

Impact of Learning Adjustment Dimensions on Depressive Symptoms Among Chinese Nursing Freshmen: The Mediating Role of Psychological Capital

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Purpose: To examine the influence of learning adjustment dimensions (motivation, attitude, ability, teaching pattern, and environment) on depressive symptoms in Chinese nursing freshmen, and the mediating role of psychological capital.

Methods: A cross-sectional survey was conducted among 471 nursing freshmen at a university in May 2024. The anonymous self-reported questionnaire included the Patient Health Questionnaire, the Learning Adjustment Questionnaire, and the Psychological Capital Questionnaire. Data were analyzed using SPSS v25.0 and PROCESS v4.1 macro, including correlation and mediation analysis.

Results: Learning adjustment had a significant direct effect on depressive symptoms among nursing freshmen ($\beta = -0.565$, $p < 0.001$), and psychological capital partially mediated this relationship ($\beta = -0.156$, 95% Boot CI $[-0.107, -0.135]$), suggesting psychological capital explains part of the link between poor learning adjustment and depressive symptoms.

Conclusion: More attention should be paid to the mental health issues of freshmen. Addressing learning adjustment issues and fostering psychological capital among nursing freshmen may alleviate depressive symptoms, which will require relevant educational interventions and mental health support from university educators and counselors.

Keywords: depressive symptom, learning adjustment, psychological capital, nursing freshmen

Introduction

Depression is a prevalent psychiatric disorder worldwide, characterized by pervasive sadness, loss of interest or pleasure, feelings of fatigue, and diminished capacity for concentration.¹ Depressive symptoms are the most prevalent disturbances encountered by college students during their studies.² Nursing students tend to be more prone to depressive symptoms compared to the general college student population due to academic stress³ and clinical work pressures such as exposure to death, physical and mental illness, concerns about transmission, and fear of making mistakes in clinical practice.⁴ A meta-analysis showed that Asian nursing students have a higher prevalence of depressive symptoms as a result of deeply rooted traditional Asian values of collectivism, conformity to norms, self-control of emotions, and avoidance of shame.⁵ Additionally, studies have shown that a higher percentage of nursing freshmen experience depressive symptoms than other grades of nursing students⁶ due to trying to adapt to a new environment, distance from home, and lack of psychological support.^{6,7} Some researchers believe that dissatisfaction with their major has a significant impact on depressive symptoms in nursing students.^{7,8} Financial difficulties may also be associated with depressive symptoms in college students.^{9,10} The findings of a qualitative study indicate that clear career planning can help reduce psychological stress among college students.¹¹

Learning adjustment usually refers to the positive self-adjustment of students to balance their psychology and behavior with the new learning environment, and it is considered to be related to learning motivation, teaching pattern,

learning ability, learning attitude, and learning environment.¹² For freshmen, college life is not only an environmental change but also a series of factors resulting from the transition from high school to college.¹³ Changes in teaching patterns¹⁴ and learning environments involving negative life events¹⁵ may exacerbate depressive symptoms among college students. Individuals' attitudes¹⁶ and motivations¹⁷ are closely linked to mental health. In addition, some studies have found a correlation between college adjustment and mental health status,^{18,19} with better-adjusted students at a lower risk of depression.²⁰ It has been suggested that there is a positive correlation between learning adjustment and psychological capital, and that interventions aimed at increasing the level of psychological capital in nursing students can contribute to students' positive adjustment to school.²¹

Psychological capital (PsyCap) often refers to a positive psychological state that individuals exhibit during their growth and development, including four core components: hope, resiliency, optimism, and self-efficacy.²² Some studies have found that the development of positive PsyCap could enhance the positive mental health of college students.^{23,24} PsyCap is negatively correlated with depression, and it can be strengthened for college students to cope with the negative effects of depression.^{22,25} Previous studies have demonstrated that PsyCap can act as a mediator in the relationship between depression and other variables.^{26,27}

The theory of resource preservation posits that the motivation for people to endeavor to acquire, maintain, cultivate, and protect their resources stems from the basic need for human beings to adapt to their environment and to sustain their existence.²⁸ When an individual is faced with a loss of resources, a stress response occurs that can be alleviated with the acquisition of new resources.²⁸ Freshman nursing students face changes in their environment and have fewer resources at their disposal after enrolling in school, which may lead to depressive symptoms, and psychological capital as a unique resource that can alleviate students' depressive symptoms. Thus, this study presents a conceptual model (Figure 1) and proposes the following hypothesis: H1) There is a positive correlation between learning adjustment and PsyCap; H2) A direct pathway may exist from learning adjustment to depressive symptoms among nursing freshmen; H3) PsyCap may mediate the pathways from learning adjustment to depressive symptoms in nursing freshmen.

This study examined the pathways from learning adjustment to depressive symptoms through PsyCap, providing implications and recommendations for counselors, higher education personnel, and those in student affairs and administration to improve learning adjustment or psychological capital might lead to targeted interventions for mental health support for nursing freshmen.

Materials and Methods

Participants and Procedure

The research data were collected from May 3 to 14, 2024, using simple cluster sampling. During this time, students are in the normal course of instruction and do not encounter specific stressors such as exams. We collect data during breaks in classroom teaching. It took approximately 15 minutes for the participants to complete the survey with informed consent by scanning a QR code. The anonymous questionnaire consists of three parts: the first part is the instructions, informing the students of the principle of anonymity, voluntary principle, confidentiality principle, and data only for scientific research, the second part is a general sociodemographic characteristics questionnaire, including gender, family financial

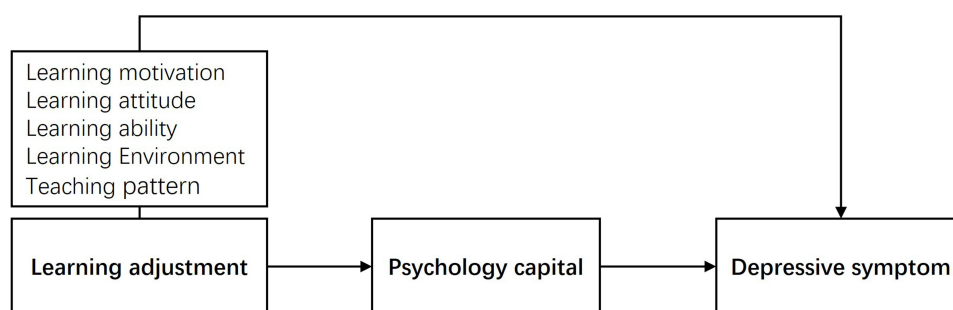


Figure 1 Hypothesized pathways from learning adjustment to depressive symptom in the conceptual model.

difficulties, satisfaction with major, and career planning, and the third part measures, including the patient health questionnaire, the learning adjustment questionnaire, and the psychological capital questionnaire.

We used G*Power 3.1.9.7 to calculate the appropriate sample size of 138 participants for multiple linear regression analysis with $\alpha=0.05$, 95% power, and 0.15 medium effect size, and in fact, 593 nursing freshmen completed the online questionnaire. Therefore, the sample size meets the requirements of the study.

Inclusion criteria: Nursing students volunteered to participate in the study after reading the instructions. Exclusion criteria: During data screening, we excluded the following questionnaires: 1) those who have obvious contradictions in answering questions; 2) those who choose the same answer for all options; 3) those answers that have a consistent arrangement pattern. Data cleansing helps improve the quality of data and the accuracy of analysis.

Measurements

Depressive Symptoms

The Patient Health Questionnaire (PHQ-9), which is the most widely used measure of depression worldwide²⁹ and has good reliability for Chinese university students,³⁰ was used to evaluate mental health. The tool comprised nine items, with each item ranging from 0 (never) to 3 (almost every day). Total scores of 5, 10, 15, and 20 indicated the thresholds for different degrees of depressive symptoms, namely mild, moderate, moderately severe, and severe, respectively. Cronbach's alpha was 0.866 in this study.

Learning Adjustment

This study used the learning adjustment questionnaire developed by Feng et al¹² which showed good reliability among Chinese nursing students.³¹ The measure comprised 29 items that were divided into five categories: eight items on learning motivation, seven on teaching patterns, six on learning ability, four on learning attitudes, and four on learning environments. Each question was scored on a five-point Likert scale ranging from 1 (not at all) to 5 (very much so), with higher scores representing a higher level of learning adjustment. Cronbach's alpha was 0.926 in this study. The Cronbach's alpha of all dimensions was 0.876 for learning motivation, 0.834 for teaching pattern, 0.861 for learning ability, 0.789 for learning attitude, and 0.784 for learning environment.

Psychological Capital

The Psychological Capital Questionnaire was used to measure the PsyCap of the nursing students. The measurement tools developed by Luthans et al²² and modified by Zhang et al³² showed good reliability in Chinese nursing students.³³ The scale consisted of 26 items. Responses were scored on a seven-point Likert scale ranging from 1 (strong disagreement) to 7 (strong agreement). Higher scores reflected higher levels of PsyCap. In this study, the Cronbach's alpha was 0.935.

Data Analysis

The data were analyzed using the statistical software package SPSS 25.0. It should be noted that the data for this study was obtained by self-report questionnaire. Thus, common method bias may exist among the variables. Therefore, Harman's single-factor test was conducted to assess the potential impact of common method bias on sample data,³⁴ and the first unrotated factor of variance explanation cut-off threshold should be below 40%.³⁵ Furthermore, if the correlation between the independent variables is high, there may be a multicollinearity problem. If the variance inflation factor (VIF) of each variable factor value is less than 5, indicating no multicollinearity issue.³⁶

Means and standard deviations ($M \pm SD$) were used to describe participants' general characteristics, levels of depressive symptoms, learning adjustment, and PsyCap. The distribution of variables was described via *t*-test and ANOVA. Relationships between variables were analyzed using Pearson's coefficient, and multiple linear regression was used to identify the direct effects of learning adjustment dimensions on depressive symptoms among nursing students. We analyzed the mediating effect of PsyCap between depressive symptoms and learning adjustment using the PROCESS v4.1 macro and Model 4,³⁷ a model used to test the moderating effect of a mediating variable between the independent and dependent variables.

Ethical Considerations

The study was approved by the Ethics Committee of Xuzhou Medical University. All procedures were conducted in accordance with relevant ethical guidelines and regulations. All participants in the questionnaire fulfilled the requirement of informed consent.

Results

Method Bias Test

The results of Harman's single-factor test indicated that the unrotated first factor can explain 30.39% of the variance, which was below the 40% threshold, suggesting that there was no significant common method bias in the study. In the regression analysis, VIF values ranged from 1.345 to 2.106, so there was no multicollinearity problem. So, the sample data was valid.

Preliminary Analysis

Due to the exclusion principle mentioned above, 122 (20.6%) questionnaires were excluded from the sample. The remaining 471 (79.4%) questionnaires were analyzed, with 16.8% of male nursing freshmen and 83.2% of female nursing freshmen.

In our research, the mean score of the PHQ-9 was 6.22 among nursing freshmen, and results showed that depression levels were 44.6% for mild depression, 14.9% for moderate depression, 3.0% for moderately severe depression, and 0.4% for severe depression. The mean learning adjustment score on the 5-point Likert scale was 104.93, and the mean on PsyCap was 121.72. Male students reported higher depression than women among nursing freshmen ($p < 0.05$), and women exhibited higher levels of learning adjustment than men ($p < 0.01$). There is no gender difference in the level of PsyCap ($p = 0.66$). Additionally, there were statistically significant differences in the three variables among nursing freshmen who were satisfied with their major ($p < 0.001$) and those who had career planning ($p < 0.001$) (Table 1).

Correlation Analysis

A Pearson's linear correlation analysis of the continuous variables is presented in Table 2. The results indicated a negative correlation between depression and learning adjustment and its components ($p < 0.001$). This suggests that the higher the performance of learning adjustment, the lower of depression. Similarly, depression was significantly negatively correlated with PsyCap ($p < 0.001$), indicating that the greater the PsyCap, the worse the performance of

Table 1 Sociodemographic Characteristics of Variables Among Nursing Freshmen

Category	N (%)	Depressive Symptom		Learning Adjustment		Psychological Capital	
		Mean \pm SD	t/F (p)	Mean \pm SD	t/F (p)	Mean \pm SD	t/F (p)
Total	471	6.22 \pm 4.23		104.93 \pm 15.55		121.72 \pm 20.53	
Gender							
Male	79 (16.8)	7.11 \pm 5.02	$t=2.039$	100.06 \pm 20.01	$t=-3.078$	120.65 \pm 24.53	$t=-0.442$
Female	392 (83.2)	6.04 \pm 4.11	($p < 0.05$)	105.91 \pm 14.31	($p < 0.01$)	121.94 \pm 19.66	($p = 0.66$)
Family financial difficulties							
Yes	67 (14.2)	6.64 \pm 4.47	$t=0.871$	103.76 \pm 14.81	$t=-0.664$	118.43 \pm 16.83	$t=-1.663$
No	404 (85.8)	6.15 \pm 4.26	($p = 0.384$)	105.12 \pm 15.67	($p = 0.758$)	122.27 \pm 21.05	($p = 0.099$)
Satisfaction with major							
Satisfaction	226 (48)	5.01 \pm 3.78	$F=18.626$	110.81 \pm 14.48	$F=36.798$	128.11 \pm 19.8	$F=23.026$
Medium	184 (39.1)	7.28 \pm 4.48	($p < 0.001$)	100.23 \pm 14.19	($p < 0.001$)	116.02 \pm 19.24	($p < 0.001$)
Dissatisfaction	61 (12.9)	7.51 \pm 4.33		97.31 \pm 15.34		115.26 \pm 20.17	
Career planning							
Good	275 (58.4)	5.74 \pm 4.4	$F=6.431$	109.2 \pm 15.64	$F=34.116$	128.09 \pm 19.99	$F=42.515$
Medium	169 (35.9)	6.64 \pm 4.09	($p < 0.001$)	100.35 \pm 12.76	($p < 0.001$)	114.52 \pm 17.31	($p < 0.001$)
Bad	27 (5.7)	8.48 \pm 3.42		90.15 \pm 13.57		101.96 \pm 17.31	

Abbreviation: SD, Standard Deviation.

Table 2 Pearson's Correlation Between All Variables

	1	2	3	4	5	6	7	8
1. Depressive symptom	1							
2. Learning motivation	-0.452**	1						
3. Teaching pattern	-0.489**	0.521**	1					
4. Learning ability	-0.313**	0.634**	0.410**	1				
5. Learning attitude	-0.488**	0.570**	0.587**	0.455**	1			
6. Learning environment	-0.403**	0.350**	0.425**	0.293**	0.467**	1		
7. Learning adjustment	-0.565**	0.845**	0.790**	0.732**	0.787**	0.632**	1	
8. Psychological capital	-0.459**	0.600**	0.430**	0.639**	0.485**	0.377**	0.667**	1

Note: ** $p < 0.001$ (two-tailed).

depression. In addition, there was a significant positive correlation between all dimensions of learning adjustment and PsyCap ($p < 0.001$) (Table 2), and this validates hypothesis 1.

Direct Effects Analysis

A linear regression analysis was conducted to ascertain the impact of learning adjustment on depressive symptoms among nursing freshmen. The results showed that learning adjustment ($\beta = -0.565$, $p < 0.001$) has a significant direct effect on depressive symptoms (Table 3). Thus, hypothesis 1 was validated. To further explore the effects of dimensions of learning adjustment on depressive symptoms, a multiple linear regression analysis was performed. The results demonstrated that learning motivation ($\beta = -0.195$, $p < 0.001$), teaching pattern ($\beta = -0.224$, $p < 0.001$), learning attitude ($\beta = -0.184$, $p < 0.001$), and learning environment ($\beta = -0.164$, $p < 0.001$) were identified as significant predictors of depressive symptoms, thereby providing further support for hypothesis 2 (Table 3). In the present study, we did not find a significant effect of learning ability on depressive symptoms among nursing freshmen.

Mediation Effects Analysis

We used PROCESS v4.1 macro to assess the mediating effects of PsyCap in the process of learning adjustment to depressive symptoms. The mediating effect is determined by employing 5000 bootstrap samples with 95% confidence interval (CI). The results demonstrated that learning adjustment exerted significant direct effects ($\beta = -0.129$, 95% Boot CI [-0.156, -0.151]), indirect effects ($\beta = -0.027$, 95% Boot CI [-0.048, -0.007]), and total effects ($\beta = -0.156$, 95% Boot CI [-0.107, -0.135]) on the depressive symptom. Results above involving 95% Boot CI did not include zero,³⁷ indicating that PsyCap played a role mediating in the relationship between learning adjustment and depressive symptoms. This validates hypothesis 3. (Table 4, Figure 2).

Table 3 Depressive Symptoms Associated with Learning Adjustment Based on Regression Analysis

Model	Independent Variables	R ²	Adj.R ²	F	Beta	t	P-value
Model 1	Learning adjustment	0.319	0.318	219.98	-0.565	-14.83	$p < 0.001$
Model 2	Learning motivation	0.343	0.336	48.58	-0.195	-3.574	$p < 0.001$
	Teaching pattern				-0.224	-4.546	$p < 0.001$
	Learning ability				0.034	0.695	$p = 0.487$
	Learning attitude				-0.184	-3.526	$p < 0.001$
	Learning environment				-0.164	-3.759	$p < 0.001$

Note: The dependent variable is depressive symptoms.

Table 4 The Mediating Effects of Psychological Capital

Effects	Pathways	β	S.E.	95% CI	
				LLCI	ULCI
Direct effects	Learning adjustment \rightarrow PsyCap	0.882	0.045	0.792	0.971
	Learning adjustment \rightarrow Depressive symptom	-0.129	0.014	-0.156	-0.101
	PsyCap \rightarrow Depressive symptom	-0.031	0.011	-0.052	-0.010
Indirect effects	Learning adjustment \rightarrow PsyCap \rightarrow Depressive symptom	-0.027	0.011	-0.048	-0.007
Total effects	Learning adjustment \rightarrow Depressive symptom	-0.156	0.011	-0.107	-0.135

Note: Psychological capital (PsyCap).

Discussion

This study aims to explore the status quo of depressive symptoms and the relationship between learning adjustment, PsyCap, and depressive symptoms among nursing freshmen. We found that the prevalence of depressive symptoms among nursing freshmen in this study was approximately 62.9%, which was similar to the results (61.7%) of the previous study by Janatolmakan et al⁶ and significantly higher than the results (35.2%) among other grade nursing students reported by Mohamed and Mostafa.³⁸ As described earlier, this may be attributed to factors such as the unfamiliar learning environment, academic distress, or being separated from family members.^{39,40}

A significant difference was observed in the score of depression among nursing freshmen with different options for gender, satisfaction with major, and career planning. In this study, male nursing students exhibited a higher prevalence of depressive symptoms than their female counterparts. Nevertheless, some studies have indicated that female students may exhibit elevated levels of depression.^{40,41} In male-dominated societies, there may be a social bias against male nurses, men are typically discouraged from pursuing nursing careers, so some may express surprise at the presence of male students in nursing programs. Such gender bias may result in male nursing students experiencing role conflict and psychological distress.⁴²

In the present study, students who identify more strongly with their major are less likely to experience depression. This result is consistent with other studies.^{40,43} Students who volunteered for nursing work showed more favorable psychological indicators than those who did not.⁷ Consequently, enhancing satisfaction with the nursing major is important to alleviate the negative emotional symptoms of nursing students. This study suggests that students with clear career planning have significantly lower levels of depression than those with no career planning. Ishida and Okada⁴⁴ discovered that if individuals have a clear plan, it will help to reduce the autonomic nervous system's overreaction to emotional stress. Additionally, self-determination theory⁴⁵ posits that individuals with a well-defined plan will experience increased autonomy and motivation, ultimately leading to enhanced mental health.

In the current study, there were no significant differences in depressive symptoms according to students' family financial situation. Interestingly, it has been suggested that family financial difficulties may increase the levels of depression among college students.^{9,10} This discrepancy may be attributed to these factors: economic factors, government policies, and unique

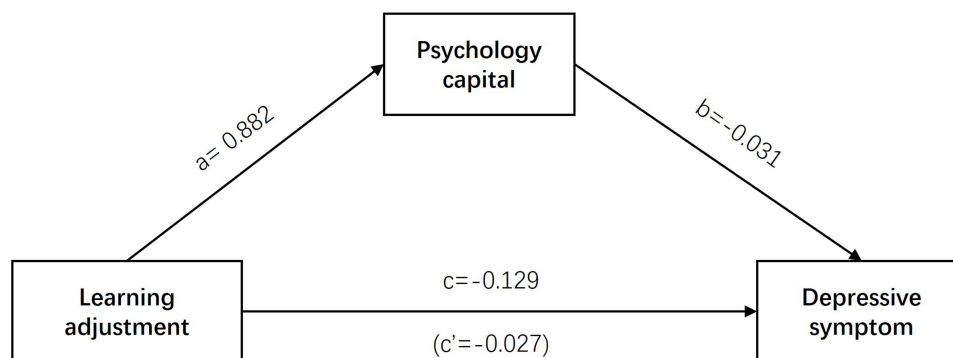


Figure 2 Mediating effect of PsyCap on the relationship between learning adjustment and depressive symptoms.

cultural values. Although China has risen to become the second largest economy in the world, it still faces major challenges with a large population and persistent disparities in regional economic development. The living standards of individuals in the majority of Chinese regions remain considerably lower than those observed in developed countries. A notable aspect of this discrepancy is the relatively lower financial burden borne by Chinese university students compared to their counterparts in developed countries. As a result, the financial pressure borne by Chinese students is also lower than that of their peers in developed countries. The Chinese government has long provided a strong system of financial assistance to economically disadvantaged students, which includes student loans, tuition fee waivers, living allowances, and other forms of assistance. This policy system provides students with the financial security to pursue their studies without undue concern for their financial obligations. Since ancient times, people in Chinese society have considered education to be valuable in changing their economic and social status. This cultural factor provides students with a sense of spiritual comfort, enabling them to cope with the challenges of their current economic circumstances.⁴⁶

As our study revealed, other studies have also found a significant negative correlation between learning adjustment and depression.^{19,47} The students' learning maladjustment may lead to learning boredom, which in turn has a negative affecting on the lives of students. As evidenced by this study, PsyCap has been demonstrated to be negatively associated with depression in college students.^{23,24} An increase in the level of students' PsyCap is beneficial for their mental health.^{48,49} Furthermore, this study corroborates the findings of a previous study on college students, indicating a positive correlation between PsyCap and learning adjustment.^{21,50} In other words, the maintenance of a positive state of mental health is beneficial to the process of learning adjustment.

The present results suggest that the factors of learning adjustment influencing depression in nursing students were learning motivation, teaching patterns, learning attitude, and learning environment. As we have found, some studies have also considered that achievement motivation is significantly correlated with mental health.^{17,51} Therefore, the lower the motivation to learn, the more likely people are to be depressive. As we know, there are significant differences in the teaching patterns used in high school and college. This alteration in teaching patterns will result in a state of maladjustment in the learning process, which in turn will give rise to depressive symptoms among freshmen.¹³ To our knowledge, the present study is the first to find a link between learning attitude and depression among college students, which is consistent with the results of a study examining depression and attitudes in adults.⁵² The improvement of students' positive attitudes towards learning may contribute to the improvement of their mental health. Our study found that the learning environment is an important factor for depressive symptoms among nursing freshmen. Similarly, some scholars have suggested that an adverse learning environment can lead to depressive symptoms in students.^{53,54} Nursing students in adverse learning environments may experience difficulties with relationships and negative events, which may lead to mental health problems.

The results of our study indicated that PsyCap plays a partial mediating role in the relationship between learning adjustment and depressive symptoms, with the direct effects ($\beta = -0.129$, 95% Boot CI $[-0.156, -0.151]$), indirect effects ($\beta = -0.027$, 95% Boot CI $[-0.048, -0.007]$), and total effects ($\beta = -0.156$, 95% Boot CI $[-0.107, -0.135]$). This may be attributed to the fact that PsyCap is associated with a reduction in the negative emotions commonly experienced during the transition to university life. Similarly, evidence suggests that PsyCap can enable students to overcome negative emotions and facilitate their adaptation to college life.⁴⁷ This is also consistent with the principle of access to resources in the theory of resource preservation, which suggests that PsyCap including hope, resiliency, optimism, and self-efficacy is a valuable resource that can help individuals resist stress effectively.²⁸ When faced with a loss of resources, individuals become stressed, and this is when the replenishment and addition of resources becomes especially important and more valuable to the individual. The addition of new resources both counteracts the loss of resources and relieves the individual's stress.

Implications for Policy and Practice

The results of our study indicate that learning motivation, teaching pattern, learning attitude, and the learning environment are significant predictors of depressive symptoms. It is therefore recommended that universities consider the implementation of targeted policies and curriculum changes to address these factors. For instance, educational institutions should endeavor to enhance students' motivation through the introduction to their field of study; improve teachers' teaching methods to enhance students' sense of learning efficacy; provide effective academic management to promote students' positive learning attitudes;

and provide training in dealing with interpersonal relationships to enable students to better integrate into their learning environments. Furthermore, the provision of guidance on career planning for students will assist in the development of their professional identity, which will prove advantageous to their psychological well-being.

The enhancement of psychological capital has been demonstrated to assist students in the alleviation of depressive symptoms. It is therefore recommended that universities integrate psychological capital enhancement programs into their orientation programs for new students. Educators, counselors, and policymakers can facilitate students' attainment of success and enhance their confidence by setting reasonable goals, motivating students effectively to maintain optimism, encouraging innovative approaches to foster hope, and conducting resilience training to enhance stress tolerance.

Parents need to recognize that students' transition from high school to college may go through a period of adjustment. Regular communication between parents and students is beneficial to ascertain their well-being and provide guidance on adapting to university life and reducing anxiety about being away from home. Additionally, parents should recognize the importance of communication between home and school and have formed an educational synergy to help students adapt to university life.

Limitations

It is important to note that when interpreting the results of this study, some limitations must be taken into account. First, our study only included nursing freshmen at one university, which limited the generalizability of the study results. The study scope should be expanded. Second, cross-sectional studies are not the best way to establish the causal relationship between factors, and longitudinal studies should be conducted in the future to reveal the causal relationship between variables. Interventions to enhance psychological capital should be explored, and the changes in depressive symptoms over time should be tracked. Third, the mediating role of each dimension of PsyCap and other mediating variables needs to be explored in the future. Finally, the unique psychological needs of male nursing students should be taken into account in the future research.

Conclusion

This study demonstrated that learning adjustment was a significant factor impacting depressive symptoms among nursing freshmen, and that the better the students' learning adjustment, the less likely they are to be depressed. PsyCap may play a partial mediating role in the relationship between learning adjustment and depressive symptoms by alleviating the stress that students experience as a result of learning adjustment problems. This finding contributes to improving the mental health of nursing students and has the potential to generalize these findings to other academic populations. It also contributes to research in educational psychology and mental health.

Data Sharing Statement

The data used in this study is available from the corresponding author on request.

Ethical Approval and Consent to Participate

The study was approved by the Ethics Committee of Xuzhou Medical University. All research methods were performed following the relevant guidelines of the Declaration of Helsinki. All participants in the questionnaire fulfilled the requirement of informed consent.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflict of interest in this work.

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