ISSN 2663-8169 Vol. 7, Issue 6: 73-83, DOI: 10.25236/IJNDE.2025.070611

An in-Depth Study on the Psychological Health Status of College Students in Private Colleges and Universities: A Panoramic Analysis of Multiple Influencing Factors

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Abstract: *This study focuses on the mental health education of college students in private colleges and adopts the SCL-90 scale to systematically analyze the effects of gender, only-child status, grade level, place of origin and family economic status on the dimensions of mental health, and to explore in depth the multiple factors affecting college students' mental health and their internal mechanisms. The study innovatively proposes to build an education system that adapts to the psychological characteristics of students in private colleges and universities, develops targeted mental health education content, pays special attention to the mental health problems of poor students from underdeveloped regions, and implements precise intervention strategies. The results of the study provide a theoretical basis and a practical path for improving the scientific and effective mental health education in private colleges and enhancing students' mental health literacy, and provide an important reference for promoting the high-quality development of mental health education in private colleges and universities.*

Keywords: *Private Colleges and Universities; College Students' Mental Health; SCL-90; Differentiated Education*

1. Introduction

Under the background of rapid development of the current society and increasingly fierce competition in education, college students' mental health has become a core issue that needs urgent attention, which profoundly affects the growth of individuals, the effectiveness of education and social stability. As an important part of China's higher education system, private colleges and universities not only play an important role in meeting diversified educational needs and promoting the massification of higher education, but also face unique challenges. Compared with public colleges and universities, private colleges and universities have certain gaps in schooling resources, teaching staff and management level, etc. These objective factors bring potential pressure on students' mental health, resulting in more complex and diversified psychological problems. Studies have shown that the mental health problems of students in private colleges and universities are on a high trend, and negative emotions such as anxiety and depression appear frequently, hostility and obsessive-compulsive symptoms are more common, and problems such as sleep disorders, stress overload and self-cognitive bias are also prevalent [1]. These psychological difficulties not only significantly affect students' academic performance, leading to a decline in motivation and grades, but also may lead to serious psychological crises, and in extreme cases, may even jeopardize life safety. These problems are a serious threat to the growth trajectory and future development of students, and they require urgent attention and in-depth research.

In recent years, the Ministry of Education has gradually strengthened the work of mental health education in colleges and universities, and issued a series of policy documents.The 2021 Circular on Strengthening the Management of Student Mental Health sets out comprehensive requirements in terms of curriculum development, counseling services, and crisis intervention [2];The Special Action Plan for Comprehensively Strengthening and Improving Student Mental Health in the New Era (2023-2025), released in 2023, emphasizes the urgency of the current situation and deploys special actions [3];The Circular of the General Office of the Ministry of Education on the First National Student Mental Health Awareness and Education Month, released in 2024, advocates collaborative social participation to improve students' mental health literacy [4].Despite the continuous improvement of the policy system, systematic research on the mental health of students in private colleges and universities is still weak.

ISSN 2663-8169 Vol. 7, Issue 6: 73-83, DOI: 10.25236/IJNDE.2025.070611

Due to the special characteristics of enrollment sources, educational environment and social expectations, the mental health problems of students in private colleges and universities have significant complexity and diversity, and current research has not yet fully revealed the deep-seated causes and dynamic mechanisms of these problems. Therefore, it is of great theoretical significance and practical value to comprehensively analyze the current situation of students' mental health in private colleges and universities, and to deeply explore the multiple factors and their internal relationships. This study will provide a scientific basis for the development of precise interventions and differentiated education strategies, promote the scientization and standardization of mental health education in private colleges and universities, promote the overall development of students' physical and mental health, cultivate high-quality talents for the society, and maintain the harmony and stability of the campus and the society.

2. Research Objects and Research Methods

2.1 Research Objects

This study takes college students in private colleges and universities as the research object, focusing on the current situation of their mental health and multiple influencing factors.

2.2 Research Methods

2.2.1 Literature Research Method

By searching keywords such as “private colleges and universities”, “college students' mental health”, “mental health education” and so on, a large amount of related literature is collected and finely categorized, We collect a large amount of related literature and conduct fine classification, comprehensive analysis and systematic summarization of the acquired literature, focusing on refining the core information and data, so as to provide a solid theoretical foundation and a reliable reference for the study.

2.2.2 Questionnaire survey method

(1) Selection of survey respondents

Stratified sampling strategy is adopted to scientifically select samples from the college students of N private universities, fully covering students of different grades, majors, genders and places of origin to ensure the representativeness of the samples.

(2) Questionnaire design

The questionnaire is divided into two parts:

1) Basic information: including individual background variables such as gender, grade, major, and place of origin, to provide basic data support for analyzing the association between background factors and mental health.

2) Main part: the internationally recognized Self-rating Scale of Mental Health Symptoms (SCL-90) compiled by L.R. Derogatis in 1975, which contains ten key factors such as somatization, obsessive-compulsive symptoms, etc., and can systematically and comprehensively quantify the mental health status of the respondents and provide core data dimensions for in-depth analysis [5].

(3) Questionnaire survey and implementation

Questionnaires were distributed and collected through the Questionnaire Star online platform. A total of 480 questionnaires were distributed, and 458 valid questionnaires were finalized after strict screening, with a validity rate of 95.42%. The basic information of the samples is shown in Table 1.

Table 1 Basic information about the sample (N=458)

Title	Options	Number	Percentage(%)
Sex	Male	235	51.31
	Female	223	48.69
Grade level	Freshman	118	25.76
	Sophomore	122	26.64
	Junior	112	24.45

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Title	Options	Number	Percentage(%)
	Senior	106	23.14
Specialization	Art	31	6.77
	Literature	144	31.44
	Engineering	168	36.68
	Management	93	20.31
	Economics	22	4.80
Only child	Yes	266	58.08
	No	192	41.92
Whether poor students	Yes	123	26.86
	No	335	73.14
Place of origin	Developed regions	296	64.63
	Less developed regions	162	35.37
Total		458	100.0

2.2.3 Interview Method

This study adopts the interview method to investigate the teachers of school counseling centers, aiming to gain a deeper understanding of the mental health status of students in private colleges and universities and their multiple manifestations. Teachers in the psychological counseling center have a deep and unique insight into students' psychological problems due to their close daily interaction with students. Through interviews, we can comprehensively collect information on teachers' observations of the main manifestations, frequency and severity of students' psychological problems, and at the same time obtain first-hand information on the impact of key factors such as academic pressure, family environment, and social relationships on students' mental health.

The interviews were conducted in both structured and semi-structured modes, and focused on the current situation of students' mental health, the causes of mental health problems, and the difficulties of intervention. Teachers were also encouraged to expand on their own experiences to ensure the comprehensiveness and depth of the interviews. In this way, the study not only provides rich data support for the accurate analysis of students' mental health problems in private colleges and universities, but also provides a strong empirical basis and theoretical guidance for the development of scientific and feasible intervention strategies.

2.2.4 Mathematical and Statistical Methods

In this study, the collected data were systematically organized and analyzed in depth with the help of Excel and SPSS 26.0 software.

3. Research results and analysis

3.1 Overall Situation Analysis of Mental Health Level of College Students in N Private Universities

Table 2 SCL-90 factor scores and comparisons with national norms for each factor

Factor scores	This survey sample	National model for university students in some areas	National model for young people	Model for normal people in China
	$(\overline{X} \pm S)$	$(\overline{X} \pm S)$	$(\overline{X} \pm S)$	$(\overline{X} \pm S)$
Somatization	1.55±0.78	1.45±0.49	1.34±0.45	1.37±0.48
Obsessive-compulsive symptoms	1.62±0.83	1.99±0.64	1.69±0.61	1.62±0.58
Interpersonal sensitivity	1.76±0.90	1.98±0.74	1.76±0.67	1.65±0.51
Depression	1.65±0.84	1.83±0.65	1.57±0.61	1.50±0.59
Anxiety	1.70±0.85	1.64±0.59	1.42±0.43	1.39±0.43
Hostility	1.75±0.87	1.77±0.68	1.50±0.57	1.48±0.56
Terrorism	1.69±0.87	1.46±0.53	1.33±0.45	1.23±0.41
Paranoia	1.71±0.90	1.85±0.69	1.52±0.60	1.43±0.57
Psychotic	1.59±0.80	1.63±0.54	1.36±0.47	1.29±0.42
Other	1.67±0.85			

The data analysis in Table 2 shows that compared with the normative mean of college students in some areas of the country, the survey sample scored significantly higher than the normative mean on the three factors of somatization, anxiety, and phobia, while the scores on the rest of the factors were lower than the normative mean. This indicates that under these comparative dimensions, the mental

ISSN 2663-8169 Vol. 7, Issue 6: 73-83, DOI: 10.25236/IJNDE.2025.070611

health of N private college students is overall better than that of college students in parts of the country. However, compared with the national youth norm, the survey sample only scored lower than the college student norm on the obsessive-compulsive symptom factor, while the other factors were higher than the college student norm, suggesting that the mental health level of this group is lower than that of the national youth norm.

In addition, compared with the Chinese normal norm, the survey sample generally scored higher on the SCL-90 factors, further confirming that their mental health level was lower than that of the Chinese normal norm. This result reveals that there are significant problems in the mental health of college students in N private colleges and universities. By comparing with different norms, the mental health of the survey sample showed a complex trend: although the scores on some factors were higher than those of the national norms for college students in some regions, the overall level was lower than that of the national youth norm and the Chinese norm for normal people. This phenomenon may be closely related to the unique educational environment of private colleges and universities and the individual characteristics of students, and factors such as academic pressure, employment competition and insufficient self-knowledge may be the main negative factors affecting students' mental health.

3.2 Mental health of college students in private universities: comparison and analysis of differences in the dimensions of demographic variables

3.2.1 Differences in the SCL-90 factors by gender

The differences of gender on the ten factors of SCL-90 scale (including somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, etc.) were analyzed by independent samples t-test. The data in Table 3 show that gender differences on the eight factors of obsessive-compulsive symptoms, depression, anxiety, and hostility did not reach the level of significance ($p > 0.05$,Table 3), suggesting that gender is not the main influencing factor for the changes in these factors, and male and female students showed a high degree of consistency in these mental health dimensions.

Table 3 Results of t-test analysis of the gender factor on each factor dimension of the SCL-90 (N=458)

	Sex($\overline{X} \pm S$)		*t*	*p*
	Male(*n*=235)	Female(*n*=223)		
Somatization	1.47±0.70	1.63±0.86	-2.176	0.030*
Obsessive-compulsive symptoms	1.60±0.80	1.65±0.86	-0.651	0.515
Interpersonal sensitivity	1.67±0.84	1.84±0.94	-2.057	0.040*
Depression	1.65±0.83	1.65±0.86	-0.000	1.000
Anxiety	1.66±0.82	1.75±0.87	-1.073	0.284
Hostility	1.70±0.82	1.80±0.93	-1.233	0.218
Terrorism	1.64±0.85	1.74±0.89	-1.282	0.201
Paranoia	1.65±0.87	1.76±0.92	-1.271	0.205
Psychotic	1.53±0.75	1.65±0.84	-1.573	0.116
Other	1.66±0.83	1.68±0.87	-0.182	0.855

* $p<0.05$ ** $p<0.01$

However, on the factors of somatization and interpersonal sensitivity, the gender differences were shown to be significant ($p < 0.05$,Table 3), and the female sample scored significantly higher than the male sample on these two factors. This difference may be related to differences in gender roles in the socio-cultural context. Females usually differ from males in emotional expression, stress coping, and social role expectations, as evidenced by the fact that females are more likely to perceive and express bodily discomfort and show greater sensitivity and delicacy in dealing with interpersonal relationships, which may have led to their higher scores on the somatization and interpersonal sensitivity factors.

3.2.2 Test for differences in SCL-90 factor dimensions by only-child status

The differences between only children and non-only children on the dimensions of SCL-90 factors were analyzed by independent sample t-test. The results showed that on the nine factors of somatization, obsessive-compulsive symptoms, and interpersonal sensitivity, the samples from the two groups did not show significant differences ($p > 0.05$,Table 4), indicating that only-child status did not have a significant effect on these mental health dimensions, and that the two groups were more consistent in terms of mental health performance on the relevant dimensions. However, on the depression factor, there was a significant difference ($p < 0.05$,Table 4) between the two samples, with non-only children

ISSN 2663-8169 Vol. 7, Issue 6: 73-83, DOI: 10.25236/IJNDE.2025.070611

having significantly higher depression scores than only children. This difference may be closely related to family and social factors. Only children usually receive more material support and emotional attention from their families, which helps them develop a positive psychological state and reduce the risk of depression. In addition, due to the lack of sibling companionship, only children tend to be more adept at being alone and self-regulation, and have stronger intrinsic resilience, which reduces the tendency to depression. In contrast, non-only children need to share resources with their siblings and compete for parental attention in the family, which may lead to feelings of neglect and competitive stress, thus increasing the risk of depressive mood. Although non-only children may receive some emotional support from the companionship of their siblings, they also face the interference of more family factors, such as financial pressure, academic competition and family relationship coordination, which may aggravate the psychological burden. In the absence of effective adjustment strategies, these negative factors may lead to high depression scores.

Table 4 Results of t-test analysis of the only child status factor on each factor dimension of the SCL-90 (N=458)

	Only child($\overline{X} \pm S$)		t	p
	Yes(n=266)	No(n=192)		
Somatization	1.53±0.77	1.58±0.81	-0.674	0.501
Obsessive-compulsive symptoms	1.59±0.80	1.67±0.86	-1.007	0.314
Interpersonal sensitivity	1.77±0.91	1.73±0.88	0.524	0.600
Depression	1.56±0.78	1.79±0.90	-2.908	0.004**
Anxiety	1.71±0.84	1.69±0.85	0.160	0.873
Hostility	1.70±0.86	1.81±0.90	-1.299	0.195
Terrorism	1.70±0.88	1.68±0.86	0.304	0.762
Paranoia	1.65±0.86	1.78±0.94	-1.552	0.121
Psychotic	1.56±0.78	1.63±0.82	-0.945	0.345
Other	1.65±0.85	1.70±0.85	-0.556	0.579

* $p<0.05$ ** $p<0.01$

3.2.3 Difference test of poor students' status on the dimensions of SCL-90 factors

The effect of poor student status on the dimensions of SCL-90 factors was analyzed by independent samples t-test, and the results showed that there was a significant difference between poor and non-poor students on the ten factors of somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychoticism ($p < 0.05$,Table 5). This finding suggests that poor student status has a profound effect on the mental health status of college students in private colleges and universities.

First, on the somatization factor, poor students may lead to more frequent symptoms of physical discomfort due to their long-term financial pressure, especially on tuition and living expenses. Compared with better-off students, poor students face greater difficulties in accessing living resources, and persistent economic stress may manifest itself in physiological somatization responses.

Second, on a psychological level, impoverished student status may lead to the expression of obsessive-compulsive symptoms. Economic hardship causes students to worry excessively about financial issues, which in turn triggers obsessive-compulsive thinking and behavior. In terms of interpersonal relationships, impoverished students may exhibit higher sensitivity and anxiety due to economic differences, and even develop a tendency to avoid social relationships. This over-sensitivity to the economic situation aggravates their psychological burden when interacting with others.

Poor students living in chronic economic hardship are also more likely to exhibit negative psychological states such as depression, hostility, terror, paranoia, and psychoticism. For example, due to the difficulty in getting effective relief from economic stress, poor students may develop a sense of helplessness or frustration, and the accumulated negative emotions may be transformed into depressive symptoms. Meanwhile, economic inequality may stimulate hostility or paranoia, especially when feeling excluded or unfairly treated due to economic disparities. Overall, the multidimensional complexity of mental health problems among poor students fully reflects the profound impact of economic hardship on mental health.

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Table 5 Results of t-test analysis of poor students' identity factors on each factor dimension of the SCL-90 (N=458)

	Whether poor students($\overline{X} \pm S$)		t	p
	Yes(*n*=123)	No(*n*=335)		
Somatization	1.85±1.02	1.44±0.65	4.240	0.000**
Obsessive-compulsive symptoms	1.88±1.01	1.52±0.73	3.624	0.000**
Interpersonal sensitivity	2.16±1.07	1.61±0.78	5.229	0.000**
Depression	1.85±1.01	1.58±0.76	2.611	0.010**
Anxiety	2.06±1.05	1.57±0.71	4.724	0.000**
Hostility	2.04±1.04	1.64±0.78	3.954	0.000**
Terrorism	2.02±1.09	1.57±0.74	4.247	0.000**
Paranoia	1.94±1.06	1.62±0.81	3.072	0.002**
Psychotic	1.79±1.00	1.52±0.70	2.793	0.006**
Other	1.95±0.98	1.57±0.77	3.922	0.000**

* $p<0.05$ ** $p<0.01$

3.2.4 Differences in SCL-90 factor dimensions by place of birth

The effects of place of birth on the dimensions of SCL-90 factors were analyzed by independent samples t-test, and the results showed that there was a significant effect of place of birth on ten factors, including somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychoticism ($p < 0.05$,Table 6). This finding highlights the critical role of place of origin factors in the mental health status of college students in private colleges and universities.

Further analysis revealed that students from less developed regions scored significantly higher on the factors than those from developed regions. This difference may be closely related to the relatively lower educational resources, economic development level and social support system in less developed regions. During their formative years, students from less developed regions tend to face more pressures and challenges, including limitations in the quality of education, constraints in their families' economic situation, and insufficient mental health support. These factors may have prevented them from fully developing mental toughness and coping skills at an early stage. Upon entering private universities, these students need to adapt to more intense academic competition, higher academic demands and more complex interpersonal networks. Rapid changes in the environment may exacerbate their psychological burdens, resulting in more pronounced psychological responses in the dimensions of somatization, obsessive-compulsive symptoms and interpersonal sensitivity. For example, higher somatization scores may indicate that these students are more inclined to express emotional distress through physical symptoms in the face of stress, whereas higher scores on obsessive-compulsive symptoms and depression factor may stem from concerns about self-efficacy as well as long-term accumulated stress. In addition, students from developed regions tended to benefit from more favorable economic conditions, richer educational resources, and better social support networks, which led them to show stronger adaptive ability, higher psychological resilience, and lower negative psychological reactions when facing similar environmental stress. This difference is further reflected in the significant difference in mental health factor scores between the two groups of students.

Table 6 Results of t-test analysis of the birthplace factor on each factor dimension of the SCL-90 (N=458)

	Place of origin($\overline{X} \pm S$)		t	p
	Developed regions(*n*=296)	Less developed regions(*n*=162)		
Somatization	1.40±0.63	1.81±0.96	-4.851	0.000**
Obsessive-compulsive symptoms	1.52±0.73	1.81±0.95	-3.394	0.001**
Interpersonal sensitivity	1.59±0.77	2.05±1.03	-4.947	0.000**
Depression	1.56±0.74	1.82±0.97	-2.976	0.003**
Anxiety	1.55±0.71	1.98±0.99	-4.900	0.000**
Hostility	1.62±0.77	1.97±1.00	-3.878	0.000**
Terrorism	1.55±0.75	1.94±1.01	-4.246	0.000**
Paranoia	1.58±0.80	1.94±1.01	-4.000	0.000**
Psychotic	1.51±0.70	1.75±0.93	-2.890	0.004**
Other	1.56±0.77	1.88±0.95	-3.668	0.000**

* $p<0.05$ ** $p<0.01$

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3.2.5 Tests and Analyses of the Effects of Differences in Professional Categories on the Factor Dimensions of the SCL-90

In this study, one-way analysis of variance (ANOVA) was used to explore the effect of differences in different professional categories on the dimensions of SCL-90 factors. The results of the analysis showed that different majors did not exhibit significant differences ($p > 0.05$,Table 7) in scores on the ten factors of somatization, obsessive-compulsive symptoms, and interpersonal sensitivity. This result suggests that in the group of college students in private colleges and universities, the impact of major categories on mental health status is relatively small and fails to reflect significant differences in specific mental health dimensions.

Despite the differences in curriculum, academic stress, and future career development among different majors, which may theoretically have different impacts on students' mental health, the student population showed a high degree of consistency on the core mental health dimensions reflected by the major SCL-90 factors involved in this study. This may be related to common factors in the university educational environment, such as a unified campus culture, similar social situations, and common challenges of growing up, which somewhat diminish the impact of major differences on students' mental health. As a result, despite differences in major categories, students across majors demonstrated a high degree of similarity in overall mental health status.

This finding provides an important basis for implementing universal mental health education and interventions in higher education, suggesting that individualized interventions based excessively on major differences may not be necessary in large-scale mental health counseling and educational planning. However, considering the specific mental health needs that may exist in certain majors, it is still recommended that colleges and universities implement universal interventions with appropriate customization to better meet the diverse needs of their student populations.

Table 7 ANOVA results for professional categories on the factor dimensions of the SCL-90 (N=458)

	Specialization($\overline{X} \pm S$)					F	p
	Art (*n*=31)	Literature (n=144)	Engineering (n=168)	Management (*n*=93)	Economics (*n*=22)		
Somatization	1.35±0.53	1.53±0.78	1.54±0.78	1.67±0.88	1.51±0.71	1.089	0.361
Obsessive-compulsive symptoms	1.57±0.78	1.62±0.84	1.62±0.80	1.64±0.87	1.70±0.90	0.087	0.987
Interpersonal sensitivity	1.68±0.86	1.67±0.86	1.82±0.92	1.78±0.92	1.86±0.89	0.685	0.602
Depression	1.48±0.72	1.76±0.88	1.61±0.83	1.64±0.85	1.61±0.80	0.990	0.412
Anxiety	1.56±0.75	1.65±0.81	1.68±0.84	1.88±0.94	1.68±0.84	1.433	0.222
Hostility	1.61±0.80	1.79±0.91	1.66±0.83	1.89±0.93	1.66±0.75	1.395	0.235
Terrorism	1.71±0.89	1.61±0.84	1.74±0.89	1.76±0.91	1.55±0.75	0.688	0.600
Paranoia	1.56±0.77	1.62±0.86	1.79±0.95	1.71±0.88	1.79±0.89	0.952	0.434
Psychotic	1.63±0.78	1.55±0.78	1.57±0.78	1.66±0.86	1.69±0.83	0.402	0.807
Other	1.38±0.55	1.70±0.86	1.70±0.88	1.67±0.87	1.66±0.82	0.989	0.413

* $p<0.05$ ** $p<0.01$

3.2.6 Testing and analyzing the effect of grade level differences on SCL-90 factor dimensions

In this study, the effect of grade level differences on the dimensions of SCL-90 factors was examined in depth through one-way analysis of variance (ANOVA). According to the data in Table 8, the results showed that there were significant differences ($p < 0.05$,Table 8) in the ten factors of somatization, obsessive-compulsive symptoms, and interpersonal sensitivity among students of different grade levels, which fully revealed the important role of grade level factors in the mental health status of college students in private universities.

Further analysis showed that the scores of the fourth-year students were significantly higher than those of the other grades in each factor, while the scores of the first-year students were the lowest. Freshmen have just stepped into the university campus and are in the transition period of adapting to the new environment, new learning style and new social circle, and although they face certain pressure, the overall psychological burden is light, so their scores on the mental health factors are lower. As the grade rises, the academic pressure faced by students gradually intensifies, including the increased difficulty of specialized courses, intensified competition in examinations and further studies, etc. At the same time, social relationships become more complex, accompanied by more interpersonal conflicts and emotional distress, as well as anxiety and confusion about future career planning. These factors

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work together to cause changes in students' mental health.

Table 8 ANOVA results for the grade factor on each factor dimension of the SCL-90 (N=458)

	Grade Level($\overline{X} \pm S$)				F	p
	Freshman (*n*=118)	Sophomore (*n*=122)	Junior (*n*=112)	Senior (*n*=106)		
Somatization	1.39±0.63	1.49±0.70	1.53±0.70	1.80±1.03	5.612	0.001**
Obsessive-compulsive symptoms	1.49±0.74	1.56±0.76	1.56±0.74	1.90±1.01	5.584	0.001**
Interpersonal sensitivity	1.58±0.76	1.75±0.82	1.71±0.80	2.02±1.13	4.899	0.002**
Depression	1.62±0.81	1.51±0.68	1.64±0.80	1.88±1.02	3.930	0.009**
Anxiety	1.53±0.70	1.72±0.80	1.63±0.73	1.95±1.08	5.009	0.002**
Hostility	1.60±0.80	1.71±0.77	1.76±0.84	1.92±1.05	2.636	0.049*
Terrorism	1.50±0.72	1.66±0.81	1.65±0.74	1.98±1.12	6.039	0.000**
Paranoia	1.55±0.74	1.60±0.77	1.67±0.81	2.05±1.15	7.519	0.000**
Psychotic	1.39±0.58	1.65±0.79	1.53±0.67	1.82±1.05	6.231	0.000**
Other	1.53±0.79	1.66±0.78	1.58±0.71	1.93±1.05	4.903	0.002**

* $p<0.05$, ** $p<0.01$

In the fourth year of college, with the superposition of multiple pressures such as employment pressure and graduation thesis, students' mental health faces even more serious challenges. As a result, senior students generally scored higher on all mental health factors, reflecting the severity of students' mental health problems at this stage. This result further emphasizes the complex impact of grade differences on college students' mental health, suggesting that colleges and universities should carry out hierarchical and targeted mental health education and interventions according to the characteristics of different grades to help students effectively cope with the psychological pressures and challenges at various stages.

4. Strategic Response and Progressive Development Planning of Mental Health Education for Students in Private Colleges and Universities

4.1 Elaborate construction of a mental health education ecosystem that fits the psychological characteristics of students in private colleges and universities

Research results show that the mental health of students in private colleges and universities is complicated. Although their mental health level is slightly better than the national norms of college students in some regions, it still falls short of the national norms of young people and the norms of normal people in China, and further attention and intervention are urgently needed. Analyzing the dimensions of psychological characteristics, students in private colleges and universities are more prominent in the four factors of interpersonal sensitivity, hostility, paranoia, and anxiety, which have become key areas for mental health intervention, and these factors significantly affect the students' ability to adapt to their psychological conditioning and the quality of campus life.

In terms of interpersonal sensitivity, students in private colleges and universities have a certain gap in learning ability compared with students in public colleges and universities, and they are prone to inferiority complex, remorse and sense of loss in their interactions with others. For example, in teamwork learning, due to insufficient knowledge reserves or lack of learning methods, students often appear to be silent, afraid of being negatively evaluated by others, and gradually avoid group interactions, thus exacerbating the sensitivity of interpersonal relationships. In addition, in the highly developed mobile Internet, college students generally rely excessively on cell phones, which sets up an invisible barrier to face-to-face social communication [6]. The proliferation of virtual socialization has weakened students' ability and willingness to communicate face-to-face, and some students thus feel uneasy in real social situations, making it difficult to establish a healthy and stable interpersonal relationship network.

In terms of the hostile factor, some private college students have to bear multiple stressors such as academic pressure and family expectations for a long time, and are in a constant state of tension and anxiety, which makes it easy for them to resist and confront the external environment. For example, in the dormitory life, students lack tolerance and understanding of their roommates' living habits or work schedules, and minor frictions or disagreements may lead to heated verbal conflicts, or even physical conflicts, which in serious cases may lead to long-term hostile relationships, thus affecting the

ISSN 2663-8169 Vol. 7, Issue 6: 73-83, DOI: 10.25236/IJNDE.2025.070611

harmonious atmosphere of the dormitory and students' psychological comfort.

In terms of paranoia, some students are prone to bias in cognitive processing due to their personal experiences or inherent personality traits. For example, when faced with unsatisfactory academic performance, students tend to blame teachers' unfair grading or intentional difficulties rather than reflecting on their own learning strategies and efforts, and this cognitive bias may lead to mistrust of teachers, which in turn affects learning attitudes and psychological health.

Anxiety is also more common among students in private universities, especially when the examination cycle is approaching or during the employment recruitment season, students are prone to excessive worry and fear of failing the examination or failing to find a job due to a lack of confidence in their own ability and competitiveness, which manifests itself in typical anxiety symptoms such as insomnia, excessive dreaming, loss of appetite, and so on, which seriously interferes with the pace of learning and life, and affects their physical and mental health.

Based on the above analysis, it is especially necessary to build a mental health education ecosystem that fits the psychological characteristics of students in private colleges and universities according to the current situation and characteristics of their mental health. The system should focus on shaping a healthy personality, improving self-regulation ability, strengthening psychological quality and optimizing interpersonal relationships [7], and provide students with all-round, multi-level and personalized mental health education and support services for all students and throughout their college career. Through the integration of school, family and society and other resources, we create a positive, healthy, inclusive and harmonious campus psychological culture atmosphere, establish diversified mental health education platforms and intervention mechanisms, including the construction of the mental health curriculum system, the optimization of individual psychological counseling services, the development of group counseling activities, and the innovation of mental health publicity and education, in order to promote the overall enhancement of the level of mental health of the students of the private colleges and universities and the sustainable development of mental health. Through this system, we help students better cope with various challenges in college life and lay a solid psychological foundation for their future career development and life path.

4.2 Precise measures: constructing mental health education contents that suit the diversity of individual differences

The survey results show that in terms of gender dimension, the SCL-90 scores of female students are generally higher than those of male students, indicating that the mental health level of female students is relatively low. Therefore, mental health education should pay special attention to the female group, especially in the process of mental health screening, and should focus on monitoring the psychological status of female students. To this end, diversified forms of mental health education, such as psychological counseling and group counseling, can be used to carry out targeted intervention activities. For example, in response to the outstanding problems of female students in such areas as interpersonal sensitivity, special courses can be designed to enhance their interpersonal skills and emotional management abilities, so as to strengthen their psychological adjustment capabilities and thus improve their mental health.

With regard to the status of only child, the survey results show that the scores of non-only children on all factors are slightly higher than those of only children, which may reflect the fact that they face more complex family environments and psychological pressures. Special consideration should be given to this feature in mental health education planning, and specialized counselling should be provided for non-only children to help them cope with the pressure of family relationships and to strengthen their capacity for self-psychological adjustment. Therefore, relevant thematic courses can be organized to meet the unique psychological needs they may encounter in the family environment.

In addition, the survey also found that there are significant differences in the mental health status of students at different grades, with the highest scores on each factor among juniors and relatively lower scores among freshmen. To address this phenomenon, mental health education should implement differentiated interventions based on grade level characteristics. For freshmen, mental health activities focusing on adaptive education, such as entrance psychological adjustment lectures and team building activities, should be implemented to help them adapt to university life smoothly. For sophomores and juniors, courses and workshops on time management, learning strategies and stress management should be provided to help them effectively cope with academic challenges, taking into account the characteristics of academic stress. For senior students, mental health education should focus on

ISSN 2663-8169 Vol. 7, Issue 6: 73-83, DOI: 10.25236/IJNDE.2025.070611

employment anxiety and career planning, organizing employment counseling lectures, mock interviews and other diversified intervention activities to alleviate their employment pressure.

Through precise interventions targeting different grades and individual differences, the mental health education system of private universities can be continuously optimized to enhance the effectiveness and relevance of educational work, thus promoting the overall improvement of students' mental health, helping them better adapt to university life, and laying a solid psychological foundation for their future career development and life path.

4.3 Deep Focus: Concern and Help for the Mental Health of Poor College Students in Less Developed Regions

The results of the survey show that the mean values of poor college students from N private colleges and universities on each factor of SCL-90 are significantly higher than those of the groups of students with superior and moderate family economic status, indicating a lower level of mental health. From the perspective of place of origin, students from underdeveloped regions generally scored higher on the factors than those from developed regions. This phenomenon further highlights the seriousness of the mental health problems of poor college students and is consistent with the findings of related foreign studies [8]. The higher tuition fees set by private universities put economically disadvantaged students under tremendous economic pressure, thus increasing their psychological burden. Once failing to respond effectively, these students are prone to psychological crisis. Therefore, the urgent task of mental health education is to accurately identify the psychological needs of poor students and implement targeted intervention strategies.

To address the psychological needs of poor students, mental health education should adopt targeted value-oriented strategies. For example, various activities such as inspirational education lectures and success story sharing sessions are organized to help poor students look at their family's economic situation correctly and realize that economic difficulties are not a defect of personal ability but the result of a combination of social factors. This helps to promote a positive attitude of self-acceptance among students, cultivate an optimistic mindset and enhance their confidence in coping with difficulties. At the same time, students should be helped to resolve their negative emotions in a timely manner, laying a solid foundation for their mental health and promoting their healthy growth and overall development.

In addition, schools should actively create a favorable humanistic environment. Through planning unity and mutual help campus cultural activities, it can advocate in-depth communication and mutual understanding among students, establish a caring and supportive interpersonal relationship network, and shape a positive campus mental health atmosphere. At the same time, it is also indispensable to build a perfect psychological support mechanism. For example, a special psychological counseling hotline for poor students has been set up with a team of professional counselors to ensure that timely and effective psychological counseling services are provided to poor students.

For poor college students from underdeveloped regions, schools should also carry out mental health education activities with regional characteristics to enhance their sense of belonging and identity to the campus environment. Through all-round and multi-dimensional support, we help poor students build a solid mental health defense, and help them realize healthy growth and comprehensive development in their study and life in private universities.

5. Conclusion

Mental health education for college students in private universities is a long-term and systematic project. In this study, the influence mechanism of multiple factors on students' mental health was explored in depth, with the aim of constructing a framework of education system that meets the students' characteristics, carefully designing education contents with significant differences, and paying special attention to special student groups. In the future, mental health education should continue to integrate internal and external resources, innovate educational modes and methods, promote the construction of professional talents, and enhance the science, precision and effectiveness of mental health education. Through these initiatives, we can build a solid protective barrier for students' mental health, help them realize their self-worth and glow on the platform of private colleges and universities, and move steadily towards a future of comprehensive development and maturity. In the end, we will push the mental health education in private universities to new heights and open up new horizons, and

ISSN 2663-8169 Vol. 7, Issue 6: 73-83, DOI: 10.25236/IJNDE.2025.070611

promote sustainable and high-quality development. This will not only contribute unique wisdom and strength to private colleges and universities in the field of higher education, but also provide valuable experience and inspiration for the progress of mental health education as a whole.

Acknowledgements

Philosophy and Social Sciences Program of Jiangsu Universities: Research on College Students' Mental Health Assistance System under the Concept of “Three-Whole Parenting” (Project No. 2023SJYB0633)

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