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Retraction

Retracted: Data Analysis and Feedback System Construction of University Students' Psychological Fitness Based on Fuzzy Clustering

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Y. Li and X. Sun, "Data Analysis and Feedback System Construction of University Students' Psychological Fitness Based on Fuzzy Clustering," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 6019803, 11 pages, 2022.

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Research Article

Data Analysis and Feedback System Construction of University Students' Psychological Fitness Based on Fuzzy Clustering

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With the advancement of information technology, mega data techniques are becoming more widely used in data analysis applications in all walks of life; the expansion of universities has resulted in a significant increase in the number of students; and the improvement of living standards has caused more parents to travel to other places. Children are becoming less and less communicative. Many students become lonely and worried in this environment, and psychological fitness issues develop over time. We should also introduce the application method of big data into the field of college psychological fitness education to improve the accuracy of college students' psychological fitness education. Giving priority to university students' psychological quality education, conducting targeted psychological fitness counseling based on the current state of university students' psychological fitness, and effectively cultivating high-quality talents are realistic and urgent tasks faced by universities. Universities can use the relevant methods of fuzzy set and cluster analysis to evaluate university students' psychological fitness in order to provide more relevant psychological fitness education and to study and evaluate university students' psychological fitness problems more scientifically. We should extract the performance characteristics of university students' rebellious psychological phenomenon and analyze the relationship between rebellious psychology and behavior obstruction in detail when modeling psychological fitness quality. Traditional methods, on the other hand, suffer from a large modeling error due to the introduction of a mapping table and a misclassification rate threshold. This paper investigates the analysis of university students' psychological fitness data and the construction of a feedback system using mega data techniques, based on their current psychological fitness status.

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1. Introduction

According to a national survey of 126,000 university students, 20.3 percent of them face psychological challenges to varying degrees. Their catchphrases were "depressed" and "abnormal" [1]. University students' behavior is heavily influenced by their psychology, and different types of psychology determine the diversity of university students' behavior, which is influenced not only by subjective factors such as their own psychological cognition level, but also by objective factors such as changes in the social, school, and family environment [2]. In all walks of life, there is still some prejudice against psychological problems, and there are also some issues with school psychological education [3]. According to statistics, university students are being suspended from school, dropping out, and being involved in other violent incidents as a result of psychological issues. It is clear that mental health issues have had a significant impact on college students' healthy development [4]. Simultaneously, with the rapid development of the Internet, university students' roles are gradually dislocated, and interpersonal relationships have evolved into "human-machine" interactions, the personality structure has become unbalanced, and a "digital" personality disorder has emerged [5].

The necessary health status of university students has become the focus of the entire society [6]. Malignant events caused by university students' psychological problems occur frequently. The Ministry of Education issued a notice in February 2011 on the basic construction standard of psychological

fitness education for students in universities (Trial), emphasizing the importance of strengthening the "construction of University Students' psychological crisis prevention and intervention system," which included a general survey of freshmen's psychological fitness [7]. There have been an increasing number of incidents of university students' psychological fitness problems, and these issues have drawn the attention of a large number of people in society [8]. Students' psychological fitness education has always been a priority in Western developed countries [9]. They analyze students' psychological data using measurement principles, methods, and tools, as well as mathematical statistics, in order to guide psychological counseling teachers in providing targeted psychological counseling to students. They have a long list of accomplishments that we should learn about and reference [10]. The psychological security of university students is the research object of this topic, which investigates the internal mechanism of psychological security of university students using system dynamics theory as the main line of inquiry and summarizes and discovers the factors affecting university students' psychological crises [11]. In the study of university students' psychological fitness, fuzzy clustering analysis is used. The performance and habits of university students' psychological fitness, as well as the behavioral characteristics of students with psychological disorders, are analyzed using fuzzy clustering [12]. Most schools simply add and delete students' psychological fitness data through simple statistics, and other functions to obtain data on the surface of the information, and no substantial to student's psychological fitness data analysis and mining, to extract hidden, valuable information from a large amount of data from these concentrated [13].

The related fuzzy set and cluster analysis methods are the paper's innovation. The clustering analysis method is an unsupervised learning [14] process that groups objects into classes based on some attributes, minimizing similarity between different classes while maximizing similarity between the same classes, resulting in data classification [15]. To initialize the cluster centers, determine the number of cluster centers, and obtain the final cluster centers, the concept of information extraction and class merging is used.

2. Related Work

According to the literature [16], big data refers to a collection of data sets that are so large that their processing capacity and application scope far exceed that of traditional database software tools in terms of acquisition, storage, management, and analysis. It has a lot of data, a lot of variety, a low value density, and a fast processing speed. Literature [17] proposes an optimization method for university students' psychological fitness quality based on the tendency of attractive characteristics, which yields the various stages of university students' rebellious psychology and obtains the various stages of university students' rebellious psychology. According to literature [18], the specific connotation of the big data concept includes analyzing problems from the standpoint of data, paying attention to the entire data, and looking for correlation from data. The objectives, contents, and strategies for building a digital campus in the context of big data are presented in document [19]. Literature [20] proposed an entropy corresponding to behavior obstacles and calculated the best method for determining the psychological fitness quality of university students that is inverse to kernel clustering. According to literature [21], people with psychological fitness and a healthy personality should possess four characteristics: a positive self-concept, appropriate identification with others, facing and accepting reality, and a wide range of subjective experience. Psychological fitness, according to the literature [22], is defined by the following valuable psychological characteristics: personal development, happiness, harmony, and self-esteem. Ten psychological fitness criteria are listed in the literature [23], such as if there is a sufficient sense of safety; whether or not they are capable of fully comprehending and assessing their own abilities; and whether or not their ideal life is feasible. The literature [24] proposes the following psychological fitness standard: actively facing reality and environment; avoid morbid symptoms due to excessive stress or anxiety; and ability to channel energy into creativity and constructiveness. Literature [25] analyzes the current situation of informatization of university student management in China, expounds the implementation principles of informatization reconstruction, and proposes measures for informatization reconstruction of university student management, starting with the influence of big data on the informatization of university student management.

The clustering analysis proposed above is an important technology in the field of DM. They have certain fuzziness, low modeling accuracy, and tedious and time-consuming process. In this paper, the relevant methods of cluster analysis are extended to fuzzy state, the cluster theory is established, and an effective method is really proposed.

3. Fuzzy Set and Cluster Analysis-Related Methods

3.1. Basic Theory of Fuzzy Sets. Psychological fitness data from the organization of data sources, the data mainly come from psychological fitness education centers, universities, dormitories, families, and other organizations [26]. Fuzzy set means that the extension of any concept has a limited range, which is called the domain of discourse. Given a set X, the set composed of all its subsets is called the power set of the set X [27]. In the process of establishing the principle model of university students' psychological information system, first obtain the outstanding psychological and physiological performance characteristics of university students, analyze the external environ-psychological objective factors and their own main factors of university students' psychology through these characteristics, and establish the principle model of university students' psychological information system. For university students' psychological fitness data analysis, the first is to collect university students' psychological fitness data. The cluster analysis process of university students' psychological fitness data is shown in Figure 1.

Data on psychological fitness gathered from various perspectives reflects various psychological states [28]. A type of data analysis theory is fuzzy set theory. An object corresponds to a set, either belonging to it or not, and it must be one of them and only one of them, according to the requirements of general set theory. The main idea is that

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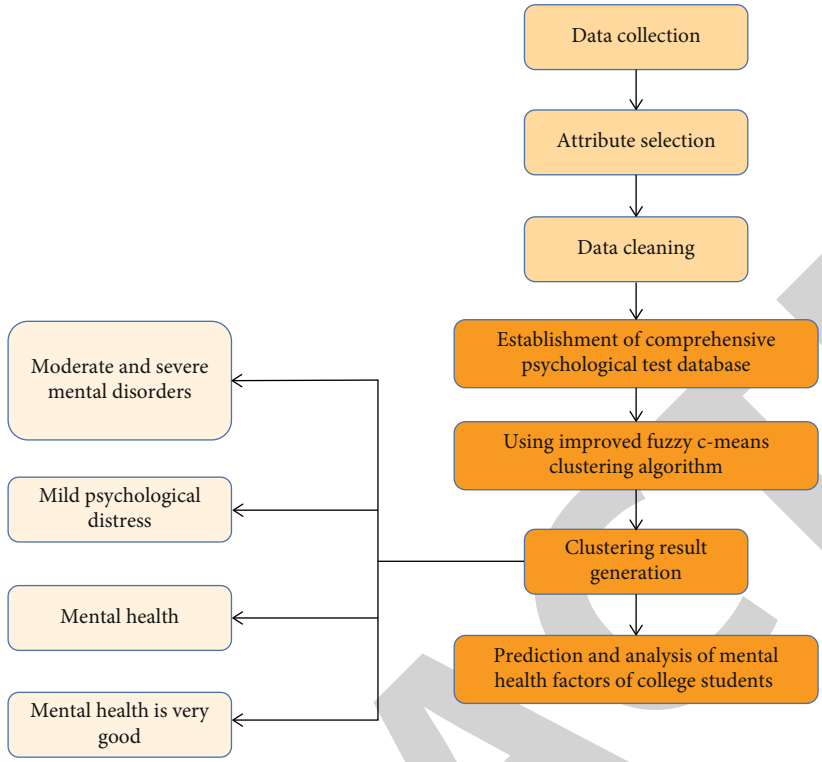

Figure 1: Flow chart of cluster analysis of university students' psychological fitness analysis data.

by classifying the measured data itself, dividing the domain of the problem, simplifying the data on the premise of retaining the key data information, evaluating the dependencies between the data, and deriving the classification rules of concepts, according to the existing knowledge of a given problem. Problem definition, data collection and image processing [29, 30], data mining, algorithm execution, and result interpretation and evaluation are the four steps in the data mining process. Figure 2 depicts the steps involved in data mining:

The evaluation index system and importance fuzzy set were created by taking into account the existing psychological fitness standards as well as the current situation of university students. Data on psychological fitness comes primarily from psychological fitness education centers, universities, dorms, families, and other organizations, according to the organization of data sources. The data comes primarily from psychological counselors, psychological teachers, counselors, students, parents, and other sources in the main body of data sources. Data comes primarily from psychological surveys or evaluations, psychological consultations or interviews, psychological course teaching, in-depth counseling, and psychological activities, among other sources. Multitechnology is an important area of distributed artificial intelligence research. It has distinct advantages in dealing with distributed, open, and heterogeneous complex problems due to its excellent characteristics such as autonomy, sociality, and reactivity. As a result, it has become a crucial tool for resolving distributed problems. There is no such thing as an isolated and closed agent. It lives in a specific environment and must interact with it on a regular basis. Figure 3 shows an abstract view of the interaction between agent and environment.

In biology, it can be used for classification of animals and plants, gene classification, and discovery of potential population structure. The data sources of psychological fitness factors indicators mainly include psychological fitness centers, schools, dormitories, and families and friends with more contacts. From the perspective of the investigated personnel, they are mainly psychological fitness consultants, school teachers, classmates, and some friends who communicate frequently. The main ways to obtain these data are through conversation, investigation, and psychological counseling. Fuzzy set theory divides the research domain's knowledge into indistinguishable relationships, creates a knowledge expression system, approximates the description object with upper and lower approximate sets, and obtains the simplest knowledge through knowledge reduction, which is described by different attribute knowledge. It is possible to create various classifications. Classification is primarily used to generate categories, which are then used to create knowledge modules, or classification classes. The indistinguishable relation is the equivalence relation in the domain of discourse when an object is represented by a property set, and it is the cornerstone of rough set theory. It reveals knowledge's granular structure, which is why some concepts cannot be accurately represented using existing knowledge.

3.2. Fuzzy Comprehensive Evaluation Method. The core of the problem is fuzzy mathematical processing: determining the evaluation factor rating index and weight of each factor separately, and using the membership degree principle comprehensive description of the various factors, to establish a discriminant model, to which the evaluation result

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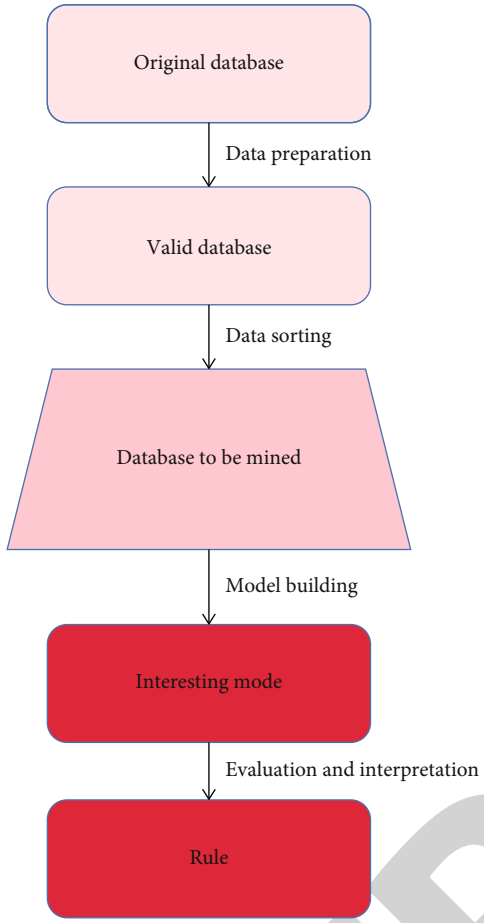

Figure 2: Data mining process.

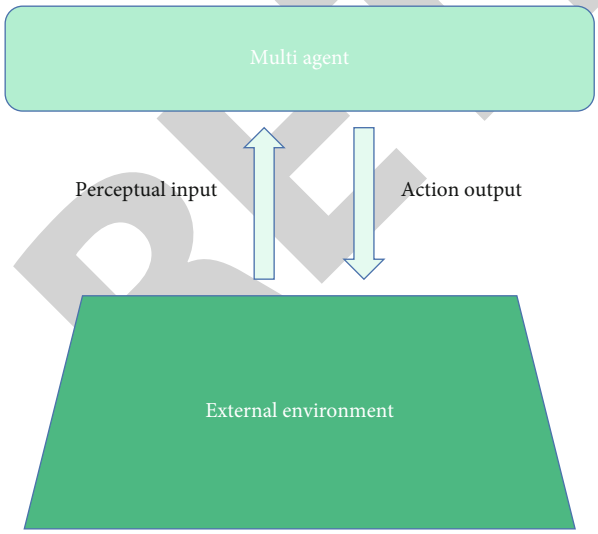

Figure 3: Abstract view of the agent's interaction with the environment.

object belongs. The content of psychological fitness data mainly includes psychological fitness measurement data. In the psychological fitness survey, scl-90, Beck depression, social support, and other scales were selected to measure students, generating a large number of measurement data. The BID structure provides a theoretical basis for the definition of intelligent attributes such as belief, desire, and intention using modal logic. As shown in Figure 4, it mainly consists of two key data organizations and an annotator.

It is difficult to find patterns in data using traditional data processing methods because data processing is usually complex and the amount of data to be processed is relatively large. As a result, we attempt to develop a corresponding data mining model, analyze and predict other data using the data model, and locate information hidden in the massive data. The fuzzy comprehensive evaluation method, which can solve the problem of comprehensive evaluation of multiple factors, is one of them. The majority of the text resources comes from psychological counseling records, psychological course assignments, in-depth interview records, and psychological crisis management records, among other places. The majority of numerical resources comes from psychological fitness testing and learning outcomes from psychological courses. Students' psychological activities, psychological counseling, psychological crisis management, and other audio and video resources are the most common sources of audio and video resources. Call Dao with permission to obtain psychological fitness information from the database for the head teacher's class or the department leaders' students. When I get these results, I will sort them using the field function in SQL. Finally, action will display the sorted data in red font on the JSP page. The flow chart is shown in Figure 5.

When analyzing the relationship between psychological barriers to behavior in detail according to the performance characteristics of university students' psychological phenomena, we should use the principle model of university students' psychological information system to optimize the modeling of psychological fitness quality. The traditional method, on the other hand, completes the modeling process by introducing a mapping table and a misclassification rate threshold value, as well as assigning attributes to various psychological fitness quality categories. Psychological counselors will sometimes assess the psychological fitness of students in groups, as well as those who are experiencing a crisis. The content of a psychological consultation record is the time, event, and reason for the consultation. Psychological fitness research at universities generates a wide range of data. Text and numerical data are relatively rich, structured, and useful in psychological fitness work at the moment. Universities typically pay close attention to the method of fuzzy comprehensive evaluation and use the analysis data to prevent and treat psychological problems in students.

4. Analysis on the Psychological Fitness of University Students

4.1. The Psychological Fitness Analysis of University Students Based on the Weighted Fuzzy C-Means Algorithm of Information Skillful Attributes. Because the initialization of the traditional FCM algorithm is so important, it is easy to fall into local minima during iteration and has high data

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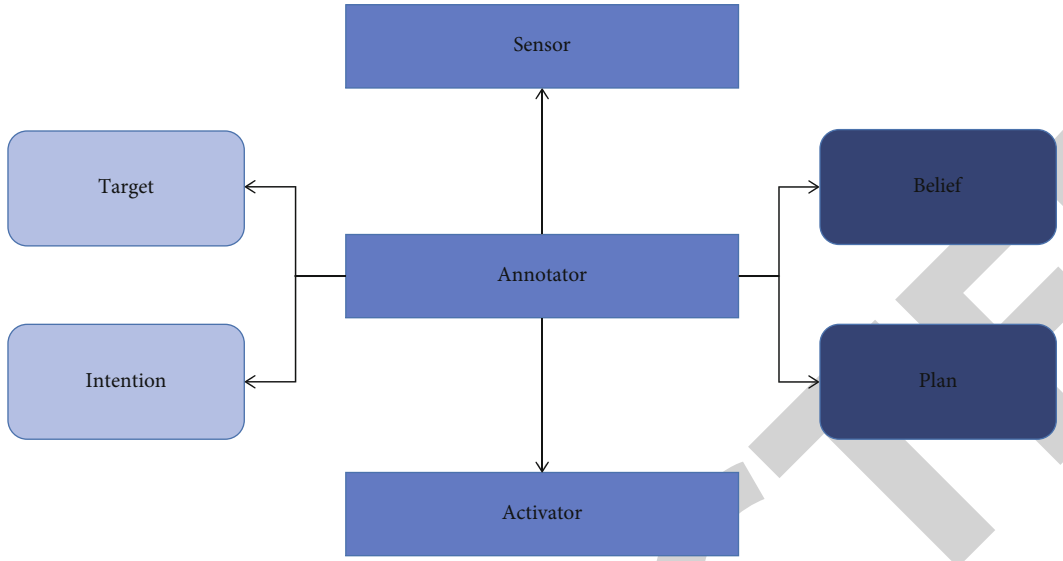

Figure 4: Structure model of bid.

set requirements. The information smart attribute weighted fuzzy C-means theory, class merging, and attribute weighting to improve the algorithm are all covered in this chapter. The cluster analysis algorithm has three steps: feature extraction, algorithm selection, and parameter setting. Data are from many data sources on relevant topics such as psychological counseling, in-depth counseling, psychological crisis evaluation, and classroom discussions of psychological courses. The fuzzy similarity between fuzzy sets is primarily described by the distance between fuzzy sets. For frequently used between fuzzy sets hamming distance, let A and B be $U = \{u_1, u_2, \cdots, u_n\}$ and are calculated as follows:

$$D(A,B) = \frac{1}{n}\sum_{i=1}^{n}|\mu_A(\mu_i) - \mu_B(\mu_i)|. \quad (1)$$

It should be processed in real time and fed back in time. Relatively speaking, the data of psychological fitness measurement, psychological course scores, students' psychological activities, and other related contents are not processed in real time, and there is a time interval for data update or feedback. In the process of increasing the number of cluster centers from $C_{\min}$ to $C_{\max}$, calculate the cluster center corresponding to each cluster number C, and the calculation results are shown in Figure 6 below.

The selection of criterion function directly affects the clustering quality of the algorithm, so it is necessary to choose the appropriate criterion function in order to get better clustering effect. The commonly used criterion functions are error square sum criterion function and weighted average square distance sum criterion. Call all c of X fuzzy partition space. If degenerate partition is included, it is called degenerate C fuzzy partition space. To:

$$V = i\frac{\sum_{j=1}^{n}(u_{ij})^m x_j}{\sum_{j=1}^{n}(u_{ij})^m}. \quad (2)$$

The method of data mining has correlation analysis, which predicts other things through one thing that is related to each other, thus pointing out the relationship between hidden data. After the reduction of rough set discernibility function, the complicated and disorderly data get concise rules, and the original knowledge expression system can be expressed only by the combination of the above eight indexes at most. Using SPSS to make principal component analysis on the index values of university students' psychological fitness factors, the analysis results are shown in Figure 7.

In this paper, the fuzzy comprehensive evaluation matrix of the primary index u is expressed by R using the multilevel fuzzy comprehensive evaluation method. To begin, the information extraction theory is presented in order to reduce the randomness of the information smart attribute weighted fuzzy c-means algorithm in selecting the initial clustering and completing the initialization in the clustering, which not only reduces the error caused by the initial clustering, but also improves the algorithm's operation efficiency. All aspects of each student's data can be separated in the current work. We must associate all aspects of a student's data under the guidance of the concept of big data. There are ways to standardize the data with maximum value transformation:

$$yij = \frac{xij}{x_j^{\max}}(i = 1, 2, \cdots, n; j = 1, 2, \cdots, m). \quad (3)$$

Establish a database of psychological fitness data content and have data mining function; feedback to each subject of the data can be read, is understandable, and is executable, which is relatively high. According to the table analysis, the mean square of error within any factor subclass is less than the mean square of error between classes, and $P = 0.002 < 0.004$, indicating that each factor has significant differences among classes. The variance analysis of psychological fitness factors is shown in Figure 8 below.

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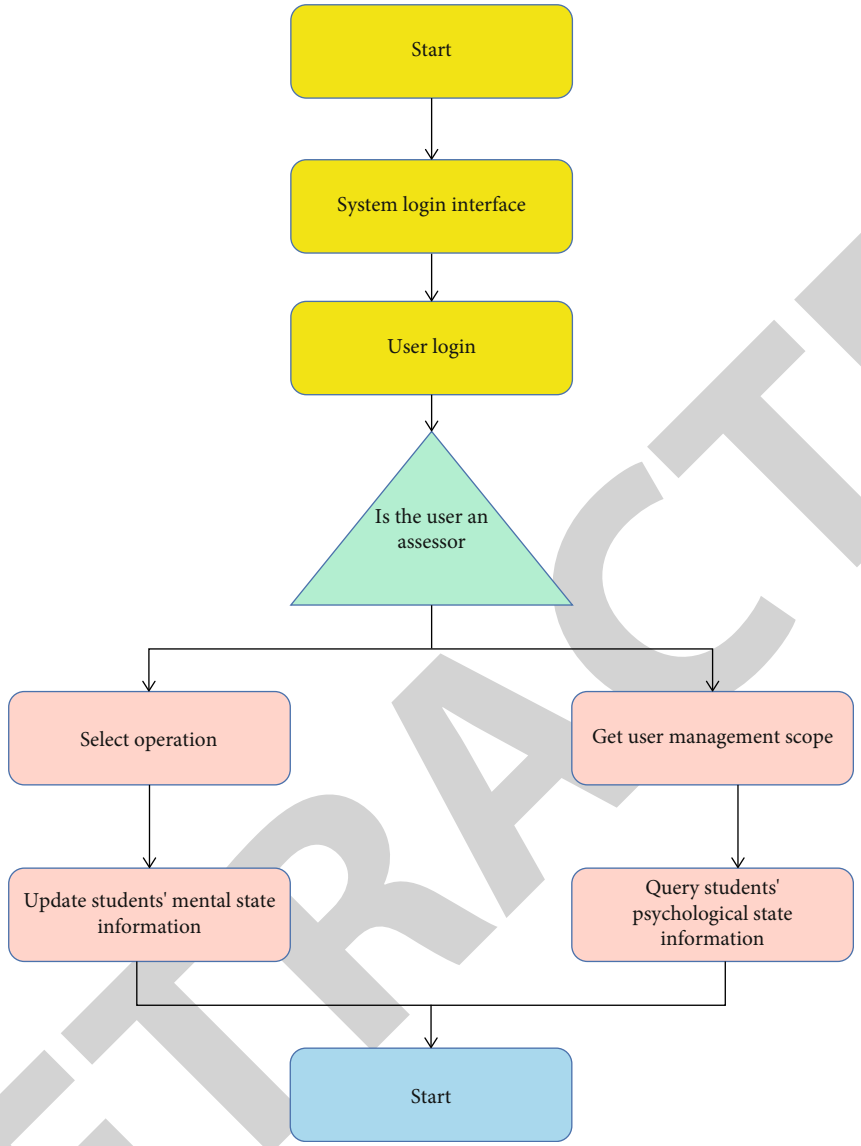

Figure 5: Flow chart of student psychological fitness management.

In the optimization of the algorithm, parameters like interest and correlation are constantly introduced to increase the algorithm's execution efficiency, and the hidden information mined is more in line with the needs. Then, using the concept of class merging, the initial cluster center is verified and adjusted, and the final cluster is obtained. Finally, the attribute weighting concept is introduced to avoid falling into a local minimum during iteration, solve the local convergence problem, and reach the global minimum.

4.2. Implementation and Analysis of Attribute Weighted FCM Algorithm Based on Entropy. The entropy theory's FCM algorithm is applied to the concept of class merging. The different weights of each attribute are found to reflect the influence of the sample attributes on the clustering results, and the clustering results are adjusted, based on the attribute weighting parameter. Clustering at the start because the center is closer to the actual center, the clustering result is more accurate, and the potential relationship between the data attributes is discovered. Standardized data can be processed by

$$r_{ij} = \left\{ \begin{array}{c} 1, i = 1 \\ \dfrac{1}{m} \displaystyle\sum_{k=1}^{m} x_{ik} \cdot x_{jk}, i \neq j \end{array} \right\} M = \max \left(\sum_{k=1}^{m} x_{ik}, x_{jk} \right). \quad (4)$$

The entropy attribute weighting FCM algorithm is applied to the analysis of rational health data from university students, and the clustering results are compared to the traditional FCM algorithm, and its effectiveness is confirmed through experiments. Figure 9 shows the clustering results of the FCM algorithm based on entropy attribute weighting and the FCM algorithm, with 1 representing the FCM algorithm based on entropy attribute weighting and 2 representing the FCM algorithm.

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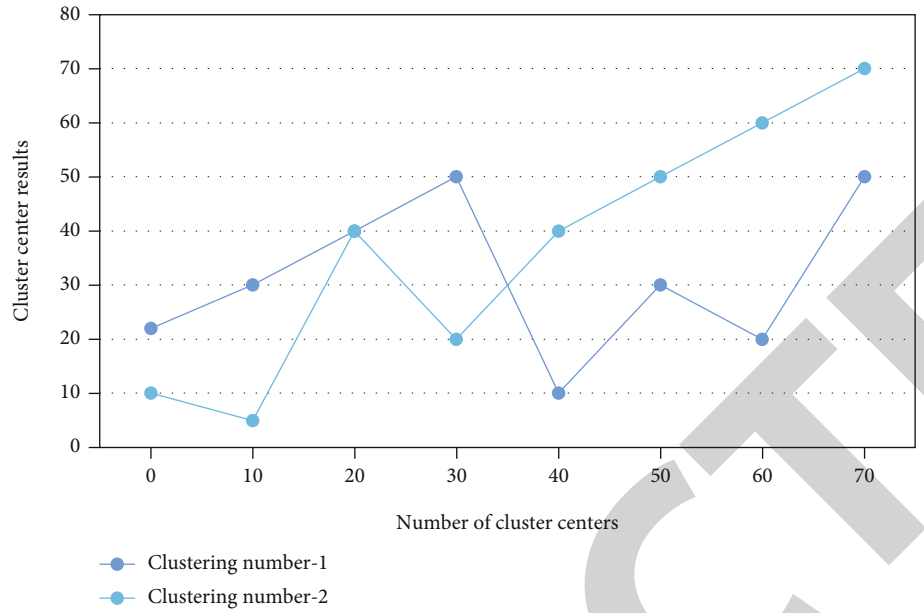

Figure 6: Fuzzy clustering center.

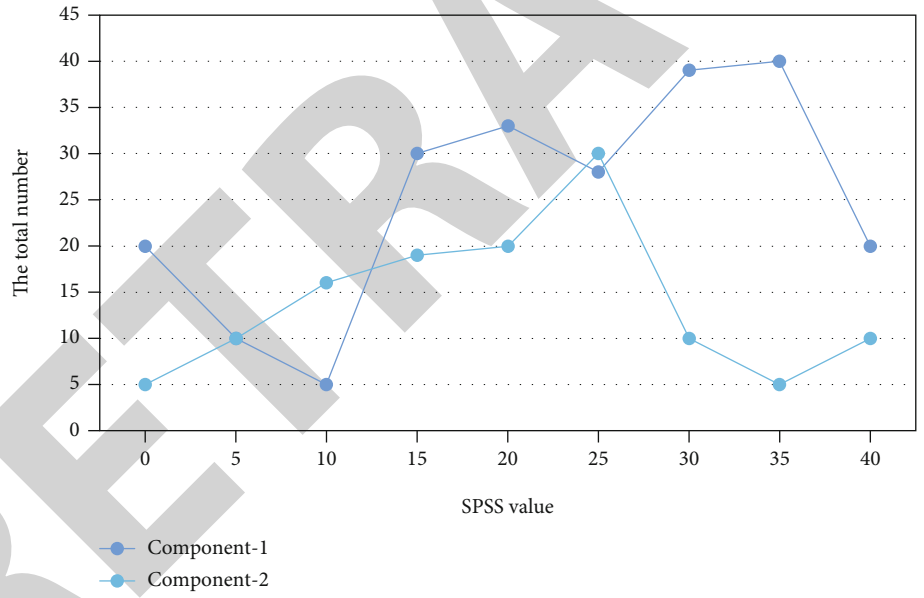

Figure 7: Distribution of SPSS values.

Students' psychological fitness is closely related to the family environment, social environment, and school environment. Students adapt to the environment and have a harmonious relationship with the environment. The students' psychological fitness level is high. Otherwise, various psychological problems will occur. The calculation formulas of the cluster center P_i and the membership matrix U of the FCM algorithm are as follows:

$$P_i = \frac{\sum_{k=1}^{n} u_{ik} x_{ik}}{\sum_{k=1}^{n} u_{ik}}. \quad (5)$$

In addition, according to the size of F value, it can be concluded that each Billie health factor has different effects on the clustering results. Figure 10 shows the comparison of mean square between classes of different health factors.

FCM is a collection of concepts, methods, processes, and software to help enterprises improve their decision-making ability and operation ability. The objective function reflects the clustering performance of the two algorithms. Figure 11 shows the comparison of objective functions.

In the data feedback system model, the main elements include students, psychological consultants, full-time teachers,

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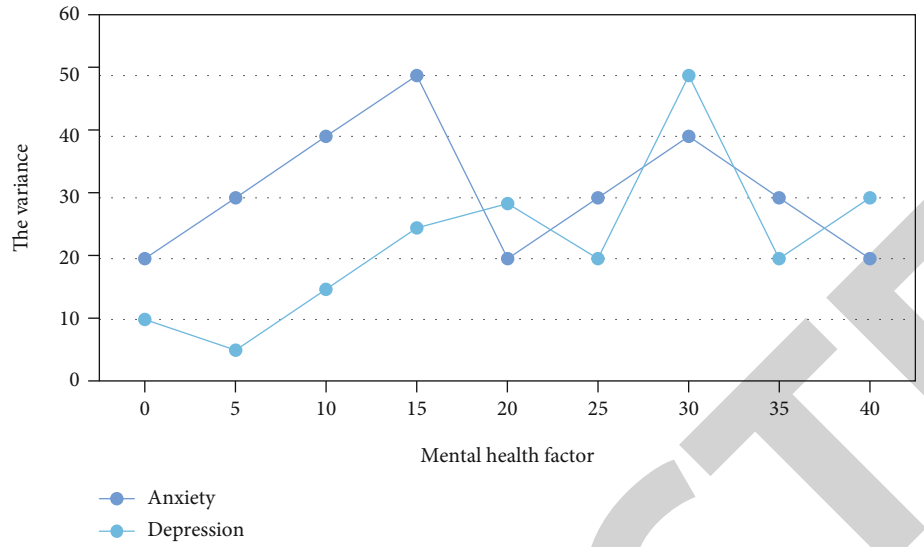

Figure 8: Variance analysis of psychological fitness factors.

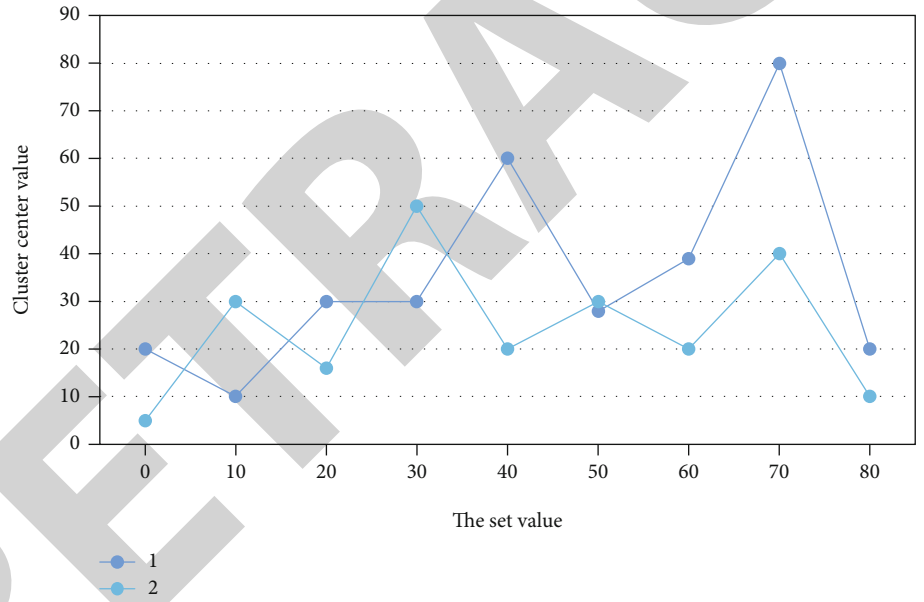

Figure 9: Comparison of clustering results between FCM algorithm and FCM algorithm based on entropy attribute weighting.

managers, and family members. These subjects play a very important role in the operation of the feedback system. In general, these features must be normalized to some dimensionless interval by some utility function. Column j in matrix U is sample Xj, relative to the membership function of C subset, so the hard C partition space of X is

$$M_{be} = \{U \in R^{cn} | \mu_{ik} \in \{0, 1\}, \forall_i, k; \forall k\}. \quad (6)$$

If the feedback system is to function properly, a psychological data feedback system must be established to clarify each subject's responsibilities and rights. Many universities have scattered student data because some students do not attend the same school, so feedback information will be different. We must use big data to connect them and create a database for data mining so that it is easier to refer to. The criteria for each factor of 16PF are 9 points, with 1 3 indicating low, 4 6 indicating medium, and 7 9 indicating high. Table 5.5 shows that the mean values of the tested group's 16 personality factors are all between 4 and 6 points, indicating that the group's personality structure is essentially harmonious. According to the male and female information, the mean difference and variance are statistically calculated, and the results are shown in Figure 12.

The two different stages are screened out for the time series X and Y of behavioral tendencies dominated by university students' rebellious psychology formed by subjective

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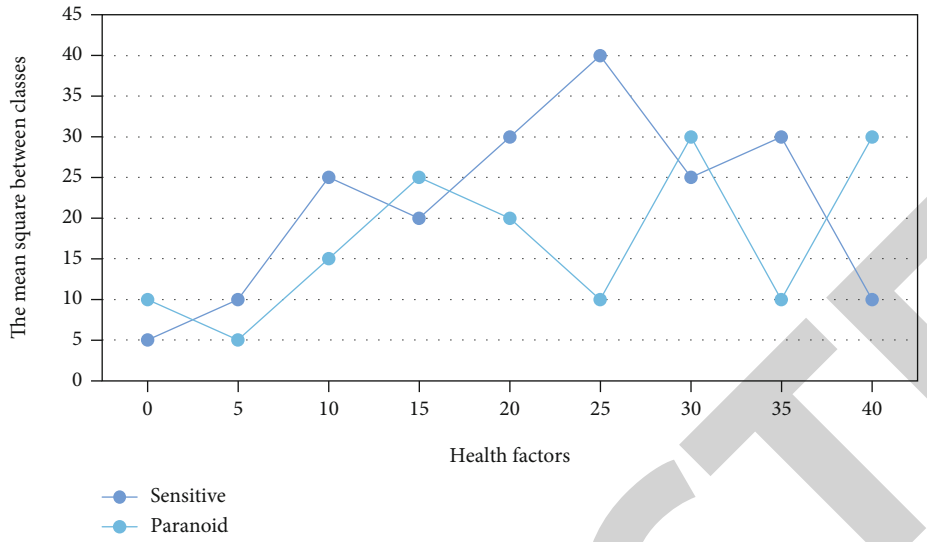

Figure 10: Comparison of mean square between classes.

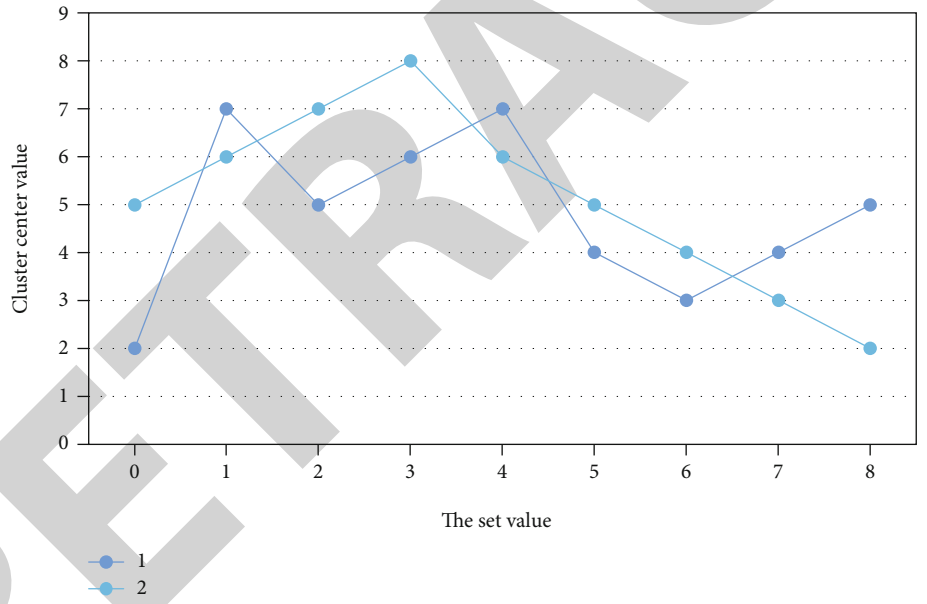

Figure 11: Comparison of objective functions.

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will and objective events in two different stages, according to the performance of university students' rebellious psychology in work, life, and study. The average amount of information on psychological behavioral barriers is generated by subjective and objective factors. The following is the formula for calculating the cluster center v_i and the membership matrix U in the FCM algorithm:

$$u_{ij} = \left\{ \sum_{k=1}^{c} \left(\frac{\|x_j - v_i\|}{\|x_j - v_j\|} \right)^{2/m-1} \right\}^{-1}, j = 1, 2, \cdots, n. \quad (7)$$

A business intelligence system's technical architecture consists primarily of a data source, a data warehouse, a data mart, a business intelligence application, and a metadata. The algorithm to be used is determined by parameter settings for various applications. Students' information and psychological fitness status can be viewed by administrators, department leaders, and head teachers through the system. This method of assessing psychological fitness is relatively new in the field of psychological fitness research, which is beneficial to the development of psychological counseling. Universities should make full use of this technology, accurately understand the

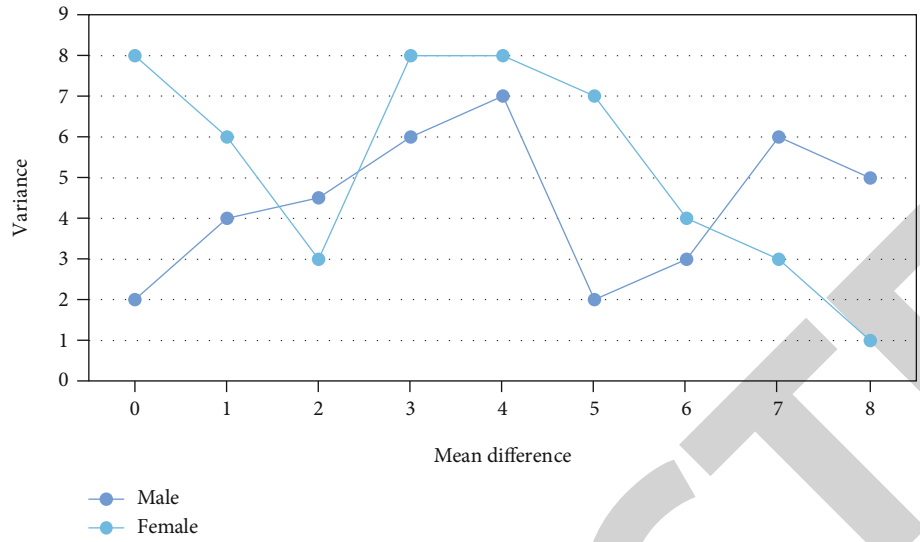

Figure 12: Table of differences of variables between boys and girls.

psychological fitness of higher vocational students, and create a psychologically healthy educational environment.

5. Conclusions

Institutional guarantee is required for any job to be done well and consistently, and the feedback of students' psychological fitness data is no exception. In order for the feedback system to function properly, a psychological data feedback system must be established to clarify each subject's responsibilities and rights. The application of cluster analysis to the mining and research of the main factors of university students' psychological fitness is a useful discussion. The service system has developed a psychological assistance standard for university students. The psychological fitness of university students can now be managed in a unified manner. The system primarily achieves centralized management of students, psychological fitness status of students, weekend comments, classes, head teachers, and other information. The system's organic integration of these functions is sufficient to meet the needs of most universities in terms of student management, and it offers multilevel user rights. The system allows administrators, department heads, and head teachers to view information about students as well as their psychological fitness status. This method of psychological fitness assessment is relatively new in the field of psychological fitness research, which is beneficial to the growth of psychological counseling. Universities should make full use of this technology, correctly understand the psychological fitness of higher vocational students, and create a psychologically healthy educational environment. Examine a variety of data sources and data contents, and provide genuine feedback on students' mental health. In the application of psychological fitness analysis, this paper has some value as a reference. Although it has some limitations, it will undoubtedly play an important role in psychological fitness diagnosis and will become an effective tool for university students' psychological fitness diagnosis in the future, assuming that the system is continually improved and the samples in the training library are continually updated.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors do not have any possible conflicts of interest.

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