

Exploration of College Students' Mental Health Status Based on Campus Big Data in the Epidemic Situation

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Abstract: In today's society, psychological issues are increasingly valued. As the main source of talent, college students' psychological problems also deserve attention, and the epidemic has indeed brought psychological health impacts to college students. Moreover, most college students live in the university city and are able to receive unified management from the campus. They can easily receive monitoring of mental health issues. Therefore, this article believes that using a smart campus platform based on campus big data would be a good choice. This article conducted a questionnaire survey on a certain university, focusing on the degree of negative emotions from multiple perspectives, and attempted to interpret the main factors affecting the mental health of college students through various perspectives to intervene.

Keywords: Campus Big Data, College Students' Mental Health, Smart Campus Platform, Employment Pressure

1. Introduction

Nowadays, smart platforms have been widely used in major universities, so it is necessary and correct to use this powerful system to monitor students' psychological problems and abnormal behaviors.

As a major talent reserve for a country, college students' mental health issues deserve attention, especially after being hit by the epidemic. Yildirim M believed that the mental health of college students is influenced by multiple factors^[1]. Lee J stated that the impact of the epidemic on the mental health of college students is mainly related to isolation^[2]. Jia Y proposed that the outbreak of the epidemic would have an impact on the psychological status of college students^[3]. Hunt C said that in gender diverse universities, men exhibit higher levels of psychological distress than women^[4]. Reyes Portillo J A proposed that the epidemic not only has an impact on the minds of college students, but also has an impact on academic and economic aspects^[5]. It can be seen that college students have a common level of psychological problems.

This article believes that the increasingly popular campus big data can play a role in analyzing the mental health status of college students. Hassani H pointed out that the application of big data has entered various fields^[6]. Baig M I proposed that the current big data functionality is too powerful, and decision-makers in the education sector tend to apply it widely in universities^[7]. Wang Y believed that career choices can be predicted for students based on campus big data^[8]. Li W pointed out that the development concept of smart campuses has broad application prospects^[9]. Valks B stated that intelligent campus platforms can make university communities more mobile^[10]. Enhancing the mobility of university communities can also reduce the occurrence of psychological problems among college students to a certain extent.

This article first built a smart platform based on campus big data, and pointed out that the smart platform has powerful functions and can radiate to every teacher and student on campus, thereby assisting the school in unified management. Moreover, it was observed whether the students possessed psychological problems by analyzing their abnormal behaviors. Subsequently, this article conducted a questionnaire survey on some students from a certain university and analyzed their sources of psychological stress and negative emotions from multiple perspectives.

2. Overview of Campus Big Data

Campus big data refers to large-scale data collected, analyzed, and utilized in the campus environment. Santiko I proposed that since the era of the pandemic, almost all universities around the world have started to equip campus smart platforms^[11]. These data can include various information such as students' academic performance, course choices, social activities, and library borrowing records. The collection and analysis of campus big data can help schools and educational institutions better understand students' needs and behaviors, thereby providing personalized educational services and support. Meanwhile, campus big data can also be used for school management and decision-making, such as predicting student turnover rates and optimizing course arrangements. He J X believed that the use of campus big data is an inevitable result of the school's informatization to a certain extent^[12].

2.1 Building a Smart Platform Based on Campus Big Data

The smart platforms widely used in various universities are built based on big data technology, and even some primary and secondary schools have begun to introduce this technology for better education and management. Li W stated that a complete campus smart platform must include multiple functions such as data collection, data governance, and data storage^[13].

Figure 1 as follows shows the design architecture of the campus smart platform. In this architecture, it is mainly divided into data application layer with data intelligence system, data management system, and platform management system, as well as data access layer. There is also an algorithm layer, which includes student avatars, performance prediction, graduation destination, social analysis, learning preferences, and academic hotspots. Furthermore, there is a data layer that includes raw data, feature data, and shared data, followed by a storage and computing layer, and finally a series of hardware, such as server clusters, network facilities, and security devices. At the same time, this architecture would establish a complete set of smart platform connections with various terminals, which include personal terminals for each teacher and student, such as mobile phones and computers, network facilities scattered throughout the campus, and data control centers.

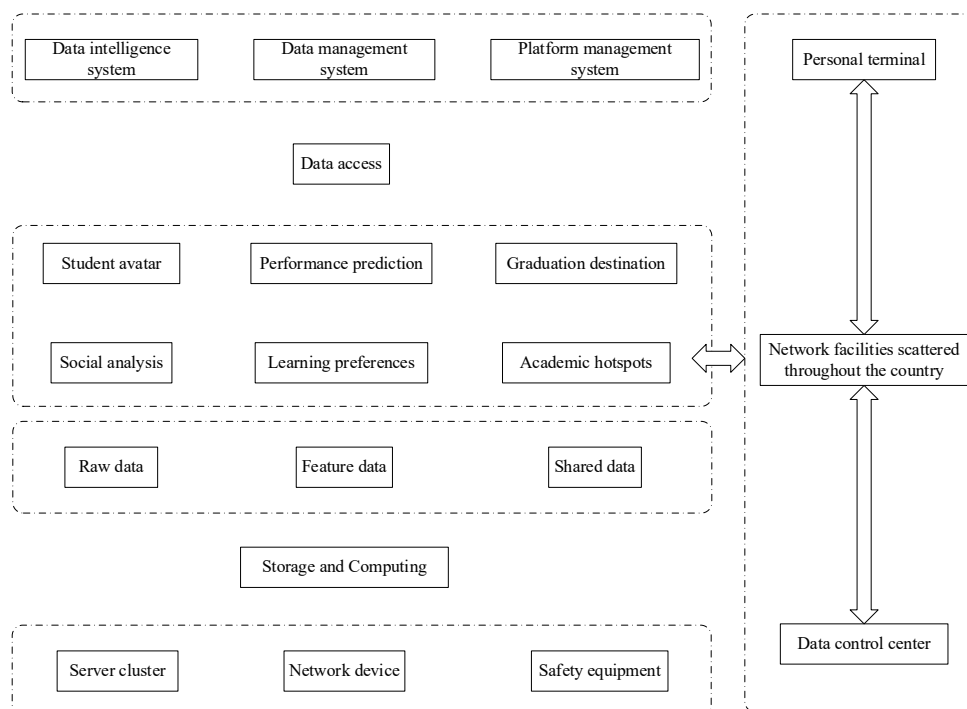


Figure 1: Campus Smart Platform Design Architecture

2.2 Campus Big Data for Abnormal Student Behavior

The campus smart platform established based on campus big data can not only assist teachers and students in their daily learning and work, but also analyze abnormal behavior of students' daily

behavior and learning status based on analytical models, in order to observe whether students are in an abnormal state.

Table 1: Possible Abnormal Behaviors of Students

Abnormal behavior	Specific behavior	Reason
Loss of connection	For a period of time, no card swiping records were found on campus.	Going out to play, due to family reasons, was scammed
Stay out late	The clock in time can reflect the return time to school.	Going out to play, but not ruling out the possibility of encountering fraud.
Abnormal consumption	School consumption records can be queried on smart platforms.	Influenced by consumerism, even accepting illegal loans.
Academic abnormalities	Attendance in class, grades and GPA can all reflect students' learning status.	Any encounter that distracts students' attention can affect their academic performance.
Physical and mental health	The school would regularly organize physical examinations and psychological examinations to obtain data on students' physical and mental health.	Various physical or psychological illnesses.

Table 1 shows some abnormal behaviors that may occur on students. Firstly, there is a loss of contact. Generally speaking, if a student's check-in record cannot be found on campus for a period of time, it can be determined that they have lost contact. The reason for the loss of contact is naturally that the student may have left school without authorization, which may be due to outings, family reasons, or even being scammed. Secondly, there is a late return. Due to the need to clock in and out of the school gate, the clock in time can reflect the return time. The harm of late return is less than the loss of contact, and the underlying reason may be just going out for fun, but the possibility of encountering fraud cannot be ruled out. The third possibility is abnormal consumption, as consumption records on campus can be queried on smart platforms, which can reflect students' consumption status. The reason behind abnormal consumption may be that students have been influenced by consumerism. Copeland L believed that consumerism, as a popular trend of thought today, has a huge impact^[14]. Behind the huge consumption, it may also be that students have accepted certain illegal loans. Subagiyo D T suggested that illegal loans are extremely harmful and should be avoided as much as possible^[15]. Furthermore, there are academic abnormalities and attendance in class. Elements such as grades and grade point average can reflect students' learning status, and the reasons behind academic abnormalities may be multifaceted. Any encounter that distracts students' attention can affect their academic performance. Finally, it is about physical and mental health. The school would regularly organize physical examinations and psychological examination to obtain data on students' physical and mental health. The reasons that affect students' physical and mental health are various diseases.

By collecting various abnormal behaviors of students and analyzing them, this is the basic principle of smart platform monitoring students' physical and mental health.

3. Investigation on the Psychological Status of College Students after the Epidemic

Sun C C proposed that the epidemic, as a major public health emergency that has swept the world in recent years, has a serious impact on the mental health of college students^[16]. Due to the difficulty in directly extracting student information from university smart platforms, this article conducted a questionnaire survey on the psychological status of a certain comprehensive type of university. The survey approach was to select 50 individuals from each of four different types of majors, and then conduct questionnaire surveys from different perspectives to obtain more three-dimensional and comprehensive information.

Table 2: Levels of Negative Emotions such as Depression and Anxiety in the Heart

Professional type	None	Mild	Moderate	Severe
Science and Engineering	14	18	13	5
Literature and History	7	16	17	10
Economic	5	14	17	14
Art	10	25	8	7

Table 3: Level of Impact of the Epidemic on Learning

Professional type	None	Mild	Moderate	Severe
Science and Engineering	5	14	26	5
Literature and History	16	18	12	4
Economic	12	22	10	6
Art	0	14	28	8

Table 4: Levels of Future Employment Stress

Professional type	None	Mild	Moderate	Severe
Science and Engineering	8	12	24	6
Literature and History	2	7	28	13
Economic	5	16	11	18
Art	11	14	12	13

From tables 2-4, it can be seen that this article conducted a questionnaire survey on college students from different majors from three perspectives. The content of Table 2 survey shows the degree of negative emotions such as depression and anxiety in students' hearts. It can be seen that the negative emotions of science, engineering, and art students were mainly concentrated in mild degrees, while those of literature, history, and economics students were relatively more concentrated in moderate or even severe degrees.

The survey content in Table 3 shows the degree of impact of the epidemic on their respective studies in recent years. Students majoring in science, engineering, and art tend to believe that the impact is moderate, while students majoring in literature, history, and economics tend to believe that the impact is mild.

Table 4 shows the level of pressure on students' future employment after the epidemic swept through. It can be seen that among science and engineering students, the number of people holding severe employment pressure was the least, and more people chose moderate employment pressure. Compared to students majoring in literature and history, more people chose moderate and severe, while those majoring in economics chose the most severe category. The distribution of votes in art was relatively scattered and average, but the number of people choosing severe was still as high as 13, which was the same as that in literature and history.

4. Psychological Status of College Students Based on Survey Data

From the previous questionnaire survey, it can be seen that in the post pandemic era, the impact on college students still exists, which can be seen from the survey results to some extent. Of course, inner depression and anxiety may also be a sequela of the psychological trauma brought about during the entire epidemic period.

These accumulated depression and anxiety actually mainly come from the widespread impact on people's lives during the pandemic. People are beginning to pay attention to health and safety and take protective measures. Social isolation increases loneliness and stress, and work and economic shocks lead to an increase in unemployment and economic difficulties. People's lifestyles have changed, travel has been cancelled, and entertainment venues have been closed. The response measures include maintaining hygiene habits, seeking social support, maintaining a positive attitude, and seeking alternative entertainment. Moreover, the transition from education to online teaching has affected learning progress and reduced social interaction among students due to forced isolation. Sun G N demonstrated the changes in the consumption structure of a certain place in its research ^[17].

From the comparison between Figure 2 and Figure 3, it can be seen that during the epidemic period, the consumption structure in the region shifted highly towards food and medical aspects, and the consumption of daily necessities also increased to a certain extent; Other aspects of clothing, entertainment, and transportation have all shrunk. Kaye A D pointed out that the US economy has also been severely damaged by the impact of the epidemic [18]. The epidemic has led to a decline in the overall economic income of each family, an impact on the entertainment sector, and a narrowing of social scope, resulting in anxiety and stress affecting the mental health of college students.

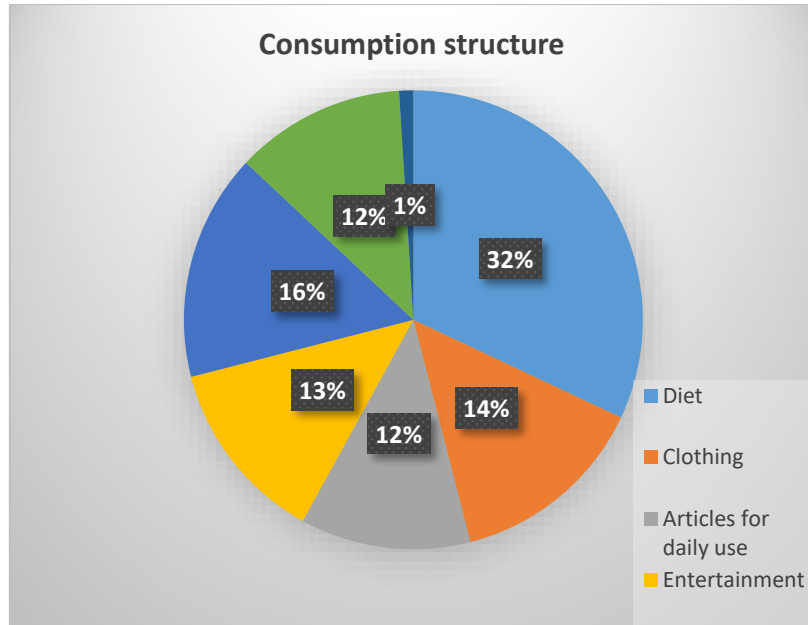


Figure 2: Consumption Structure of the Area before the Epidemic

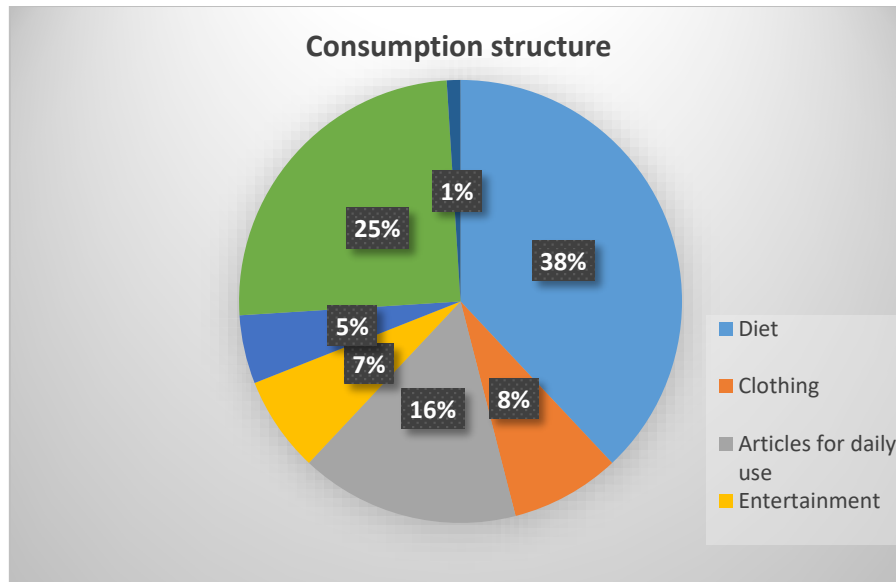


Figure 3: Consumption Structure of the Region during the Epidemic

In addition to overall anxiety, the previous questionnaire survey also included the impact of the epidemic on learning. It can be seen that students majoring in science, engineering, and art are more severely affected. This may be because science and engineering students need to conduct experiments, while art students need to go to studios, and online learning at home is difficult to provide them with corresponding conditions. In contrast, students majoring in literature, history, and economics have less demand in this area, so they are less affected.

In addition, the questionnaire survey also included the degree of pressure on future employment in the post pandemic era. As is well known, the epidemic has a significant impact on the economic development of the world. Many shops and companies have been forced to shut down due to the overall environment, which has led to an increase in unemployment rate. Even during the economic recovery period of the post epidemic era, the damage to the economy during the epidemic period still needs some time to recover. Coinciding with the failure of industrial upgrading in recent years, these college students have basically caught up with the most difficult period of employment. In the overall environment of difficult employment, students from different majors face different employment pressures. According to the questionnaire results, the pressure faced by science and engineering students seems to be the smallest among the four major majors, followed by art majors, while the

pressure faced by economics and history students is the largest among the four major majors. Actually, this is not difficult to predict. The applicability of professional knowledge in science and engineering is strong, coupled with the fact that the computer revolution and China's infrastructure dividend have not yet completely disappeared, the employment situation of science and engineering students is still at least better than that of humanities and social sciences students. Llop Girones A also pointed out that the epidemic has exposed many employment inequalities^[19].

Zhu Y L also analyzed the employment pressure of college students from the perspective of their self-esteem in employment^[20]. In the context of economic downturn, the difficulty of employment has sharply increased, and many industries have begun to engage in ineffective internal competition, including internal competition for academic qualifications. More and more graduates have to face jobs that cannot match their own abilities. This contrast has also caused a setback in the self-esteem of many college students, leading to employment pressure.

5. Conclusion

The overall idea of this article is to first build a smart platform based on campus big data to lay a technical foundation for monitoring and observing students' psychological problems, and then roughly understand the sources of psychological stress among contemporary college students through questionnaire surveys. However, there are still some aspects of the questionnaire survey in this article that are not well done, that is, there is no distinction between grades for college students. Higher grades obviously face greater employment pressure than lower grades. If a distinction can be made, it should be more convincing.

Overall, this article has a certain degree of innovation in using campus big data, and the problems to be solved are also urgent, because the psychological health problems faced by contemporary college students in the context of the epidemic would directly affect their future work and life. Ensuring their mental health is undoubtedly a social issue. In the future, they would inevitably be able to get rid of the impact of the epidemic and better engage in work and life.

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