

# A Survey and Analysis of the Mental Health Status of University Freshmen: A Case Study of Tongling University

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**Abstract:** The mental health status determines how adolescents serve society is crucial for their development. A survey was conducted on the mental health status of freshmen in Tongling University using a questionnaire survey combined with SCL90. A total of 177 valid questionnaires were collected. The results showed that the scores of obsession and interpersonal sensitivity factors ranked in the top two, with these two factors having more problems. There are significant differences between males and females in seven aspects: somatization, obsessive-compulsive symptoms, depression, anxiety, hostility, paranoia, and psychosis. There is a significant difference between only child and non-only child in terms of hostility and paranoia. A healthy and harmonious family can have a certain impact on the mental health of students. The healthier and more harmonious the family is, the fewer psychological problems it will have. Therefore, different mental health solutions should be provided for different types of students, emphasizing the establishment of a harmonious family environment and strengthening education on student mental health issues in schools.

**Keywords:** Psychological Health; Independent Sample T-test; SCL90; Freshmen

## 1. Introduction

The university stage is a crucial period for teenagers to learn and enter society. With the increasing economic level of people, university students will also face severe challenges when entering society, and their psychological problems are constantly emerging. According to a survey, 10% -20% of teenagers worldwide have certain psychological problems [1]. Psychological health problems not only affect the development of teenagers, but also affect

their quality of life. Teenagers, especially university students, are the reserve force for national development, and the quality of their mental health determines how they serve society. Therefore, studying the mental health issues of university students has practical significance.

After reviewing relevant literature, research on the mental health of college students mainly focuses on two aspects. Firstly, regarding the analysis of the current situation of mental health, Zhang et al.(2021) conducted a survey and analysis of the mental health status of rural university freshmen based on SCL90, and found that different categories of students have different tendencies towards psychological problems[2]. Bai et al. (2021) conducted a survey and analysis on the current mental health status of college students, and provided different intervention suggestions [3]. Liu et al. (2023) conducted a survey and research on the mental health status of college students in Guiyang using a multi-stage stratified sampling method, and found that the main psychological problems were obsessive-compulsive symptoms, interpersonal sensitivity, and depression [4]. Han et al. (2021) investigated the psychological health status of students in a certain university after resuming school due to the epidemic, and conducted differential analysis on the psychological health status of students in different groups, and proposed feasible suggestions [5]. Secondly, regarding the analysis of factors affecting mental health. Lin (2021) analyzed the impact of youth adaptation disorders on mental health based on survey data, and concluded that there is a close relationship between youth adaptation disorders and mental health [6]. Chen (2023) analyzed the effect of horticultural therapy on social anxiety disorder in college students and concluded that horticultural therapy can help alleviate social anxiety [7]. Sun et al. (2017) explored the

relationship between student self-worth and mental health, and found that students with higher self-awareness of self-worth have healthier mental health [8].

A survey was conducted on the mental health status of college freshmen through a questionnaire combined with the Symptom Checklist-90 (SCL90). SCL90 is one of the most famous mental health testing scales in the world and is currently the most widely used doorstep examination for mental disorders and mental illnesses [9]. It will help understand the mental health level of students from ten aspects, and is applicable to people aged 16 and above. This scale has a total of 90 items and includes a wide range of psychiatric symptom studies, including sensation, emotion, thinking, consciousness, behavior, lifestyle habits, interpersonal relationships, diet and sleep, etc. It uses 10 factors to reflect the psychological symptoms in 10 aspects. The article combines a survey questionnaire with a Symptom Checklist-90 (SCL90) to comprehensively analyze the mental health status of college freshmen, draw corresponding conclusions, and provide suggestions, which will help strengthen mental health education and promote healthy growth of students.

## **2. Research Design and Reliability and Validity Testing**

### **2.1 Research Objectives**

By conducting a sampling survey and collecting representative sample questionnaires, corresponding data analysis was conducted to understand the various factors and current situation that affect the mental health of freshmen in Tong-ling University. By investigating and analyzing the results, we can better manage the psychological aspects of students, strengthen mental health education, and promote their healthy growth.

### **2.2 Research Content and Object**

The survey mainly focuses on the theme of "mental health", focusing on the influencing factors of the mental health of new students in Tongling University, the current situation, and how to strengthen education on the mental health of university students. Based on the survey results, reasonable suggestions are proposed for the construction of the school's mental health. According to the survey content,

it is determined that the survey targets all new students of Tongling University, namely all students of the 2018 Tongling University.

## **2.3 Research Methods**

### **2.3.1 Copywriting investigation method**

In the early stage, we searched for knowledge about mental health through literature review, strengthened our understanding of mental health professional knowledge, especially the Symptom Checklist-90 (SCL90). We used a designed survey questionnaire combined with the Symptom Checklist-90 (SCL90) to gain a deeper understanding of the mental health status of university freshmen, and provided suggestions for the school to carry out mental health construction and improve the management of mental health for freshmen.

### **2.3.2. Design a network questionnaire sampling survey**

Due to the development of electronic computer technology, online questionnaires have been endowed with the advantages of convenience, speed, and low cost. Therefore, the method of collecting sample data through online survey questionnaires is adopted. The questionnaire consists of two modules. The first module is the part of students' basic information, personal life and family background; The second module is the Symptom Checklist 90 (SCL90), including somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, psychosis and other 10 factors [5]. Here, only the first 9 factors are studied, and the Likert 5-level scale is used to measure factor scores. 1-5 represent "none", "mild", "moderate", "severe", and "severe", respectively. A total score exceeding 160 points indicates abnormal conditions.

### **2.3.3. Two stage sampling survey method**

Tongling University has 14 secondary colleges (departments) and 62 undergraduate majors (including Sino foreign cooperative education majors and second bachelor's degree majors). Sample size allocation at all levels: Randomly select 4 secondary colleges from 14 secondary colleges, and use unequal probability sampling proportional to the professional population to select students from them.

## **2.4 Pre Investigation and Sample Size Determination**

### **2.4.1 Pre investigation**

Through pre investigation, the survey questions were further clarified, and the questionnaire was modified to prepare for the smooth progress of the formal survey. A total of 50 pre survey questionnaires were collected in this survey, of which 1 questionnaire with incomplete answers or obvious logical errors was treated as invalid, resulting in an effective rate of 98%. The survey questionnaire has been readjusted based on the survey results.

#### 2.4.2 Sample size determination

According to the registration information of new students from the Academic Affairs Office of Tongling University, the total number of students in the 2018 cohort was 4910, including 2314 males and 2596 females. According to the two-stage sampling method, the total number of new students from the four secondary colleges in the primary unit is shown in Table 1. The formula is used to calculate the total sample size for the formal survey. According to certain theories, the total sample variance is often taken as  $S^2 = 0.25$ . Ensure that the relative error limit does not exceed 8% (i.e. the absolute error limit  $d=0.05$ ), with a confidence level of 95%,  $\alpha=0.05$ ,  $Z_{\alpha/2} = 1.96$ , the calculated initial sample size is:

$$n_1 = \frac{NZ_{\alpha/2}^2/\alpha S^2}{Nd^2 + Z_{\alpha/2}^2/\alpha S^2} = 173 \quad (1)$$

Based on the effective response rate  $r=98\%$ , we adjust the sample size to obtain the initial sample size:

$$n_2 = \frac{n_1}{r} = 177 \quad (2)$$

According to the formula for determining the sample size, the final sample size was determined to be 177. According to the unequal probability sampling proportional to the professional population of 4 secondary colleges, the sample size of the selected 4 secondary colleges is determined as shown in Table 1.

**Table 1. Total Number of Students in Secondary Colleges**

School	School of Economics	School of Finance	School of Accounting	School of Law
Number of people	342	482	734	249
Sample size	35	46	71	25

### 2.5 Reliability and Validity Testing of the Questionnaire

According to the Cronbach coefficient rule, when the Cronbach coefficient is less than 0.6, it is considered that there is a certain problem

with the scale and there is insufficient internal consistency. When the Cronbach coefficient is between 0.7 and 0.9, it indicates that the scale has high or acceptable internal reliability. When the Cronbach coefficient is greater than or equal to 0.9, it indicates that the reliability is very good. According to Table 2, the Cronbach coefficient is equal to 0.752, which is greater than 0.7. This indicates that the credibility of the market survey questionnaire is high. At the same time, the KMO coefficient is 0.604, which is greater than 0.6. The p-value of Bartlett's sphericity test is 0.000, which is less than the significance level of 0.05. This indicates that the classification of questionnaire questions is consistent with the structure of the questionnaire itself, and the construct validity of the questionnaire is more appropriate.

## 3. Data Analysis

### 3.1 Analysis of Basic Family Situation

#### 3.1.1 Household income situation

We Analysis the correlation between family status and mental health from the perspective of understanding family income.

**Table 2. Annual Income Frequency Distribution of Student Families**

	What is your family background?	frequency	Effective percentage(%)
Rural area	Under 30000 yuan	44	38.3
	30000 to 80000 yuan	48	41.7
	80000-150000 yuan	21	18.3
	Over 150000 yuan	2	1.7
	Total	115	100
Town	Under 30000 yuan	15	24.2
	30000 to 80000 yuan	20	32.3
	80000-150000 yuan	26	41.9
	Over 150000 yuan	1	1.6
	Total	62	100

From Table 2, it can be seen that 65% of student families have an annual income between 30000 and 150000 yuan, with the highest number of families having an income between 30000 and 80000 yuan. At the same time, 33% of families have an annual income below 30000 yuan, and nearly one-third of families have an annual income of less than 30000 yuan. Two thirds of students come from rural areas, and rural families generally have lower incomes. It can be seen that the economic conditions of most students are at an average level. At the same time, the ratio of

boys to girls conforms to the overall distribution characteristics, and the sample has a certain representativeness.

3.1.2 Correlation analysis between the soundness and harmony of the family

From the analysis results in Tables 3 and 4, it

can be seen that there is a certain correlation between the level of family health and parental arguments, whether in rural or urban families. More arguments and fights between spouses can lead to family breakdown.

**Table 3. Correlation analysis**

What is your family background?			In your impression, what is the relationship between parents?					Total
			I've never had a fight before	Occasional arguments without physical conflict	Occasional arguments accompanied by physical conflicts	Frequent arguments accompanied by physical conflicts	Always arguing and accompanied by physical conflicts	
Rural area	What is the situation with parents?	Parents are still alive and not divorced	9	72	18	7	1	107
		Living parents, divorced	0	0	0	2	0	2
		Father passed away	0	4	0	0	0	4
		Mother passed away	0	1	0	0	0	1
		Both parents passed away	0	1	0	0	0	1
		Total	9	78	18	9	1	115
Town	What is the situation with parents?	Parents are still alive and not divorced	3	43	7	4		57
		Living parents, divorced	0	0	3	2		5
		Total	3	43	10	6		62

**Table 4. Chi Square Test Table**

What is your family background?		DF	Progressive Sig (bilateral)
Rural area	Pearson chi square	16	0.044**
	N	115	
Town	Pearson chi square	3	0.001**
	N	62	

Note: Superscripts \*, \*\*, and \*\*\* respectively represent P<0.1, P<0.05, and P<0.001, the same below.

3.1.3 The degree of physical abuse received by students

In the past year, 55.4% of college freshmen have not been beaten or scolded by their parents. 31.1% have been beaten or scolded by their parents 1-2 times, and most students have been beaten or scolded less than 2 times. However, the percentage of students who have been beaten or scolded more than 5 times is still 7.3%, accounting for a certain proportion. It indicates that a small portion of new students have poor family environment and atmosphere, and their parents lack education, which needs improvement.

**3.2 Analysis of Symptom Checklist-90(SCL90)**

3.2.1. Analysis of total score and scores of each factor

Divide the total mean score and factor scores of the Symptom Checklist-90 (SCL90) into three levels: the score of the first level is between 1 and 2, indicating a healthy psychological state; The score of the second

level is between 2-3, indicating the presence of certain mental health problems and being in a sub healthy state, belonging to the mild level; If the score of the third level is greater than or equal to 3, it is considered to have moderate or above mental health problems.

(1) Total score of college freshmen factors

If the total score of the Symptom Checklist-90 (SCL90) exceeds 160 points, it indicates positive symptoms. If the number of individual positive items exceeds 43, and the score exceeds 2, it is necessary to carefully examine and analyze the individual in order to better and timely detect the psychological health problems of students.

According to the calculation of the total score of the Symptom Checklist-90 (SCL90) for college freshmen, there were 46 individuals with a total score exceeding 160 points, accounting for 25.99%, 26 individuals with a total average score above 2 points, accounting for 14.69%, and 3 individuals with a total average score above 3 points, accounting for 1.69%. It can be seen that the psychological health problems of college freshmen are mostly at a mild level, with an average total score of 143.5511. Considering the total number of college freshmen in the university, we calculated according to the formula for estimating the total population value without returning to inequality sampling:

$$\hat{Y} = \sum_{i=1}^n \frac{y_i}{\pi_i} = \frac{10 \times 4910}{342} + \frac{18 \times 4910}{734} + \frac{10 \times 4910}{482} + \frac{8 \times 4910}{249} \approx 524 \quad (3)$$

It can be estimated that 524 people, accounting

for 10.67%, have a total score of over 160 points in the university. Among the university freshmen with a total score of over 160 points, most of them have mild mental health problems.

(2) Score of various factors for college freshmen

In the first nine factors, the SCL90 factor scores of normal adults and new students in our school were compared [10], and the factor score comparison data table shown in Table 5 is obtained.

**Table 5. Comparison of SCL90 factor Distribution between Normal Adults and New Students in Our School**

Project	National norm for college students	National Youth Norm	New students in our school
Somatization	1.57±0.55	1.34±0.45	1.40±0.09
Compulsive symptoms	2.03±0.66	1.69±0.61	1.96±0.11
Sensitive interpersonal Relationships	1.92±0.65	1.76±0.67	1.75±0.10
Depressed	1.91±0.64	1.57±0.61	1.64±0.10
Anxious	1.68±0.58	1.42±0.43	1.53±0.10
Hostile	1.74±0.69	1.50±0.57	1.50±0.09
Terror	1.54±0.56	1.33±0.45	1.54±0.10
Paranoia	1.84±0.63	1.52±0.6	1.52±0.09
Psychiatric	1.61±0.58	1.36±0.47	1.48±0.08

From the data in Table 5, it can be seen that the average scores of various factors for the freshmen of Tongling university are all lower than the national college student norm, indicating that the mental health level of our university's freshmen is better than that of the national college students. Compared with the national youth norm [11], the average scores of somatization, obsessive-compulsive symptoms, depression, anxiety, terror, and psychosis factors are higher than the national youth norm, indicating that the mental health level in these aspects is slightly worse than the national youth norm. The scores in other aspects are equal to or slightly lower than the national youth norm, indicating that there is no significant difference between these aspects and the national youth norm, and the factor scores of obsessive-compulsive symptoms and interpersonal sensitivity rank in the top two, with more problems in these two factors.

3.2.2 Comparative analysis of the mental health status of college freshmen

We studied whether there were significant differences in 9 factors among college freshmen from two aspects: gender and only

child and non-only child. The relevant results were obtained using independent sample t-test [12], as shown in Tables 6-7.

(1) Comparison of psychological health status between male and female freshmen [13]

**Table 6. Score of Male and Female Neogenesis Factors**

Project	Male	Female	T Value	p Value
Somatization	1.54±0.26	1.24±0.08	1.358	0.036**
Compulsive symptoms	2.05±0.28	1.93±0.11	0.837	0.048**
Sensitive interpersonal Relationships	1.90±0.26	1.69±0.11	1.467	0.057*
Depressed	1.79±0.28	1.59±0.09	1.443	0.023**
Anxious	1.66±0.25	1.49±0.09	1.310	0.040**
Hostile	1.66±0.23	1.44±0.09	1.776	0.033**
Terror	1.59±0.25	1.52±0.10	0.504	0.157
Paranoia	1.72±0.25	1.45±0.09	2.090	0.009**
Psychiatric	1.61±0.22	1.44±0.08	1.539	0.033**

(2) Comparison of mental health status between only child and non-only child freshmen

**Table 7. Score of Only Child and Non-only Child Freshman Factors**

Project	Only child	Non only child	T Value	p Value
Somatization	1.39±0.18	1.41±0.10	1.982	0.716
Compulsive symptoms	1.92±0.20	1.98±0.13	1.980	0.470
Sensitive interpersonal Relationships	1.76±0.19	1.74±0.12	1.980	0.344
Depressed	1.66±0.19	1.63±0.12	1.972	0.248
Anxious	1.52±0.16	1.54±0.11	1.960	0.607
Hostile	1.56±0.16	1.47±0.11	1.980	0.024**
Terror	1.55±0.17	1.54±0.12	1.981	0.329
Paranoia	1.65±0.19	1.45±0.10	1.984	0.025**
Psychiatric	1.51±0.14	1.47±0.10	1.988	0.226

From Table 6, it can be seen that there are significant differences ( $P < 0.05$ ) between males and females in seven aspects: somatization, obsessive-compulsive symptoms, depression, anxiety, hostility, paranoia, and psychosis. Moreover, males have higher scores than females. Therefore, more attention should be paid to males in psychological health education, as the degree of psychological health will vary depending on gender. From Table 7, it can be seen that there is a significant difference ( $P < 0.05$ ) between only one child and non-only child in terms of hostility and paranoia. Based on the above results, it can be concluded that when conducting mental health education, different categories should be treated differently, and different mental health solutions should be

provided for different genders and family situations.

(3) The relationship between family integrity and mental health

From Table 8, it can be seen that the majority of students come from healthy families. For both divorced and undivided families, students from divorced families score higher on various factors than those from undivided families. This indicates that family integrity to some extent affects the mental health of students.

**Table 8. Score of different Family Environmental Factors**

What is the situation with your parents?	Somatization	Compulsive symptoms	Sensitive interpersonal Relationships	Depressed	Anxious	Hostile	Terror	Paranoia	Psychiatric
Parents are still alive and not divorced	1.387	1.954	1.730	1.622	1.518	1.486	1.528	1.502	1.467
Living parents, divorced	1.469	1.951	1.819	1.721	1.563	1.563	1.549	1.708	1.486
Father passed away	1.229	1.500	1.472	1.577	1.250	1.333	1.179	1.250	1.350
Mother passed away	2.833	3.000	3.000	2.846	2.800	2.833	3.143	3.000	3.000
Both parents passed away	2.333	3.500	3.667	2.923	3.300	2.833	3.571	2.333	2.900

#### 4 Conclusion and Suggestions

##### 4.1 Conclusion

From the analysis in the article, the following conclusions can be drawn:

After investigation and analysis, it was found that about one-third of the students come from urban areas, two-thirds of them come from rural areas, and most of their family conditions are at a moderate level. This school focuses on economic management, with more female students than male students.

Whether born in rural or urban families, there is a certain correlation between the level of family health and parental arguments, with more arguments and fights between spouses leading to family breakdown.

According to the Symptom Checklist 90 (SCL90), among college freshmen with a total score of over 160, most of them have mild mental health problems. The factor scores of OCD and interpersonal sensitivity rank in the top two, with more problems in these two factors. There are significant differences between males and females in seven aspects: somatization, obsessive-compulsive symptoms, depression, anxiety, hostility, paranoia, and psychosis. There is a significant difference between only child and non-only child in terms of hostility and paranoia. A healthy and harmonious family can have a certain impact on the mental health of students. The healthier and more harmonious the family is, the fewer

For a few families, the death of parents has a certain impact on the mental health of their children. At the same time, in terms of the degree of impact, the death of a mother has a greater impact on children compared to the death of a father, and the impact of the death of a father on mental health is relatively small. From the table, it can be seen that the role of a mother is irreplaceable in a child's growth process, affecting their lifelong healthy growth.

psychological problems it will have.

##### 4.2 Suggestions

Based on the analysis results, the following suggestions are given:

When conducting mental health education, different treatment should be given and different mental health solutions should be provided for different genders. At the same time, more attention should be paid to men when conducting mental health education.

The family environment can affect the level of mental health. Students with unhealthy families have poorer mental health than those with healthy and harmonious families. Therefore, attention should be paid to establishing a harmonious family environment, providing students with a good family environment, and emphasizing family education.

Schools should further strengthen student mental health education, and counselors should pay attention to students. Once there are abnormal behaviors, they should be dealt with in a timely manner. Regular surveys should be conducted on the mental health level of students, and their mental health should be classified. For students in severe grades, timely guidance and assistance on mental health should be provided. At the same time, schools should provide a better school environment for students to study and live in, so that students can improve their satisfaction with the school.

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