire. Pearson correlation and path analysis were performed using Jamovi software. **Results:** Basic psychological needs satisfaction was significantly correlated with academic motivation ( $r = 0.655, p < 0.001$ ) and self-regulated learning strategies ( $r = 0.730, p < 0.001$ ). Academic motivation also showed a very strong association with self-regulated learning strategies ( $r = 0.758, p < 0.001$ ). Path analysis indicated that academic motivation partially mediated the relationship between psychological needs and self-regulated learning strategies, with a significant direct effect ( $\beta = 0.409, p < 0.001$ ), indirect effect ( $\beta = 0.321, p < 0.001$ ), and a strong total effect ( $\beta = 0.730, p < 0.001$ ). **Conclusion:** Nursing educators should foster autonomy-supportive educational environments to promote academic motivation and self-regulated learning among nursing students.

**Keywords:** Basic psychological needs satisfaction; academic motivation; self-regulated learning strategies; nursing students, Vietnam

### INTRODUCTION

According to Self-Determination Theory, humans have inherent basic psychological needs that are the nutrients to human motivation, growth, and well-being: autonomy, competence, and relatedness<sup>1</sup>. In academic settings, the satisfaction of these

needs has been linked to higher engagement, motivation, and performance. Among nursing students, fulfilling competence and relatedness has been shown to predict intrinsic motivation (Hosseini et al., 2022)<sup>2</sup>, while basic psychological needs satisfaction (BPNS) has also been identified as a mediator

between supportive learning environments and the use of self-regulated learning strategies (SRLS)<sup>3</sup>. These findings highlight the close interconnection between BPNS, academic motivation (AM), and SRLS.

In nursing education, academic motivation (AM) plays a crucial role in students to encourage them to absorb vast amounts of information, acquire necessary skills, and engage in continuous learning to provide high quality nursing care<sup>4</sup>. Research shows that BPNS fosters AM by transforming external requirements into internalized, self-determined motivation<sup>1</sup>. Conversely, lack of motivation leads to disengagement, poor performance, and even dropout<sup>5</sup>. Motivation, in turn, strongly predicts the adoption of SRLS, which help students set goals, monitor progress, and regulate effort in complex learning environments<sup>6,7</sup>.

Self-regulated learning strategies (SRLS) are essential in preparing nursing students to become autonomous and adaptive learners. SRLS not only enhance academic outcomes but also strengthen professional readiness in a demanding healthcare context<sup>8</sup>. Moreover, the effective use of SRLS can, in turn, reinforce students' sense of competence and autonomy—two key components of basic psychological need satisfaction (BPNS)—by enabling learners to take ownership of their learning and experience mastery<sup>9</sup>. As students effectively monitor, control, and evaluate their learning, they are more likely to sustain academic motivation (AM) and internalize learning goals, leading to a self-perpetuating cycle of engagement and psychological fulfillment<sup>10,11</sup>.

The main goal of higher education is to develop purposeful, autonomous, and self-directed lifelong learners who are capable of

independently acquiring and retaining new knowledge<sup>12</sup>. In basic nursing education, students need to engage in active rather than passive learning, and they should be equipped with skills and techniques for lifelong learning<sup>13</sup>. According to a literature review, numerous factors contribute considerably to enhancing students' skills and academic achievement, including basic psychological needs satisfaction, motivation, self-regulated learning strategies,...<sup>11</sup>. Nursing educators play an essential role in helping students learn their abilities. If we can identify and determine the relevance of these factors, it will assist nursing students in developing appropriate learning strategies, leading to high academic achievement.

In Vietnam, while some studies have examined AM or SRLS among nursing students, little is known about the interrelationship between BPNS, AM, and SRLS. Previous findings have also raised concerns, with more than one-third of medical and nursing students reporting low academic motivation<sup>14</sup>. However, the combined influence of psychological needs, motivation, and SRLS remains underexplored. Therefore, this study seeks to investigate the associations among these constructs in undergraduate nursing students in Vietnam. Understanding these relationships may provide valuable evidence for nursing educators and policymakers to design interventions that support psychological needs, strengthen motivation, and promote self-regulated learning, ultimately improving academic success and professional competence.

## METHODS

**Participants:** Nursing students in two public universities in the South of Vietnam.

*Inclusion criteria:* Full-time undergraduate nursing students currently enrolled in Bachelor of Nursing Program from the first to fourth year of the academic year 2024-2025; willingness to participate in the study.

*Exclusion criteria:* Participants who are on leave from their programs or are absent during data collection will be excluded from the study.

**Data collection** was conducted from February to June 2025 at two public universities in southern Vietnam. A self-administered structured questionnaire was used, and participants were asked to complete it within approximately 20 to 30 minutes.

### **Study design:**

A cross-sectional descriptive

### **Sample size and sampling technique:**

A sample of 388 nursing students was determined by G\*Power to achieve 0.8 power to detect an effect size of 0.499 at the 0.05 level of significance, with a 10% attrition rate considered.

The sample was selected using a combination of stratified and systematic random sampling. The stratified random sampling was used to divide the two selected universities in the Mekong Delta, in the south of Vietnam. At each university, the sample was further divided into 4 academic year levels, with each level of study being stratified. Within each level, systematic random sampling was applied by selecting every k-th student from the list after a random start. If a student declined participation, another was randomly chosen from the same stratum.

### **Instruments**

*The Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS):*

The original scale was developed by Chen, Vansteenkiste, et al. (2015)<sup>15</sup>. There are multiple modified versions of the original scale to fit different life domains. The questionnaire consists of two parts measuring the satisfaction and frustration of basic psychological needs. However, due to the scope of this study, only 12 items were used (4 items to reflect autonomy, 4 items to reflect competence, and 4 items to reflect relatedness) to measure BPNS in the educational context. Each rated on a 7 - point Likert scale, ranging from 1 (not at all true for me) to 7 (very true for me). The mean score of each subscale or the overall scale was obtained by dividing the total score by the number of items. The mean score ranged from 1 to 7, with higher scores indicating more satisfaction of basic psychological needs. The internal consistency for autonomy, relatedness, and competence subscales was reported as 0.82; 0.87; and 0.89 respectively<sup>15</sup>.

*The Academic Motivation Scale, College Version 28 (AMS-C 28)*

The AMS was originally developed in French as the Echelle de Motivation en Education and later translated into English (Vallerand, 1992)<sup>16</sup>. This scale is composed of 28 items subdivided into seven subscales assessing three types of intrinsic motivation, three types of extrinsic motivation, and amotivation<sup>16</sup>. Each rated on a 7 - point Likert scale, ranging from 1 (does not corresponds at all to me), 4 (corresponds moderately), to 7 (corresponds exactly to me). The range of mean scores was 1 to 7. The higher the mean

score on the group of motivation or overall scale, the greater the amount of AM for that group or overall motivation. This scale was translated into Vietnamese by Nguyen et al. (2023) with Cronbach's alpha coefficient for the total scale was 0.77<sup>14</sup>. Permission to use Vietnamese translation questionnaire was obtained from the translation author.

#### *The Motivated Strategies for Learning Questionnaire (MSLQ)*

Self-regulated learning strategies was measured by The Motivated Strategies for Learning Questionnaire, which was developed by a group of investigators from the University of Michigan (Pintrich, 1991)<sup>17</sup>. This scale is a two-part self-report assessment. Twenty-nine items for self-reported learning strategies will be used. These items are classified into nine subscales: rehearsal, elaboration, organization, and critical thinking, metacognitive strategies, time and study environment regulation, effort regulation, peer learning, and help seeking. Items are scored on a 7-point Likert-type scale, from 1 (not at all true of me) to 7 (very true of me). The mean scores ranged from 1 to 7, with higher scores on a subscale indicating a greater degree of that particular attribute. Cronbach's alpha ranged from .52 for the help seeking scale to .93 for the self-efficacy scale. The developers of the instrument claim that the alpha coefficients for the MSLQ scales are robust and demonstrate good internal consistency<sup>17</sup>.

*The three variables (BPNS, AM, and SRLS) were then classified based on their mean scores as follows: 6.14 – 7.00: Very high; 5.29 – 6.13: High; 4.43 – 5.28: Moderately high; 3.57 – 4.42: Moderate; 2.71 – 3.56: Moderately low; 1.86 – 2.70: Low; 1.00 – 1.85: Very low.*

The BPNSFS and MSLQ questionnaire were translated into Vietnamese using the back – translation method (Cha et al., 2007)<sup>18</sup>.

**Data analyses:** We used Jamovi software 2.3.28.0 version for analysis. Sex, and year level were reported as frequency and percentage. BPNS, AM, SRLS scores, and subscale scores were reported as mean and standard deviation. Pearson correlation test and path analysis were used to explore the relationship between associated factors. All analyses were done with confidence intervals of 95% and p-values less than 0.05.

**Ethical considerations:** This study adhered to the ethical principles outlined in the declaration of Helsinki and was approved by the Ethical Review Board at Trinity University of Asia before data gathering (Protocol Code: 2024-2nd-CNU-Duong-v1, June 27, 2024). Respondent anonymity was maintained by removing all potential identifiers. Participants were informed that they could withdraw from the study at any time without any impact on their academic activities. All responses were used solely for research purposes, and the risks associated with completing the survey questionnaire were less than minimal.

## **RESULTS**

A total of 388 nursing students in two selected public universities in southern Vietnam were recruited to the study. The majority of the respondents were female, comprising 80.40% of the total sample. Regarding year level, the distribution shows that the largest group of respondents were third-year students, who made up 39.90% of the total sample. This was followed by second-year students at 27.30%, first-year students at 22.90%, and fourth-year students at 9.80%.

**Table 1. Current status of basic psychological needs satisfaction, academic motivation, and self-regulated learning strategies of nursing student respondents in selected universities in Vietnam (n = 388)**

Indicators	Mean	SD	Interpretation
<b>Basic psychological needs satisfaction</b>			
Autonomy	5.23	1.19	Moderately high
Competence	4.61	1.23	Moderately high
Relatedness	5.16	1.17	Moderately high
<b>Overall</b>	<b>5.00</b>	<b>1.06</b>	<b>Moderately high</b>
<b>Academic motivation</b>			
Intrinsic motivation to know	5.20	1.28	Moderately high
Intrinsic motivation towards accomplishments	5.15	1.26	Moderately high
Intrinsic motivation – to experience stimulation	5.06	1.19	Moderately high
Extrinsic motivation – identified	5.16	1.20	Moderately high
Extrinsic motivation – introjected	5.15	1.22	Moderately high
Extrinsic motivation – external regulation	5.18	1.21	Moderately high
Amotivation	3.92	1.86	Moderate
<b>Overall</b>	<b>4.98</b>	<b>0.98</b>	<b>Moderately high</b>
<b>Self-regulated learning strategies</b>			
Rehearsal	4.94	1.26	Moderately high
Elaboration	5.05	1.27	Moderately high
Organization	4.90	1.26	Moderately high
Critical thinking	4.96	1.23	Moderately high
Metacognitive self-regulation	4.87	1.17	Moderately high
Time and study environment	5.05	1.13	Moderately high
Effort regulation	4.55	1.31	Moderately high
Peer learning	4.82	1.24	Moderately high
Help seeking	4.80	1.21	Moderately high
<b>Overall</b>	<b>4.88</b>	<b>0.99</b>	<b>Moderately high</b>

The results from table 1 indicate that the overall level of BPNS was moderately high (M = 5.00, SD = 1.06). For AM, the overall mean score of 4.98, interpreted as “moderately high”. Similarly, SRLS were also rated at a moderately high level (M = 4.88, SD = 0.99).

**Table 2. Correlational analysis between basic psychological needs satisfaction, academic motivation, and self-regulated learning strategy of nursing student respondents in selected universities in Vietnam (n = 388)**

		Basic psychological needs satisfaction	Academic motivation
Academic Motivation	Pearson's r	0.655	-
	p-value	< 0.001	-
Self-regulated Learning Strategies	Pearson's r	0.730	0.758
	p-value	< 0.001	< 0.001

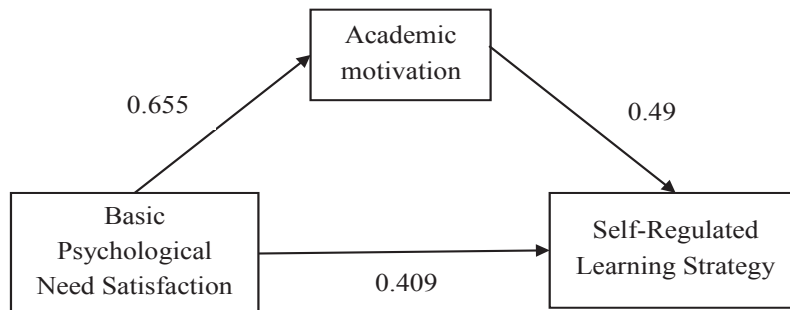
*Legent:* |Pearson's r|: 0.01 – 0.19: No or Negligible relationship; 0.20 – 0.29: Weak relationship; 0.30 – 0.39: Moderate relationship; 0.40 – 0.69: Strong relationship;  $\geq 0.70$ : Very strong relationship

Table 2 demonstrates statistically significant correlations among BPNS, AM, and SRLS of nursing students in selected universities in Vietnam. A strong positive correlation was observed between BPNS and AM ( $r = 0.655$ ,  $p < 0.001$ ). In addition, a very strong positive correlations were found between AM and SRL strategies ( $r = 0.758$ ,  $p < 0.001$ ), and between BPNS and SRL strategies ( $r = 0.730$ ,  $p < 0.001$ ).

**Table 3. The summary test for direct effect, indirect effect, and total effect of distributed basic psychological need satisfaction on self-regulated learning strategy among nursing students in selected universities in Vietnam**

Type	Effect	Estimate	SE	95% C.I. (a)		$\beta$	z	p
				Lower	Upper			
Indirect	BASIC PSYCHOLOGICAL NEEDS → ACADEMIC MOTIVATION → self-regulated learning Strat	0.3	0.0295	0.242	0.358	0.321	10.2	< 0.001
Component	BASIC PSYCHOLOGICAL NEEDS → academic motivation	0.603	0.0353	0.533	0.672	0.655	17.1	< 0.001
	ACADEMIC MOTIVATION → self-regulated learning Strat	0.498	0.0392	0.421	0.575	0.49	12.7	< 0.001
Direct	BASIC PSYCHOLOGICAL NEEDS → self-regulated learning Strategy	0.382	0.0361	0.312	0.453	0.409	10.6	< 0.001
Total	BASIC PSYCHOLOGICAL NEEDS → self-regulated learning Strategy	0.682	0.0325	0.619	0.746	0.73	21	< 0.001

The path analysis shows that AM partially mediates the relationship between BPNS and SRLS among nursing students. The total effect was notably strong (estimate = 0.682,  $\beta = 0.73$ ,  $p < 0.001$ ). The indirect effect through AM was 0.3 ( $\beta = 0.321$ ,  $p < .001$ ), while the direct effect of BPNS on SRLS remained significant at 0.382 ( $\beta = 0.409$ ,  $p < .001$ ).



**Figure 1. Path analysis model on the self – regulated learning strategy among nursing students in selected universities in Vietnam**

The model illustrates a dynamic and interrelated process in which the satisfaction of basic psychological needs - autonomy, competence, and relatedness - serves as the foundation for enhancing academic motivation and, subsequently, enhances self-regulated learning strategies among undergraduate nursing students.

## DISCUSSION

**Current status of Basic Psychological Needs, Academic Motivation, and Self-Regulated Learning Strategies:** The study found that overall mean score of BPNS was 5.00, interpreted as “Moderately high,” indicating that nursing students generally perceive these essential psychological needs to be reasonably well satisfied within their current educational environment. Among the three needs, autonomy reported the highest level ( $M = 5.23$ ), followed by relatedness ( $M = 5.16$ ). These results imply that students feel empowered to make their own decisions and experience meaningful connections with others in their learning environment. By contrast, competence received the lowest score ( $M = 4.61$ ), although still within the “moderately high” range. This relatively lower rating may reflect students’ occasional feelings

of doubt or uncertainty when confronting demanding academic and clinical tasks, despite generally maintaining a sense of capability.

For AM, the overall level among nursing students was moderately high ( $M = 4.98$ ), with all subscales - except for amotivation - falling within the same interpretative range. Notably, intrinsic motivation to know ( $M = 5.20$ ) and extrinsic motivation through external regulation ( $M = 5.18$ ) were the two highest-scoring dimensions. The predominance of intrinsic motivation to know, defined as the pleasure derived from learning and exploring new content<sup>16</sup>, aligns with prior literature emphasizing the positive effects of such motivation on academic persistence and deeper learning<sup>19</sup>.

Among the nine SRLS indicators, the two strongest dimensions were elaboration and time and study environment, both with

a mean of 5.05 and ranked first. This finding suggests that students actively integrate new information with prior knowledge and effectively manage their learning environments. Furthermore, critical thinking ( $M = 4.96$ ) and rehearsal ( $M = 4.94$ ) also received high ratings, reflecting students' abilities to reflect analytically and reinforce memory through repetition, which are critical for clinical reasoning and skills acquisition. However, it is worth noting that effort regulation ( $M = 4.55$ ) ranked lowest among all indicators. Although still interpreted as "moderately high," this relatively lower score suggests that some students may struggle with maintaining persistence and managing distractions when facing academic difficulties or clinical challenges. Similarly, help-seeking ( $M = 4.80$ ) and peer learning ( $M = 4.82$ ) also showed lower means, which may reflect a degree of hesitancy in collaborative learning or a lack of confidence in seeking academic or social support. From a practical perspective, these findings suggest that while students demonstrate commendable use of SRLS, there remains room for targeted interventions. Nursing curricula should integrate SRL workshops that focus on goal-setting, time management, and emotional regulation, alongside platforms for peer collaboration and mentorship.

**Relationships Between Basic Psychological Needs Satisfaction, Academic Motivation, and Self-Regulated Learning Strategy:** The results showed statistically significant and strong to very strong relationships among all three constructs ( $p < 0.001$ ), indicating that these elements are closely intertwined in the academic learning process of nursing students. Specifically,

the correlation between BPNS and SRLS was found to be very strong ( $r = 0.730$ ,  $p < 0.001$ ), suggesting that students who feel autonomous, competent, and socially connected are more likely to regulate their own learning effectively. This result is consistent with Stoffels et al. (2023), who reported that satisfying basic psychological needs has an indirect positive effect on self-regulated learning through a supportive learning climate<sup>3</sup>. Similarly, Grüneisen et al. (2023) emphasized the mediating role of SRL between executive functioning and academic competence, particularly in emotional and motivational contexts<sup>20</sup>.

In addition, a strong positive correlation was observed between BPNS and AM ( $r = 0.655$ ,  $p < 0.001$ ), reinforcing the Self-Determination Theory proposed by Ryan and Deci<sup>1</sup>. According to this framework, fulfilling the needs of autonomy, competence, and relatedness fosters more self-determined forms of motivation. Supporting this, Hosseini et al. (2022) found that competence and relatedness significantly predict intrinsic motivation among nursing students<sup>2</sup>. Furthermore, Torbergsen et al. (2023) highlighted that controlling learning environments may diminish intrinsic motivation, while autonomy-supportive contexts enhance enjoyment and academic engagement<sup>21</sup>.

The strongest correlation between AM and SRLS ( $r = 0.758$ ,  $p < 0.001$ ), indicating that more motivated students - whether through intrinsic interest or internalized extrinsic goals - are more likely to plan, monitor, and regulate their own learning behaviors. This finding is echoed in prior meta-analyses by Broadbent and Poon (2015) and Broadbent and Fullertyszkiwicz (2018), which found SRL to be

a key predictor of academic success<sup>22,23</sup>. It is also supported by Hertel et al. (2024), who found that students with a growth mindset regarding both intelligence and SRL demonstrated higher SRL use and academic performance<sup>24</sup>.

The path analysis showed that AM partially mediates the relationship between BPNS and SRLS among nursing students. Specifically, the indirect effect of basic psychological needs on SRLS via academic motivation was significant ( $\beta = 0.321$ ,  $p < 0.001$ ), with an estimated effect size of 0.3 (95% CI [0.242, 0.358]). This finding supports the hypothesized mediation model: as students experience greater satisfaction of autonomy, competence, and relatedness, they become more motivated academically, which in turn enhances their use of SRLS. The component paths confirm this mechanism, showing that basic psychological needs strongly predict academic motivation ( $\beta = 0.655$ ,  $p < 0.001$ ) and that academic motivation significantly predicts SRLS ( $\beta = 0.49$ ,  $p < 0.001$ ). These findings are consistent with prior studies by Bureau et al. (2022) which emphasized that satisfaction of psychological needs, particularly competence and autonomy, are linked to more autonomous forms of motivation, which in turn promote sustained learning engagement<sup>25</sup>.

In addition, a significant direct effect of basic psychological needs on SRLS was observed ( $\beta = 0.409$ ,  $p < 0.001$ ; estimate = 0.382), suggesting that even in the absence of elevated academic motivation, students who feel competent, autonomous, and socially connected are still more likely to engage in proactive learning behaviors.

The present findings highlight the essential role of basic psychological need

satisfaction in fostering both academic motivation and self-regulated learning among nursing students. When nursing students experience greater satisfaction of their psychological needs, they are more motivated and more capable of employing effective self-regulation in their learning.

### LIMITATIONS

This study has some limitations. Its cross-sectional design limits causal inferences, and longitudinal or experimental research are needed to clarify how psychological needs influence motivation and self-regulated learning over time. In addition, relying just on quantitative data restricted deeper understanding of students' satisfaction, which could be addressed through mixed methods designs. Contextual factors such as cultural, institutional, or year-level variations were also not taken into consideration in this study. Finally, the sample was confined to two public universities in the Mekong Delta, which may limit the generalizability of the findings to other settings.

### CONCLUSION

There were a significant and positive associations among basic psychological needs satisfaction, academic motivation, and self-regulated learning strategy among nursing students in two public universities in Vietnam. Path analysis indicating that academic motivation partially mediated the relationship between basic psychological needs satisfaction and SRL strategies. Nursing educators should foster autonomy-supportive educational environments to promote academic motivation and self-regulated learning among nursing students. Interventions that enhance psychological needs satisfaction may contribute significantly

to improving learning outcomes in nursing education.

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### CONFLICT OF INTEREST

The authors report there are no competing interests to declare.

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