Research on the College Students’ Psychological Health Management based on Data Mining and Cloud Platform

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Abstract: In recent years, college students' psychological problems are becoming more and more prominent, and due to the lack of high-quality resources in mental health education, it is difficult to meet the needs of students. In this paper, the author analyses the college students’ psychological health management based on data mining and cloud platform. Cloud computing is the latest network application technology, its advantage lies in the integration of resources, it can integrate mental health education resources into the cloud and share each other's quality resources. Through the analysis of college students' psychological health management system, we puts forward some measures to promote the management of college students’ psychological health.

Key words: Psychological health management, Data mining, Cloud platform, College student

1. INTRODUCTION

The current our country economic level increases, the amount of information brought about the rapid development of the network increasing, people's material life level greatly improve, people can aggravate the psychological burden and psychological problems has attracted much attention, especially the modern college students on behalf of innovation(Jin, 2014). With the accelerating pace of social life and social competition and the increasing employment pressure, college students should face to adapt to the new environment, selection and recognition of professional direction, interpersonal relationship, youth restlessness and love problems, resulting in college students' psychological burden increases, psychology, emotion, thinking and consciousness are all over the place change(Liu, 2008;Luthans, 2005). Many survey data show that the proportion of college students psychological problems are increasing, many campus vicious incident also comes from the students' psychological problems, the state brought attention to the psychological problems of college students, colleges and universities are also strengthening mental health education of College students. Health management is a process of comprehensive management of health risk factors for individuals and populations. Some people think that it is the continuous operation of the health management cycle(Peterson, 2002;Larson, 2006). For the sustainable development of China's talent, we need to use resources of all aspects of the University in this special environment, coordination of various departments, the use of the concept of health management, the establishment of students' mental health management mode, through mental health test for students to do a mental health evaluation, according to the results of targeted guidance or intervention, and then through the test and evaluation of mental health guidance or intervention, this continuous cycle, in order to effectively manage the psychological health of the students.

The rational use of a large amount of data in the psychological archives system of colleges and universities to carry out research work, to strengthen mental health education in Colleges and universities, to prevent students from psychological problems, psychological intervention and psychological counseling work to help. Under the requirements of the reform of the comprehensive quality of students, the modern educational management mode combined with computer technology has been applied in the majority of colleges and universities(Yang, 2015). At present, the computerized evaluation system has been applied to colleges and universities, many colleges and universities every year for students to carry out psychological assessment, and SCL-90 psychological assessment scale is one of the commonly used psychological measurement scale. The university has accumulated a large number of students’ psychological evaluation data, and the screening and research of these psychological evaluation data has become one of the research directions of many university teachers. In recent years, data mining technology has been widely studied in the field of College Students' psychology. In the analysis of students' psychological problems, a variety of data mining techniques and algorithms have emerged.

2. DATA MINING AND CLOUD PLATFORM

2.1. Data mining

With the rapid development of computer and information era, the ability of people to data collection, storage and access is greatly improved, the rapid growth of massive data has far exceeded people's understanding of traditional data analysis tools appear. How to organize the data effectively, find valuable
knowledge, so as to help people make the right decision, data mining technology: data mining is a kind of intelligent data at the end of the last century the rise of the analysis technology, also known as knowledge discovery in database, it can extract the useful knowledge from the data base, data warehouse, or other storage in the library or extraction. The system of College Students' psychological files, the data source mainly includes the basic information of students, the main social relations and individual psychological characteristics, the psychological characteristics of personality psychology generally use the measurement scales questionnaire survey. Data mining is an important part of data reprocessing, data acquisition of the source of the cleaning process and refining, extraction of high quality data sets and then data mining. From the data itself to consider, data mining usually need to have data information collection, data integration, data reduction, data cleaning, data transformation, data mining 8 steps of implementation process, pattern evaluation and knowledge representation. It can be divided into three stages: data preparation, data mining and knowledge representation.

**Figure 1. data mining**

- **Cluster analysis:** Cluster analysis is a kind of statistical analysis technology which is to search the valuable data from the object of a given data set, and the research object is divided into a relatively homogeneous group (clusters). The clustering process is a set of physical or abstract objects, according to the similarity between them, divided into several groups, similar objects are divided into one group, a cluster is a collection of objects similar to each other. The clustering of different objects is not similar. The clustering methods mainly include the classification method, the classification method and the hierarchical model method, the basic grid method or the density based classification method.

- **Decision tree technology:** Decision tree is a typical classification method, is based on the data set features a classifier, the samples are mapped to the unknown classification given, comparing categorical attributes, according to the different attribute values down branches, eventually become a similar tree structure from top to bottom. The decision tree attributes of each internal node represents a test, each branch said test results, each leaf node represents a category, the formation of a conjunctive rule path from the root to the leaf node.

- **Association rules analysis:** The mining process of association rules mainly includes two steps: the first step is to find all the data sets of high frequency project team. The second step is to generate association rules from these high frequency project teams. Association rule mining index is suitable for discrete data record value, if the original index is continuous data in the database, you need to make the appropriate data discretization, mining of association rules, whether reasonable will affect the association rules mining results, so the data processing is an important step in data mining.

The research of data mining technology in the field of College Students' psychological problems and the research on the data of College Students' psychological evaluation is a hot spot in the field of psychology. According to the characteristics of students' psychological evaluation data, it is a direction to research and explore in the future.
2.2. Application of cloud computing in mental health education

Cloud computing is a new network application technology, it is the grid computing distributed computing, parallel computing, utility computing, network storage, virtualization, load balancing and other traditional combination of computer technology and network technology, it is a relatively low cost computing entities into a super computing and integration resources and environment through the network, a large number of computing resources connected with the network for unified management and scheduling, constitute a pool of computing resources, and with the help of infrastructure services (IaaS), service platform (PaaS), software services (SaaS) and other advanced services to provide users with on-demand service, and build a variety of comprehensive to achieve national or even global resources sharing. Cloud computing can make the Internet users in different places of the computer together, logically as a supercomputer, which combines all the resources and information island, visits and support the completion of dynamic and heterogeneous resources in a large range, it is educational resources construction and sharing provides a new means of network.

One of the most important characteristics of cloud computing is that it can easily achieve collaborative work or cooperative learning. Cloud computing is not a simple system of the computer network, but a sea of clouds of computer resources integration, the user can at any time and place to visit and used their own form of love or the use of a variety of "cloud" resources. No matter when and where the user access, as long as access to the cloud, you can use the same working environment. These characteristics of cloud computing make it possible to schedule a large number of computers, applications, information resources and so on. It can realize the independent or cooperative learning.
The biggest advantage of cloud computing is the integration of resources, can contribute to the coexistence of heterogeneous educational resources, and without the need to change the existing data platform to maximize the integration of resources. Calculation of the mental health education of high quality resources are integrated into the "cloud" with the cloud, can share each other's resources to build and realize each in his element. The psychological health education resources in the "cloud" is the national quality resources have the opportunity set, which consists of two parts: one is the base class "cloud", an online compulsory classroom, students can choose the teacher and learning progress, through interaction with psychological teaching, master basic knowledge and theory of mental health; two is the seminar "students need to choose cloud", the mental health of special knowledge and theory according to the needs, grasp the depth of a certain aspect of psychological adjustment skills. Teachers can recommend learning content according to the students' information. These resources "cloud", for either schools or teachers and students, the use of equipment requirements are the lowest, as long as the terminal equipment can have access to the Internet, the user can at any time and place, with their own habits in the form of access to and use of cloud resources.

3. COLLEGE STUDENTS' PSYCHOLOGICAL HEALTH MANAGEMENT SYSTEM

3.1. Principles of mental health

Mental health is a continuous and positive mental state. The individual can adapt to the environment with good mental health state, also can give full play to their physical and mental potential, which can effectively adjust their psychological state to adapt to the environment, but also can continue to develop and improve the personal life. According to incomplete statistics, there are 5 college students in China every year, there are 1 people with psychological barriers, at least tens of thousands of people across the country every year to commit suicide. According to the domestic and foreign research shows that college students in depression, anxiety, compulsion, interpersonal relationship, and maladaptive personality disorders accounted for the total number of 16%-30%. Especially in recent years, due to the psychological problems caused by the increasing number of cases of College Students' behavior, resulting in suicide, crime and other phenomena have occurred. This series of data and events remind us that it is urgent to take care of the mental health of college students and take the initiative to carry out the mental health management. Mental health management is the psychological health risk of individual and group factors of comprehensive monitoring, analysis, evaluation, prediction, prevention, through mental health monitoring, mental health assessment, psychological health education, psychological crisis intervention services, establishing psychological files, periodically evaluate the health status of individual psychology, grasp the physical condition. To improve the individual's mental health awareness, life style and personal behavior by purposeful, planned and organized, so as to control the risk of personal "variable risk factors"

- Feasibility principle: The establishment of mental health management system should be suitable for China's national conditions. Emphasize the theory to guide practice, scientific management. The present universities generally has a more professional workforce to college students' Psychological Health Education Center as the core, as long as the further efforts can be formed from psychological counseling, psychological test, psychological evaluation, psychological intervention, psychological
evaluation to a set of mature management system. Therefore, colleges and universities are the basis, but also the ability to build a mental health management system.

- Systematization principle: The information recorded in the system should be as comprehensive as possible, in addition to the basic information of the user, it should also include the daily life style, psychological monitoring records, mental health log and so on. In addition, because of the mental health management is a process of intervention and feedback - intervention - feedback, so also should pay attention to collect user feedback, so as to realize scientific management of mental health and personality foundation, provides the basis for the relevant statistical analysis in the future. At the same time to ensure that the mental health management system of science, mental health information timely and reliable, should learn from research results of psychological medicine and social medicine, individuals and groups to meet the mental health needs, pay attention to mental health management of repeatability and validity but also at the same time.

- Standardization principle: The steps and processes of the system should be in accordance with the principle of standardization, which is the basis for the scientific and psychological health management for the individual and the group. Quantitative index reasonably is the touchstone to measure the mental health management science, but also should pay attention to the mental health management of personalized, put forward targeted intervention guidance, in order to achieve the desired effect of management.

- Confidentiality principle: Mental health information is personal information, in the construction of management system development, we should establish the corresponding password account, each user can login to the personal information platform through the password, browse and record their own health and puts forward some problems. In addition to mental health management, the user does not affect each other, the data are not circulating, to ensure the privacy of users and information security.

**Figure 5. Mental health principles**

### 3.2. College Students’ psychological health management system

The management mode of College Students’ mental health is mental health as the foundation, combined with the concept of health management in the management system, to create a healthy atmosphere, establish a set of mental health education, mental health services, health, construction of campus culture and network support in one management system.

1) mental health education: Mental health education is the main psychological health problems of college students in modern society such as interpersonal relationship, depression, anxiety and paranoid symptoms and to carry out the aim of comprehensive mental health education. Comprehensive health education is to encourage students to maintain or promote mental health and psychological adjustment disorder, treatment of mental illness, to avoid or reduce the psychological crisis, to enable students to obtain lifetime mental health the necessary knowledge and skills.
2) mental health services: Mental health service is to provide a full range of mental health services for college students. Mental health services for mental health problems of college students in our country outstanding, such as social weariness, anxiety, depression, employment expansion counselling service. According to the actual situation of college mental health service at present in our country, from the perfect psychological counseling, establish students' psychological files, create a good psychological environment, the construction of the campus network, to carry out the mental health of graduates employment counseling, set up several special telephone talk face to carry out the work.

3) construction of healthy campus culture in Colleges: Campus culture is a special social and cultural phenomenon, it is the school cultural activities as the main body, created by the staff and students of the whole school, full of the spirit of the times and the characteristics of the campus atmosphere. It is a good school and campus spirit as a symbol. As soon as the healthy campus culture atmosphere is formed, it will be able to produce the huge energy, which can become the important means to cultivate the talented person and deepen the educational reform.

4. MEASURES TO PROMOTE COLLEGE STUDENTS' PSYCHOLOGICAL HEALTH MANAGEMENT

The main factors affecting the mental health of college students are three major aspects of society, school and family, among which the school plays an important role in the mental health management of college students in these three aspects. After all, college students in the school for a long time to learn, do a good job in this period of psychological health management work for every student undoubtedly plays a vital role.

(1). improve awareness, attention and support for college students’ psychological health management

College Moral Education Department and the Department of students work to a profound understanding of the importance of establishing the management system of College Students' mental health, stressed that for all students, focus on the special problems of students; to strengthen and improve the management method, the mental health management mode must keep pace with the times, change the idea, from reality, face up to the fact that there may be psychological the problem of college students, fully aware of the importance and necessity of college mental health management. Secondly, university administrators to build support and mental health care management system with mental health professional institutions as the core and take practical action, adjust the focus, focus to help students better understand themselves and the society, eliminate psychological barriers, enhance social adaptability, promote their all-round development and personality perfection. In addition, the mental health management should also have a high degree of professionalism, high work enthusiasm and professional level, the student must have a high sense of responsibility, patience and honesty to students unbridding. Also continue to improve their self-cultivation, with their own healthy attitude to infect students.

(2). establish and improve the overall mechanism of College Students’ psychological health management

Update the concept, the establishment of the system, the input of manpower and material resources and planning activities, etc., are part of the overall mechanism. Construction of the mental health management system, a department of mental health of college students is not full-time organization task, but a comprehensive system, we must mobilize all positive factors, effective elements of basic education students, teachers and schools such as the role of the formation of flexible and effective mental health management and operation mechanism, the whole management of mental health security. Moreover, we should keep pace with the times in order to improve the effectiveness of mental health management. At the same time, we should also give full play to the educational function of schools and teachers, the organization of various schools, adopt diversified management measures, namely the implementation of integration method in the specific management way, and implement proactive management plan for the students, the mental health management into classroom teaching, professional learning, behavior training and practice teaching and counseling and other activities, the combination of moral education work, the formation of the overall pattern of mental health management, to better achieve the purpose of maintaining the psychological health of College students.

(3). form a comprehensive and effective information management system for college students’ mental health

The information management system is a network organization system which collects, stores, processes and feedback the demand of the mental health management, the various links of the mental health management process, and the various factors of the mental health management activities. Studies have shown that any human conscious activity, there is feedback, that is based on past activities to adjust the results of future actions. The school can use mental health management system, to understand the mental health information of each student and the formation of electronic health records, the mental health management system (or expert system function can not be realized) were analyzed to assess the personalized guidance and intervention, feedback to students.
(4).pay attention to the construction of College Students' mental health management system

The school in addition to regularly carry out mental health education and mental health monitoring work, but also on the campus environment (natural environment and humanistic environment construction, including the school) to provide basic health care, psychological counseling, diet guidance, learning and life style guidance, physical exercise (including the provision of facilities and services project).

(5). improve the evaluation system of College Students' psychological health management

The evaluation system is a system which is organized, planned and examined, evaluated and diagnosed according to the goals and standards of the mental health management. Schools should be based on the mental health management plan, process and results of the periodic evaluation, diagnosis and management of College Students' mental health related work, promote the relevant departments according to the evaluation results to ensure continuous improvement work, improving the mental health level of management.

5. CONCLUSION

College Students' psychological problems are becoming more and more serious, how to effectively manage the mental health of college students is an urgent problem to be solved. Mental health management is the whole process of monitoring, analyzing and evaluating the psychological health of the individual or the group, providing health consultation and guidance, as well as the intervention of the mental health risk factors. The construction of mental health education, mental health service, healthy campus culture construction and network support as a whole is helpful to the development of College Students' psychological health. Through mental health knowledge education, psychological health counseling services and other forms to help college students to solve psychological problems, control of mental health risk factors, to achieve personal mental health management plan. Mental health knowledge education, psychological counseling, lifestyle guidance, to create a healthy campus culture, etc.. The mental health intervention in the process of mental health management is individualized, that is, according to the mental health of the individual, to develop a suitable mental health plan for the individual, and to track the effect.

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