
| RESEARCH ARTICLE

Academic Emotions of Medical University Students in the Western Guangxi Region during COVID-19

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| ABSTRACT

To investigate the academic emotional status and its influencing factors among university students in medical colleges in Western Guangxi during the COVID-19 pandemic, and to provide scientific evidence for developing emotional intervention and psychological counseling strategies during the pandemic. **Methods:** During the COVID-19 pandemic, a total of 572 university students from medical colleges in Western Guangxi were selected using stratified cluster sampling. Data were collected through a self-designed demographic questionnaire and the College Students' General Academic Emotion Questionnaire. Statistical analyses, including t-tests and multiple regression analyses, were conducted. **Results:** (1) Significant differences in anxiety levels were found among students of different ethnicities, places of origin, majors, and educational levels ($P < 0.05$): ethnic minority > Han; rural > urban; medical majors > non-medical majors; undergraduate > junior college students. (2) Significant differences in boredom levels were observed based on ethnicity, major, and whether students were enrolled in a preventive medicine program ($P < 0.05$): ethnic minority > Han; medical majors > non-medical majors; non-preventive medicine > preventive medicine. (3) Multiple stepwise regression analysis revealed that learning motivation, negative academic emotions, ethnicity, grade level, major, and academic ranking significantly predicted positive academic emotions ($R^2 = 0.519$). Positive academic emotions, PSQI total score, age, academic ranking, father's education, grade level, and learning motivation significantly predicted negative academic emotions ($R^2 = 0.295$). **Conclusion:** During the COVID-19 pandemic, medical colleges in Western Guangxi should pay special attention to the academic emotions of students from ethnic minority backgrounds, rural areas, medical and non-preventive medicine majors, and undergraduate programs. Targeted interventions—such as regular COVID-19 health education, mental health lectures, and tailored training for different student subgroups—are recommended to enhance positive academic emotions and reduce negative academic emotions, thereby supporting academic performance and learning quality during the pandemic.

| KEYWORDS

Western Guangxi; COVID-19; university students; academic emotions.

| ARTICLE INFORMATION

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1. Introduction

The COVID-19 pandemic is an unprecedented global public health crisis that has deeply affected every aspect of daily life, particularly the education sector. For college students, especially those in medical universities, the abrupt transition to online learning, uncertainty about clinical training, and increased psychological pressure have significantly reshaped their academic experiences (Jupina et al., 2022; Torun & Torun, 2020). Emotions are inherently connected with and affect cognitive skills such as attention, memory, executive function, and problem solving, all of which play a critical role in learning. Academic emotions are directly linked to learning, instruction, and academic achievement, they play a critical role in shaping students' motivation,

learning strategies, cognitive resources, and overall academic performance (Xie & Fan, 2025). It is also tied to academic learning, performance, and self achievement. All of these have gained increasing attention in educational psychology. These emotions—such as anxiety, boredom, enjoyment, hope, and shame—not only influence students' motivation and engagement but also significantly affect their learning outcomes and psychological well-being (Liu et al., 2020).

The Control value theory proposed by Reinhard Pekrun (2006) provides a basic framework for understanding this emotion. This theory holds that in situations related to achievements, an individual's evaluation of control and value can affect achievement emotions. A study conducted by Tanriover and his colleagues (2025) indicates that emotional issues should be explicitly addressed in medical education, and students should be supported to incorporate emotional management as part of their professional development and well-being. Multiple studies have shown that positive academic emotions are conducive to improving the mental health level of college students, enhancing their learning enthusiasm and learning outcomes. Conversely, negative academic emotions can reduce the learning effect (Carmona-Halty et al., 2021; Rowe & Fitness, 2018; Tan et al., 2021). Cultivating positive emotions and managing negative ones are essential strategies for supporting student success and wellbeing (Sinclair et al., 2018). For medical students, the intense academic pressure and the high-stakes nature of medical education further amplify these emotional dynamics (Jupina et al., 2022). The outbreak of COVID-19 brought about sudden disruptions to traditional academic routines, one study conducted by Xu and Wang (2023) showed that the prevalence of anxiety, depression, and stress among remote learning students during the COVID-19 pandemic was as high as 58, 50, and 71%, respectively. Understanding how these emotions have been influenced during a major public health crisis is vital to inform supportive educational and psychological interventions.

Guangxi, whose full name is Guangxi Zhuang Autonomous Region, is an autonomous region of ethnic minorities with the Zhuang people as the main body in western Guangxi. The population of ethnic minorities in Guangxi ranks first in the country. Overall, Guangxi is still dominated by agriculture and has unique economic and cultural characteristics. Students in this area face not only the universal pressures of medical education and the impacts of the pandemic but also regional disparities in educational resources and support systems (Wei et al., 2022). These factors may contribute to unique emotional experiences that differ from those of students in more developed urban centers.

Although there is an increasing amount of research on academic sentiment and the challenges related to COVID-19 in education, few understand how these issues manifest among medical college students in underdeveloped or ethnically diverse areas. This study aims to explore the current situation and influencing factors of academic emotions among college students in medical colleges and universities in the western region of Guangxi during the COVID-19 pandemic, and to provide a scientific reference basis for medical colleges and universities in the western region of Guangxi to formulate intervention and psychological counseling measures for college students' academic emotions during the COVID-19 pandemic.

2. Methodology

2.1 Study Design

A cross-sectional research method was used, and a stratified cluster sampling method was used to conduct a questionnaire survey on the respondents during the COVID-19 epidemic. In this study, the investigators were trained uniformly, and the investigators explained the questionnaire filling requirements and precautions to the respondents, and the respondents filled in the questionnaire anonymously and independently.

2.2 Study Population

The survey targets full-time undergraduate medical college students in western Guangxi. A total of 600 questionnaires were distributed and 572 valid questionnaires were collected, with an effective rate of 95.3%. Among them, there were 162 male students and 410 female students; 138 Han students and 434 ethnic minority students; 425 rural students and 147 urban students; 285 students ranked in the top 40% of their grade in terms of intellectual performance in the most recent semester, 151 students ranked between 40% and 60%, and 136 students ranked in the bottom 40%.

2.3 Data collection

A self-compiled general situation questionnaire was used to investigate the students' academic emotions, including gender, age, ethnicity, place of origin, grade, major, major level, father's education level, mother's education level, monthly living expenses during school, and the academic performance and grade ranking in the most recent semester.

The "General Academic Emotion Questionnaire for College Students " compiled by Ma (2008) was used to investigate academic emotions. The questionnaire consists of 88 items, including 10 sub-tests: shame, anger, anxiety, happiness, interest, disappointment, hope, pride, boredom, and relaxation. Among them, happiness, hope, pride, interest, and relaxation are positive

academic emotions; the higher the score, the higher the positive academic emotion. Anger, anxiety, shame, boredom, and disappointment are negative academic emotions; the higher the score, the higher the negative academic emotion.

2.4 Statistical Analysis

In this study, questionnaires were entered using Epidata13.0 to establish a database. SPSS17.0 was used as the statistical analysis tool, and statistical analyses were conducted using methods such as t-tests and multiple regression analyses. $\alpha = 0.05$ was used as the test level.

2.5 Ethical considerations

This study was approved by the Ethical Committee of Human Research, Youjiang Medical University for Nationality for legal acceptance and human subject protection (2021031102).

3. Results

3.1 Comparison of Anxiety Levels Among University Student Groups

Statistically significant differences were identified in anxiety levels among university students across ethnicity, place of origin, academic major, and educational level ($p < .05$). Specifically, students from ethnic minority backgrounds exhibited higher anxiety levels compared to Han students. Similarly, students from rural areas reported higher levels of anxiety than their urban counterparts. Students majoring in medical disciplines demonstrated significantly greater anxiety levels than those in non-medical fields, and undergraduate students reported higher anxiety levels than diploma (junior college) students. In contrast, no significant differences in anxiety levels were found with respect to gender, monthly living expenses, or whether students were enrolled in preventive medicine programs ($p > .05$). Detailed results are presented in Table 1.

Table 1: Comparison of Anxiety Levels Among University Students by Demographic and Academic Variables

Variable	Category	N	Mean \pm SD	t	p
Gender	Male	162	85.25 \pm 11.63	0.673	0.501
	Female	410	84.51 \pm 11.80		
Ethnicity	Han	138	82.07 \pm 12.28	-3.070	0.002
	Ethnic Minority	434	85.56 \pm 11.46		
Place of Origin	Rural	425	85.45 \pm 11.66	2.535	0.011
	Urban	147	82.61 \pm 11.79		
Major	Medical	338	89.59 \pm 10.97	13.725	0.000
	Non-medical	234	77.69 \pm 8.95		
Educational Level	Undergraduate	493	85.12 \pm 11.97	2.026	0.043
	Diploma (Junior College)	79	82.24 \pm 9.97		
Monthly Expenses	< 1000 RMB	310	85.16 \pm 11.08	0.969	0.333
	\geq 1000 RMB	262	84.20 \pm 12.50		
Major Type	Preventive Medicine	95	54.28 \pm 10.29	-1.307	0.192
	Non-Preventive Medicine	477	55.66 \pm 9.18		

3.2 Comparison of Irritability Levels Among University Student Groups

There were significant differences in the level of boredom among college students of different ethnicities, majors, and whether they were majoring in preventive medicine ($P < 0.05$). The level of boredom among minority students was higher than that among Han students. The level of boredom among medical students was higher than that among non-medical students, and the level of boredom among non-preventive medicine students was higher than that among preventive medicine students. In this study, there was no significant difference in the level of boredom among college students of different genders, places of origin, educational backgrounds and monthly living expenses ($P > 0.05$). See Table 2.

Table 2 : Comparison of Irritability Levels Among University Students by Demographic and Academic Variables

Variable	Category	N	Mean \pm SD	t	p
Gender	Male	162	44.88 \pm 7.67	0.210	0.833
	Female	410	44.73 \pm 7.67		
Ethnicity	Han	138	43.14 \pm 8.51	-2.878	0.004
	Ethnic Minority	434	45.29 \pm 7.31		
Place of Origin	Rural	425	44.89 \pm 7.59	0.663	0.508
	Urban	147	44.41 \pm 7.88		
Major	Medical	338	45.22 \pm 8.38	1.690	0.092
	Non-medical	234	44.12 \pm 6.44		
Educational Level	Undergraduate	493	44.59 \pm 7.78	-1.397	0.163
	Diploma (Junior College)	79	45.89 \pm 6.78		
Monthly Expenses	< 1000 RMB	310	44.70 \pm 7.18	-0.235	0.814
	\geq 1000 RMB	262	44.85 \pm 8.21		
Major Type	Preventive Medicine	95	34.63 \pm 9.99	-3.816	0.000
	Non-Preventive Medicine	477	38.86 \pm 9.82		

3.3 Analysis of Factors Influencing Positive Academic Emotions

A multiple regression analysis was conducted with positive academic emotions as the dependent variable, and 14 independent variables: gender, age, ethnicity, place of origin, academic year, major, level of academic program, father's education level, mother's education level, monthly living expenses during university, academic performance ranking in the most recent semester, Pittsburgh Sleep Quality Index (PSQI) total score, learning motivation, and negative academic emotions. The regression model was statistically significant, $F = 101.692$, $p < .001$, indicating a good overall model fit. The results revealed that learning motivation, negative academic emotions, and ethnicity had significant positive effects on positive academic emotions. In contrast, academic year, major, and academic performance ranking showed significant negative effects on positive academic emotions. Detailed regression coefficients are presented in Table 3.

Table 3: Multiple Regression Analysis of Factors Influencing Positive Academic Emotions

Predictor Variable	B (Unstandardized Coefficient)	SE	β (Standardized Coefficient)	t	p
Constant	81.784	11.533	—	7.091	0.000
Learning Motivation	0.395	0.045	0.366	8.872	0.000
Academic Year	-5.859	0.664	-0.293	-8.831	0.000
Negative Academic Emotions	0.222	0.028	0.247	7.848	0.000
Major	-11.166	2.288	-0.205	-4.879	0.000
Academic Ranking	-4.142	0.986	-0.126	-4.203	0.000
Ethnicity	5.739	1.878	0.091	3.057	0.002

Determination coefficient $R^2=0.519$

3.4 Analysis of Factors Influencing Negative Academic Emotions

A multiple linear regression analysis was conducted with negative academic emotions as the dependent variable and 14 independent variables: gender, age, ethnicity, place of origin, academic year, major, level of academic program, father's educational level, mother's educational level, monthly living expenses during school, academic performance ranking in the most

recent semester, Pittsburgh Sleep Quality Index (PSQI) total score, learning motivation, and positive academic emotions. The regression model was statistically significant ($F = 33.658$, $p < .001$), indicating a good fit. The results showed that positive academic emotions, PSQI score, age, academic performance ranking, and father's educational level had significant positive effects on negative academic emotions. Conversely, academic year and learning motivation were found to have significant negative effects on negative academic emotions. See Table 4.

Table 4: Stepwise Multiple Linear Regression Analysis of Factors Influencing Negative Academic Emotions

Predictor Variable	B (Unstandardized Coefficient)	SE	β (Standardized Coefficient)	t	p
Constant	103.802	10.491	—	9.895	0.000
Positive Academic Emotions	0.406	0.053	0.365	7.709	0.000
PSQI Total Score	1.713	0.435	0.150	3.937	0.000
Academic Year	-11.539	1.512	-0.517	-7.630	0.000
Age	18.418	3.138	0.378	5.869	0.000
Academic Ranking	3.433	1.365	0.094	2.515	0.012
Learning Motivation	-0.134	0.054	-0.112	-2.493	0.013
Father's Educational Level	4.421	2.111	0.075	2.095	0.037

Determination coefficient $R^2=0.519$

4. Discussion

4.1 Comparison of Anxiety and Boredom Emotion Levels Among University Students

Anxiety and boredom are two critical negative emotional states that significantly affect university students' mental health. This study found that students from ethnic minority backgrounds in Western Guangxi exhibited higher levels of both anxiety and boredom compared to Han students. This result is similar with the study of Wu and colleagues (2017), they also show minorities present different degrees of mental health due to differences in their specific cultural background, habits and customs, and financial conditions. Additionally, students from rural areas demonstrated higher anxiety levels than those from urban areas. These findings suggest that ethnic minority and rural students may possess comparatively lower self-regulation capabilities for managing anxiety and boredom. This could be attributed to their relatively limited life experiences, reduced social exposure, lower levels of mental health education, and weaker psychological resilience.

Medical students were found to have higher levels of both anxiety and boredom compared to their non-medical counterparts. Medical students often face a heavier academic workload and higher academic pressure. Our research aligns with numerous previous studies, both of which indicate that medical students experience higher levels of psychological stress compared to their counterparts in other academic disciplines (Mirza et al., 2021; Vagiri et al., 2025). During the COVID-19 pandemic, universities in Western Guangxi abruptly shifted from familiar in-person teaching to remote online learning. This transition may have negatively impacted the learning outcomes of medical students, further contributing to elevated levels of anxiety and boredom within this group.

Furthermore, students in non-preventive medicine majors exhibited higher boredom levels than those in preventive medicine. As COVID-19 is classified as a major public health emergency, students majoring in preventive medicine—who are future public health professionals—tend to carry a stronger sense of responsibility and mission. During the pandemic, their professional training led them to pay closer attention to epidemic-related developments, such as the trajectory of the outbreak, prevention and treatment guidelines, and health education. As a result, these students may have maintained more stable mindsets and experienced less boredom. In addition, undergraduate students showed higher anxiety levels than junior college students. This may be related to a stronger academic atmosphere and more serious learning attitudes among undergraduates.

4.2 Analysis of Factors Influencing Academic Emotions

The stepwise multiple regression analysis of positive academic emotions identified six significant predictors: learning motivation, negative academic emotions, ethnicity, academic year, major, and academic ranking. Among these, learning motivation, negative academic emotions, and ethnicity showed positive associations with positive academic emotions, while academic year, major, and academic ranking had negative associations. The coefficient of determination (R^2) was 0.519, indicating that these six variables explain 51.9% of the variance in students' positive academic emotions. It suggests that other unmeasured factors also contribute significantly and merit further investigation. For negative academic emotions, the regression model included positive academic emotions, PSQI total score, age, academic ranking, father's educational level, academic year, and learning motivation as predictors. Among these, positive academic emotions, PSQI score, age, academic ranking, and father's educational level were positively associated with negative academic emotions, whereas academic year and learning motivation showed negative associations. The model explained 29.5% of the variance ($R^2 = 0.295$), indicating that additional factors beyond those included in the model influence negative academic emotions.

This result aligns with previous research indicating that multiple factors—including motivation, emotional experiences, and demographic variables—significantly predict positive academic emotions. Similar studies have also identified learning motivation, negative emotions, and ethnicity as key predictors, with comparable patterns of positive and negative associations. It is consistent with prior findings, while also highlighting the need to explore additional variables that may influence students' positive academic emotions further. (Martin et al., 2024; Xie & Fan, 2025). Similarly, it is consistent with prior research demonstrating that various psychological, demographic, and behavioral factors influence negative academic emotions. The negative associations of academic year and learning motivation with negative academic emotions have been observed in previous research, reinforcing the notion that these factors play critical roles in emotional experiences related to academics (Liu et al., 2020). The R^2 value of 0.295 suggests that, as in previous studies, additional unmeasured factors also contribute to negative academic emotions, warranting further exploration.

5. Conclusion

Based on these findings, it is recommended that medical universities in Western Guangxi pay particular attention to the academic emotions of students from ethnic minority backgrounds, rural areas, medical programs, non-preventive medicine majors, and undergraduate programs, especially during public health emergencies like COVID-19. Under the guidance of public health directives, institutions should regularly conduct targeted health education and mental health seminars. Tailored support and interventions for key student populations can help foster positive academic emotions, reduce negative ones, and ensure the effectiveness and quality of student learning during such challenging periods.

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Conflicts of interest: The authors declare that they have no conflicts of interest.

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