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Research Article

Evaluation Model of College Students' Mental Health Quality Based on Computational Intelligence

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In order to realize the reliability evaluation of college students' mental health quality, a model of college students' mental health quality evaluation based on computational intelligence is proposed. The mutual information quantity is used as the benchmark parameter to measure the interaction between the two variables of college students' mental health quality. The greedy algorithm to find the best feature subset for college students' mental health quality assessment is designed. The feature sequence sampling and the reassembly model of college students' mental health quality is constructed. The reliability assessment and nonparametric quantitative feature estimation are carried out, so as to complete the quantitative analysis and assessment of college students' mental health quality. The test results show that this method has a high confidence level and good reliability. The evaluation results can accurately reflect the depression, stress, anxiety, and other emotions related to college students' mental health, and have a good effect.

1. Introduction

With the high-level development of society, interpersonal relationships are becoming more and more extensive and complex, and individuals are under more and more pressure in social life, and their psychological problems are gradually increasing by 300%. Moreover, college students are in the transition stage from late youth development to early adulthood, and their psychology is not fully developed, and the incidence of psychological problems is higher than that of the general population. In recent years, relevant research shows that a large proportion of college students have psychological barriers to adaptation and adverse reactions. The incidence of psychological problems such as depression, sensitivity, hostility, and interpersonal tension is about 30%, and it is developing towards an increasingly serious trend. Many research studies on college students' mental health show that in recent years, the overall mental health level of college students is gradually declining, and the number of people with various psychological problems or barriers is increasing day by day. The research results show that 31.13% of college students have psychological problems with different symptoms and different severity. Studies have shown that 8.7% of college students have serious mental health problems, and the proportion of college students with moderate mental disorders is even more than 20%. Many domestic research conclusions show that although the overall mental health level of college students is higher than that of the general population, some psychological problems such as compulsion, interpersonal relationship, anxiety, and hostility are prominent. Studies show that the proportion of college students with moderate obsessive-compulsive symptoms is as high as 9.77%, the proportion of college students with moderate interpersonal sensitivity is 7.33%, and the proportion of college students with moderate anxiety and hostility is 3.76%. Moreover, many research results show that college students', Lu Luo Xiao, and others pointed out that college students have serious psychological confusion in interpersonal sensitivity, compulsion, and paranoia [1–3]. Therefore, it is of great significance to study an effective evaluation model of college students' mental health quality in preventing college students' mental health diseases [4].

Traditionally, the evaluation algorithms of college students' mental health quality mainly include particle swarm

optimization (PSO)-based evaluation algorithm, statistical analysis algorithm, and association rule feature extraction algorithm. Through the statistical analysis and construction of college students' mental health quality time series, the correlation feature detection method is adopted to realize the evaluation of college students' mental health quality [5]. As an important research method, computational intelligence and the knowledge network pay attention to the network relationship between computational intelligence and the network structure. Based on this, this paper attempts to effectively combine the knowledge network with the scale for detecting college students' mental health status, and tries to find out the relationships among the dimensions in the scale, so as to better evaluate the college students' mental state and solve their psychological problems pertinently [6–8].

Therefore, an evaluation model of college students' mental health quality based on computational intelligence and the multidimensional feature selection algorithm is proposed in this paper. An evaluation model of college students' mental health quality based on computational intelligence and the multidimensional feature selection algorithm is proposed. Among them, computational intelligence refers to an empirical computer thinking program. It is a branch of the artificial intelligence system. It is a system with independent thinking ability that assists human beings to deal with various problems of college Students' mental health quality. The key features are continuous evolution, environmental friendliness, and open ecology. This paper designs a greedy algorithm to find the best feature subset for the evaluation of college students' mental health quality, constructs a feature sequence sampling and a recombination model based on the regular term feature selection method, and combines the statistical information analysis method to evaluate the reliability and nonparametric feature estimation of college students' mental health quality, and constructs a sample regression analysis model for quantitative analysis and evaluation of college students' mental health quality. Finally, the empirical analysis is carried out and the validity conclusion is drawn.

2. Statistical Analysis and Big Data Modeling of College Students' Mental Health Quality

The quality of college students' mental health includes the relativity, overall coordination, and development of the standard. The specific contents are as follows:

Relativity of standards: for most college students, it is normal to face psychological problems in the process of life development. There is no need to make a fuss and they should be actively corrected. At the same time, individual gray areas also exist. College students should improve their awareness of self-care and adjust themselves in time. The activity of the people's health state is a problem of development. When a person has a certain psychological barrier, it does not mean that it will be maintained or aggravated forever. It is very normal to form psychological conflicts, and they can be solved by themselves. Overall coordination: from the perspective of the psychological process, the psychological activities of healthy people are a complete and unified coordination body, which ensures the high accuracy and effectiveness of individuals in the process of reflecting the objective world. Developmental: the developmental standard of mental health is an ideal scale. On the one hand, it provides people with a standard to measure whether they are mentally healthy or not, and also points out the direction of efforts to improve their mental health.

2.1. Statistical Analysis of College Students' Mental Health Quality. In order to realize the evaluation of college students' mental health quality based on computational intelligence and the multidimensional feature selection algorithm, it is necessary to first build a statistical analysis model of college students' mental health quality, and through big data analysis and feature detection, establish a statistical analysis model of college students' mental health quality, pay attention to the development and education of college students' mental health, scientifically and objectively understand their psychological burden and mental pressure, and work out some effective measures to solve college students' mental problems, so as to provide reference for comprehensively and effectively improve the college students' mental health level [9, 10]. It can improve the comprehensive quality of college students, promote their future growth and progress, and help colleges and universities to continuously provide high-quality talents for national development and construction. According to the method of constrained variable analysis, this paper analyzes the characteristics of college students' mental health quality, estimates the characteristics and parameters of college students' mental health quality based on data mining theory, uses big data fusion scheduling and statistical information mining methods to analyze college students' mental health quality, and uses the cluster analysis method to establish a classification analysis model of college students' mental health quality evaluation [11]. Cluster analysis is a dimensionality reduction statistical analysis technique, which divides the research objects into relatively homogeneous research objects according to their characteristics. Cluster analysis has the advantages of simple and fast processing of datasets, and improves model building capabilities through efficient scalable performance. Its goal is to collect data for classification based on similarity. The principle is that objects of the same type are more similar, while objects of different types are more different. The tool can analyze the classification status of the research objects into pedigree charts or ice wall charts, and intuitively display the relationship between the objects [12]. Thus, the implementation structure of college students' mental health quality assessment based on computational intelligence is shown in Figure 1.

It can be seen from the implementation structure of college students' mental health quality assessment based on computational intelligence in Figure 1 that the cooccurrence matrix scale relationship is made according to the common occurrence times of two symptoms. The cluster analysis method, combined with factor analysis, principal component analysis, and multidimensional scale analysis, can also

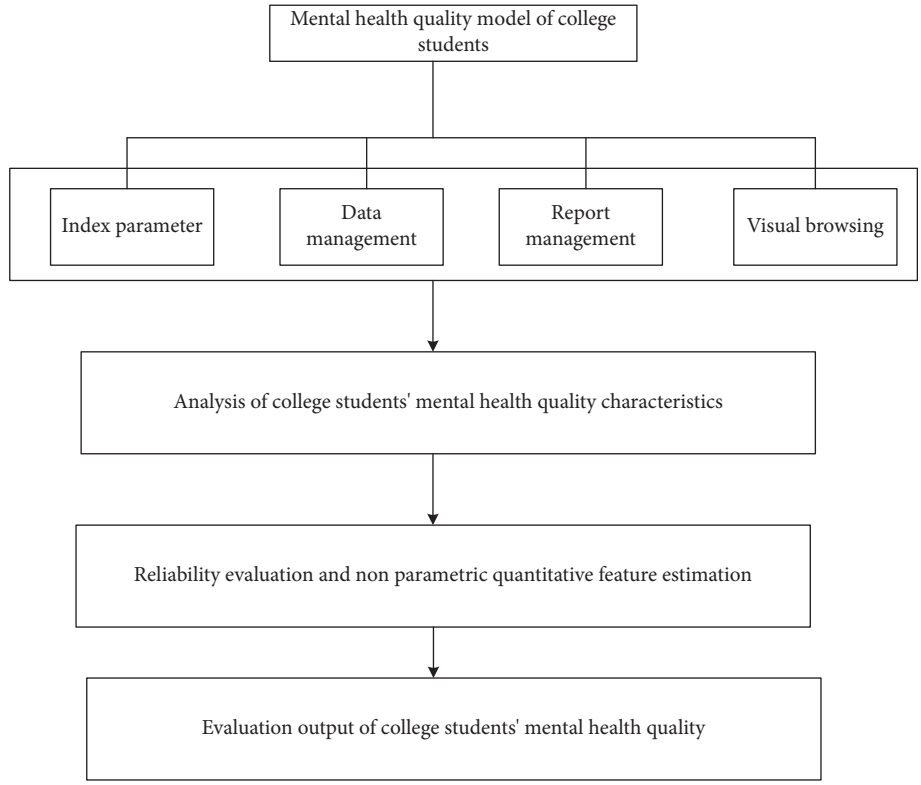

Figure 1: Implementation structure diagram of college students' mental health quality evaluation based on computational intelligence.

be called system clustering when analyzing the cluster diagram of SCL-90 factors. Variables can be selected in the path analysis classification system clustering [13–15]. By analyzing the cluster ice chart and the cluster tree diagram of each factor, the nine dimensions in SCL can be roughly divided into four categories. The first category includes terror, paranoia, and hostility; the second category includes depression; the third category includes coercion; the fourth category includes anxiety, psychosis, interpersonal relationship, and somatization factors, and establishes a fuzzy information distribution mathematical model of college students' mental health quality statistics, which is expressed as

$$\begin{cases} \sigma_1(\varphi_a, \dot{\varphi}_a) = \dfrac{1}{1 + e^{-(\omega_{11}\varphi_a + \omega_{21}\dot{\varphi}_a)}}, \\ \sigma_2(\varphi_a, \dot{\varphi}_a) = \dfrac{1}{1 + e^{-\int(\omega_{21}\varphi_a + \omega_{22}\dot{\varphi}_a)\mathrm{d}t}}, \\ \sigma_3(\varphi_a, \dot{\varphi}_a) = \dfrac{1}{1 + e^{-\mathrm{d}(\omega_{11}\varphi_a + \omega_{21}\dot{\varphi}_a)}}. \end{cases} \tag{1}$$

In the above formula, φ_a is the first-level dynamic parameter of the evaluation index of college students' mental health quality, $\dot{\varphi}_a$ represents the differentiation of it, $\omega_{11}, \omega_{12}, \omega_{21}, \omega_{22}$ represent the dynamic parameter of the relationship between objects, and w is the weighted feature vector, so as to construct a distributed fusion model of prior information of college students' mental health quality. The calculation formula is

$$SLi = \begin{cases} Li, & \text{if} \quad i = 1, \\ \text{Newi'}, & \text{otherwise}, \end{cases} \tag{2}$$

where, $\text{New}_{i'} = (e_{i',1}, e_{i'2}, \ldots, e_{i'D})$ is the dynamic influencing parameter of anxiety, psychosis, and interpersonal relationship, which is the distributed dispatching set of college students' mental health quality evaluation, $c = 1/n_j$, and Li represents the influencing parameter of terror and paranoia. According to the above analysis, a statistical analysis model of college students' mental health quality is established, and a statistical analysis model of college students' mental health quality evaluation is constructed. According to the method of constrained variable analysis, the multiobjective characteristics of college students' mental health quality are analyzed [16].

2.2. Big Data Analysis Model of College Students' Mental Health Quality. Taking the related research literature of college students' mental health on the Web of Science as the research object, this paper makes a visual analysis of the research status of college students' mental health from the perspectives of annual development [17], national or regional distribution, research institutions, subject distribution, key words, research hotspots, etc. and obtains that the dynamic migration of college students' mental health can be expressed as follows:

$$L_t^{\text{eff}} = \frac{1}{n_j} \frac{1}{1 + e^{-\int (\omega_{21}\varphi_a + \omega_{22}\dot{\varphi}_a)\mathrm{d}t}} \otimes \frac{1}{1 + e^{-\mathrm{d}(\omega_{11}\varphi_a + \omega_{21}\dot{\varphi}_a)}}, \tag{3}$$

where, n_j indicates that there are significant differences in the scores of evaluation factors of college students' mental health quality. In the process of calculating the correlation of positive factors by traditional statistical methods, the Pearson correlation coefficient is used. The Pearson correlation coefficient is a measure of the similarity of vectors, and the output ranges from −1 to +1, where 0 represents no correlation, a negative value represents a negative correlation, and a positive value represents a positive correlation. The Pearson correlation coefficient is optimized on the Euclidean distance, and the values of these vectors are centered, that is, the mean of the elements is subtracted for all dimensions in the two vectors. The average value of all dimensions after centralization is basically 0, and the cosine distance is calculated for the centralization result, but the calculation of cosine distance requires that all values in each vector must be non-empty. The Pearson correlation coefficient can assign all dimensions in the vector as 0, carry out cosine calculation to obtain the mental health status of college students. The self-adaptive optimization method is used to evaluate the reliability of college students' mental health quality. Through the quantitative optimization method, the optimization model of college students' mental health quality is designed, and the optimal parameter estimates are

$$op_{ij} = k * \left(\min_j + \max_j\right) - x_{ij}. \tag{4}$$

In the above formula, k represents the dynamic parameters under the constraints of natural conditions and living habits, x_{ij} is the related characteristic quantity that affects the healthy development of normal interpersonal relationships, $\min_j$ is the minimum fuzzy characteristic distribution set, and $\max_j$ is the maximum fuzzy statistical distribution set. Therefore, the multiple linear fusion method is the most basic and simplest one in multiple regression analysis. Using regression models, as long as the model and data are the same, a unique result can be calculated by standard statistical methods. Combining the multiple linear fusion method to make fuzzy decisions in the process of evaluating college students' mental health quality, the quantitative regression analysis model of statistical big data analysis of college students' mental health quality is established:

$$[\nabla F(x)]_j = \frac{\partial F(x)}{\partial x_j} = 2\sum_{i=1}^{N} v_i(x) \frac{\partial v_i(x)}{\partial x_j}. \tag{5}$$

In the above formula, $F(x)$ represents the control objective function of college students' mental health quality evaluation, and $v_i(x)$ represents the adaptive expansion coefficient, so as to construct a dynamic analysis model of college students' mental health quality evaluation. In condensed subgroup analysis, we find that mild symptoms are closely related to severe symptoms. And mild somatization, mild hostility, mild terror, mild depression, and mild anxiety are the most closely related [18–20]. There is also a close relationship between mild paranoia and mild psychosis. Using the method of frequent item sets association rule reconstruction, the similarity of college students' mental health quality distribution is solved as follows:

$$S(x) = \sum_{i=1}^{N} v_i(x) \nabla^2 v_i(x), \tag{6}$$

where, $v_i(x)$ is a subgroup factor of college students' psychological symptoms, and ∇ is a gradient function. In the limited state space, the related characteristic information of college students' mental health quality is extracted to obtain

$$\begin{aligned} \left[\nabla^2 F(x)\right]_{kj} &= \frac{\partial^2 F(x)}{\partial x_k \partial x_j} \\ &= 2\sum_{i=1}^{N}\left[\frac{\partial v_i(x)}{\partial x_k} \cdot \frac{\partial v_i(x)}{\partial x_j} + v_i(x)\frac{\partial^2 v_i(x)}{\partial x_k \partial x_j}\right] \\ &= 2J^T(x)J(x) + 2S(x), \end{aligned} \tag{7}$$

where, $F(x)$ is the importance distribution function of college students' abnormal psychological symptoms, the correlation characteristics of different subgroups, x_k is the cross-correlation vector, x_j is the relative position distribution set of college students' psychological symptoms, SD is a feature distribution set that further refines symptoms. $S(x)$ is a feature distribution set that further refines symptoms, $J(x)$ is the feature distribution set of further refinement of symptoms, and $J_T(x)$ is the transpose matrix of $J(x)$ F. Through the above formula, the big data analysis model of college students' mental health quality evaluation is obtained, and the adaptive scheduling weighted control method is adopted. This paper makes a statistical analysis of college students' mental health quality, designs a greedy algorithm to find the best feature subset for college students' mental health quality evaluation, and realizes the evaluation of college students' mental health quality by the feature selection method based on regular terms [21].

3. Optimization of the Evaluation Model of College Students' Mental Health Quality

3.1. Characteristics Screening of College Students' Mental Health Quality Evaluation. By using the traditional statistical method, the nine dimensions in SCL are divided into four categories, and the characteristic sequence sampling and recombination model of college students' mental health quality is constructed [22]. Combined with the statistical information analysis method, the reliability evaluation and nonparametric quantitative characteristic estimation of college students' mental health quality are carried out. The fuzzy correlation big data analysis model of college students' mental health quality is established, and the fuzzy degree evaluation and parameter evaluation of college students' mental health quality are carried out by the method of correlation regularity detection. The initial gradient function

of college students' mental health status correlation is expressed as follows:

$$x_{ij} = x_{\min,j} + \text{rand}(0,1)\left(x_{\max,j} - x_{\min,j}\right), \tag{8}$$

where, $x_{\min,j}$ and $x_{\max,j}$ represent the minimum and maximum interclass distribution feature sets of college students' mental health status distribution, and rand represents random function. The weighted coefficient is expressed as follows:

$$\left[\nabla^2 F(x)\right]_{kj} \cong 2J^T(x)J(x), \tag{9}$$

where, $J(x)$ and $J^T(x)$ represent the dynamic detection factors of the distribution factors of college students' mental health quality.

According to the prior data of college students' mental health results, the multidimensional distributed task set of college students' mental health quality is established, and the fuzzy iterative equation of college students' mental health quality evaluation is obtained by the method of priority attribute scheduling:

$$\begin{aligned} V_{\text{id}}^{t+1} &= wV_{\text{id}}^{t} + c_1 r_1 \left(p_{\text{id}} - x_{\text{id}}\right) \\ &\quad + c_2 r_2 \left(p_{gd} - x_{gd}\right), \end{aligned} \tag{10}$$

where, w is the characteristic factor of the tree model, c_1 and c_2 are dynamic factors of mental health evaluation, r_1 and r_2 F are dynamic parameters of differential selection, $x_{g\,d}$ and $x_{i\,d}$ are clustering parameters of various factors, $p_{g\,d}$ and $p_{i\,d}$ are hierarchical clustering parameters, and the correlation characteristic quantity of college students' mental health quality is determined. For each $w \in Z$, a statistical analysis and parameter evaluation model of college students' mental health quality is constructed. Data mining can support colleges and universities to accurately evaluate the psychology of college students through the useful and accurate data about college students' mental health quality evaluation and evaluation behavior, so as to help college students to establish a good psychology. Based on the trend of college students' psychological development, teachers can more accurately direct college students' attention to study and life, and improve their learning enthusiasm. In addition, data mining can also help teachers predict students' mental health status. Through this prediction, teachers can maintain and promote the needs of college students' physical and mental health, help colleges and universities to carry out mental health education, so that college students take the initiative to learn basic knowledge of psychology, master the basic skills of maintaining mental health, learn to self-resolve psychological troubles, prevent the generation of psychological disorders. Objective function of college students' mental health quality evaluation is obtained by combining the method of big data mining:

$$F = \sum_{j=1}^{n} \sum_{i=1}^{m} C_{ij} X_{ij}, \tag{11}$$

where, X_{ij} is the correlation parameter to explain the original variables, C_{ij} is the factor and principal component characteristics, and m, n are the hierarchical structure parameter. And the characteristic resolution function of the mental health quality evaluation of college students is obtained

$$g_k + A_k \Delta x_k = 0, \tag{12}$$

where, g_k is the statistical characteristic quantity of the common factor, A_k is the correlation parameter between the original variables explained by the factor, and Δx_k is the comprehensive variable. The statistical big data analysis model is established to evaluate the mental health quality of college students, and the output statistical characteristic quantity is

$$\begin{cases} \text{net}_{s1}(k) = r_s(k), \\ \text{net}_{s2}(k) = y_s(k), \end{cases} \tag{13}$$

where, $r_s(k)$ represents the original variable of factor interpretation, and $y_s(k)$ represents the characteristic quantity of the principal component. Combined with the statistical information analysis method, the reliability evaluation and nonparametric quantitative characteristic estimation of college students' mental health quality are carried out. The output statistical characteristic quantity is

$$u_{si}(k) = \text{net}_{si}(k), \tag{14}$$

where, $\text{net}_{si}(k)$ represents the constraint parameter related to the principal component. According to the attribute clustering of big data of college students' mental health quality, multiobjective programming is carried out, and the multiobjective programming function is obtained as follows:

$$x_{si}(k) = \begin{cases} 1, & u_{si}(k) > 1, \\ u_{si}(k), & -1 \le u_{si}(k) \le 1, \\ -1, & u_{si}(k) < -1. \end{cases} \tag{15}$$

In the formula, $u_{si}(k)$ represents the edge node vector of the flow load of college students' mental health quality. According to the above analysis, the characteristic sequence sampling and the recombination model of college students' mental health quality is constructed, and the reliability of college students' mental health quality is evaluated by the statistical information analysis method.

According to the method of constrained variable analysis, the multiobjective planning and feature analysis of college students' mental health quality are carried out, and the fuzzy correlation big data analysis model of college students' mental health quality is established [23–26]. The physical load of college students' mental health quality is, and the fuzzy evaluation and parameter evaluation of college students' mental health quality are carried out by the method of association rule detection, and the output migration load of passenger flow is obtained as follows:

$$L_t^{\text{eff}} = \frac{1}{n_j} \frac{L_0 P_j^{\min} - L_j P_0^{\min}}{P_0^{\min} + P_j^{\min}}. \tag{16}$$

In the above formula, $P_j^{\min}$ represents the modified optimal load transfer of college students' mental health quality, $P_0^{\min}$ represents the decision variable of college

students' mental health quality evaluation, X_{ij} is the autocorrelation variable of college students' mental health quality evaluation, n_j represents the marginal feature distribution of college students' mental health quality evaluation.

3.2. Evaluation Output of College Students' Mental Health Quality. The characteristic sequence sampling and the recombination model of college students' mental health quality is constructed, and combine the statistical information analysis method to conduct the reliability evaluation and nonparametric quantitative characteristic estimation of college students' mental health quality. The optimization control module of college students' mental health quality assessment is described as follows:

$$\begin{aligned}\min(f) &= \sum_{i=1}^{m}\sum_{j=1}^{n} C_{ij}X_{ij} \\ &= \begin{cases} \sum_{j=1}^{m} X_{ij} = a_i, \quad i = 1, 2, \ldots, m, \\ \sum_{i=1}^{m} X_{ij} = b_i, \quad j = 1, 2, \ldots, n, \\ X_{ij} \geq 0, \quad i = 1, 2, \ldots, m,\ j = 1, 2, \ldots, n, \end{cases}\end{aligned} \tag{17}$$

where, C_{ij} and X_{ij} are related. Through the above mathematical model construction, a multiobjective programming model for the evaluation of college students' mental health quality is established, which is expressed as

$$x_i = \begin{cases} 0, M - \sum_{j=1}^{\lfloor n/2 \rfloor} w_j - \sum_{j=\lfloor n/2 \rfloor+1}^{i} w_j - \sum_{j=i+1}^{k} w_j < 0, \quad i \leq k, \\ f_i(M, n, w, c, r) = \min\{f(M, n, w, c, r)\}, \\ 1, M - \sum_{j=1}^{\lfloor n/2 \rfloor} w_j - \sum_{j=\lfloor n/2 \rfloor+1}^{i} w_j - \sum_{j=i+1}^{k} w_j > 0, \end{cases} \tag{18}$$

where, M is the original variable of factor explanation, w_j is the statistical characteristic quantity of common factor, and $f_i(M, n, w, c, r)$ is the positive correlation parameter between factors. Through the autocorrelation feature matching method, intelligent learning and output control can be achieved, and the statistical characteristic quantity of college students' mental health quality evaluation meets the multiobjective linear mapping. Multiobjective linear mapping usually refers to the correspondence between two different spaces. Under the same conditions, multiobjective linear programming can obtain the evaluation value of college students' mental health quality, and realize multiobjective linear programming planning by using objective function and constraints. The correlation mapping relationship between the constraint parameter set of multiobjective programming and existence is expressed as follows:

$$p\left(R^N = r_i\right) = p\begin{pmatrix} X^N = x_i \left| |x_i| = |r_i|, \text{angle}(x_i) \right. \\ = \left(\text{angle}(r_i) - \varphi_g\right) \bmod (2\pi) \end{pmatrix}, \tag{19}$$

where, X^N is the total score parameter of depression and anxiety, x_i is the correlation parameter of depression and psychotic diseases, r_i is the dynamic distribution parameter of depression and anxiety, $\text{angle}(x_i)$ is the multivariate statistical characteristic parameter. Combining with the artificial intelligence learning method, the self-adaptive learning of college students' mental health quality evaluation is obtained, and the reliability constraint parameter model describing college students' mental health quality evaluation is as follows:

$$\begin{aligned} H\left(R^N\right) &= -\sum_{i=1}^{M} p(r_i)\log\left(p(r_i)\right) \\ &= -\sum_{i=1}^{M} p(x_i)\log\left(p(x_i)\right) \\ &= H\left(X^N\right), \end{aligned} \tag{20}$$

where, M is the number of elements in the symbol set, the fuzzy characteristic analysis method is adopted, $p(r_i)$ is the correlation parameter between the original variables of mental health quality evaluation, $p(x_i)$ is the factor explanation process parameter, and X^N is the fuzzy characteristic quantity, so as to evaluate the mental health quality of college students.

Combining the statistical information analysis method, the reliability evaluation and nonparametric quantitative feature estimation of college students' mental health quality are carried out, and a sample regression analysis model is constructed to quantitatively analyze and evaluate college students' mental health quality. The sample regression analysis model is as follows:

$$\begin{aligned} H\left(X^N | Z^N\right) &= H\left(R^N, \varphi_g | Z^N\right) \\ &= H\left(R^N | Z^N\right) + H\left(\varphi_g | Z^N\right) - I\left(R^N; \varphi_g | Z^N\right), \end{aligned} \tag{21}$$

where, the objective window function of college students' mental health quality evaluation is $R_2{}^T R_2 = V_2 \sum {}_2 V_2{}^T$, and the statistical evaluation of college students' mental health quality is carried out by rough set evaluation and the multiobjective programming method, and the optimal learning weight of college students' mental health quality evaluation is obtained as follows:

$$\omega = \omega_{\max} - t\frac{\omega_{\max} - \omega_{\min}}{T_{\max}}, \tag{22}$$

where, $\omega_{\max}$ and $\omega_{\min}$ respectively represent the regulation coefficient of college students' mental health quality evaluation, $T_{\max}$ is the maximum control time scale. Based on the above analysis, this paper constructs the characteristic series sampling and the recombination model of college students' mental health quality, combines the statistical information analysis method, carries out the reliability

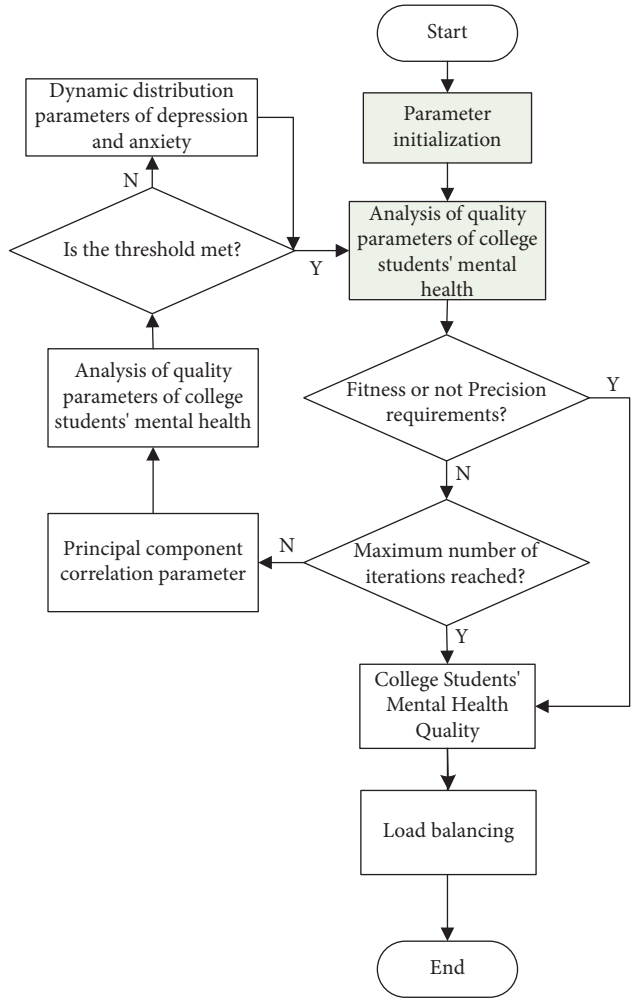

Figure 2: Optimization process of college students' mental health quality assessment.

evaluation and nonparametric quantitative feature estimation of college students' mental health quality. The optimization process is shown in Figure 2.

According to the optimization implementation process in Figure 2, the research on the construction of the college students' mental health quality evaluation model based on computational intelligence is completed.

4. Simulation Analysis

4.1. Test Environment. In order to verify the application performance of this method in the evaluation of college students' mental health quality, a simulation test analysis is carried out, which is combined with 14.0 Matlab 7 and SPSS14.0. When analyzing the cluster diagram of each factor of SCL-90, hierarchical clustering is adopted, which can also be called systematic clustering. In SPSS, the path is analysis-classification-systematic clustering, and variables are selected in clustering. Analyze the cluster ice wall chart and the cluster tree chart of each factor, as shown in Figures 3 and 4, respectively. Considering the two figures, we can see that these nine dimensions in SCL can be roughly divided into four categories. The first category includes terror, paranoia and hostility; the second category includes depression; the third category includes coercion; the fourth category includes anxiety, psychosis, interpersonal relationship, and somatization. The statistical population is 2000, including 1000 boys and 1000 girls. The states before and after the application of the mental health quality assessment model are analyzed, respectively. The number of optimization iterations of the multiobjective programming is 400, according to the above simulation parameters, the simulation analysis of college students' mental health quality evaluation is carried out.

4.2. Model Application. The evaluation model of college students' mental health quality was applied to the test of college students' psychological influencing factors to verify the feasibility and effectiveness of the model. The reliability of the evaluation model of mental health quality of college students reaches 90% to meet the test requirements. The credibility calculation formula is

$$R = [r(M - \lambda)] \times 100\%. \quad (23)$$

Among them, r is the different content of model verification; λ is the transient value of feature change. According to the above credibility formula, the measurable content of

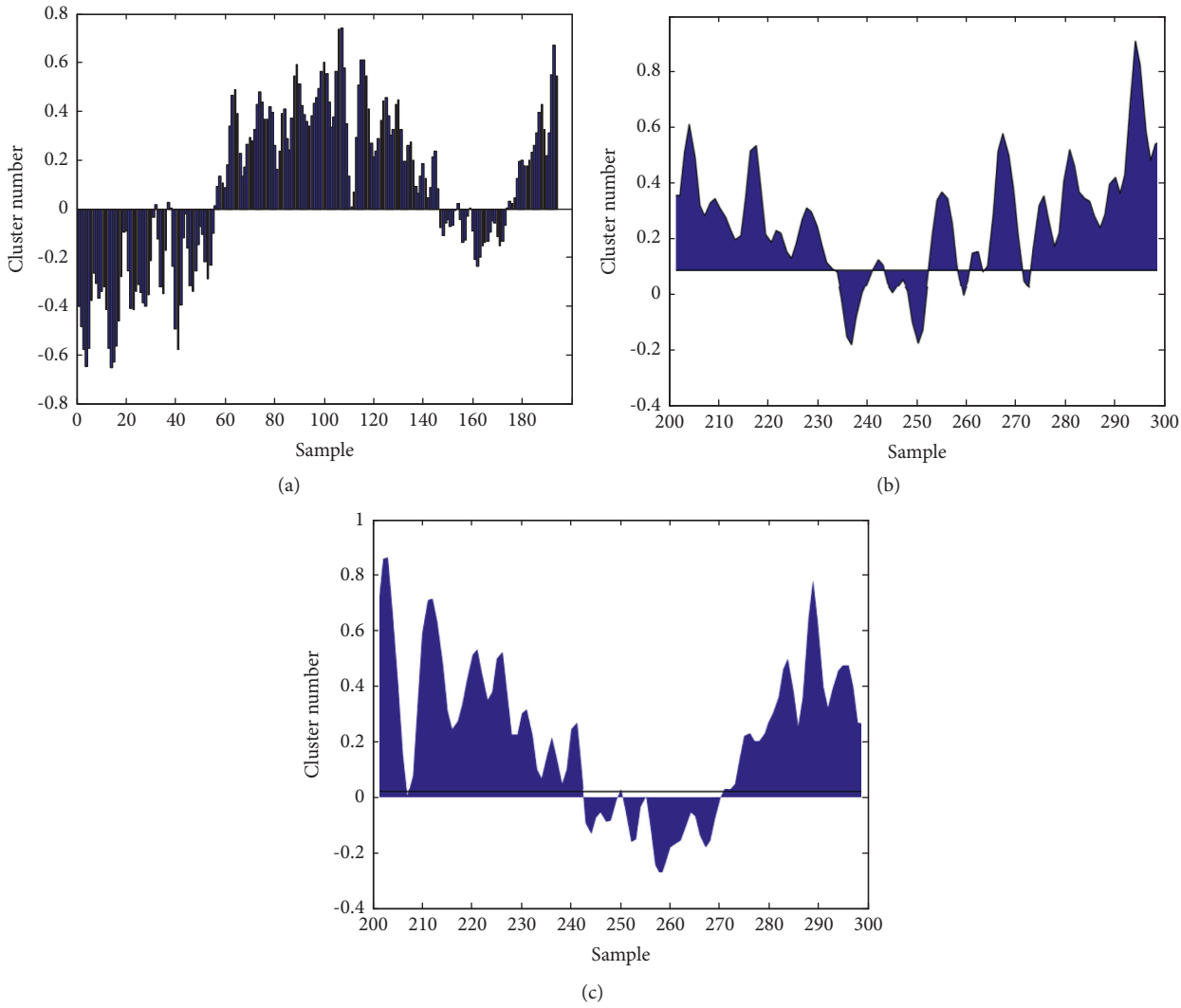

Figure 3: Cluster ice chart of various factors in mental health quality evaluation of college students. (a) Sample 1. (b) Sample 2. (c) Sample 3.

the model is used as the basis for judging the application. Table 1 shows the results of comparing the reliability of different content models.

According to the contents in Table 1, the correlation feature degree, feature sequence sampling, and data logic tracking have high reliability, the model data fidelity and fuzziness feature quantity have relatively low reliability, and all feature values are more than 80% as a whole.

4.3. Test Results. The proposed model is used to evaluate the mental health quality of college students, and the cluster ice hanging and cluster tree comparison results of each factor of the mental health quality evaluation of college students are analyzed, respectively. The detailed test results are shown in Figures 3 and 4.

It can be seen from Figures 3 and 4 that the nine dimensions in SCL can be roughly divided into four categories. The first category includes terror, paranoia, and hostility; the second category includes depression; the third category includes coercion; the fourth category includes anxiety, psychosis, interpersonal relationship, and somatization. Taking the data in Figures 3 and 4 as the research object, the fuzzy correlation big data analysis model of college students' mental health quality is established. The fuzzy evaluation and parameter evaluation feature distribution of college students' mental health quality are carried out by using the association rule detection method, as shown in Figure 5.

According to the analysis of Figure 5, 748 selected positive subjects' data, according to the scoring standard that any factor score greater than 2 but less than 3 is regarded as mild symptom, and a factor score greater than 3 is regarded as severe symptom, the original 9 factors are converted into 18, that is, mild somatization, mild compulsion, mild interpersonal relationship, mild depression, mild anxiety, mild hostility, mild terror, mild paranoia, mild psychosis, severe somatization, severe compulsion, severe interpersonal relationship, severe depression, severe anxiety, severe hostility,

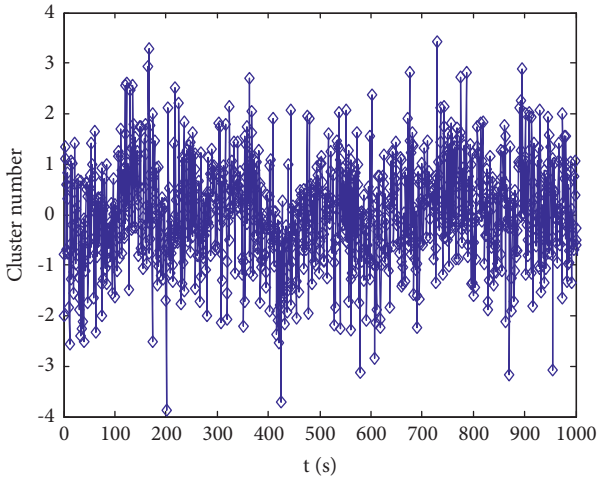

Figure 4: Cluster tree diagram of each factor of college students' mental health quality evaluation.

Table 1: Model verification content credibility.

Content	Content reliability (%)
Degree of association	91
Feature sequence sampling	94
Ambiguity feature quantity	82
Model data fidelity	84
Data logic tracking	93

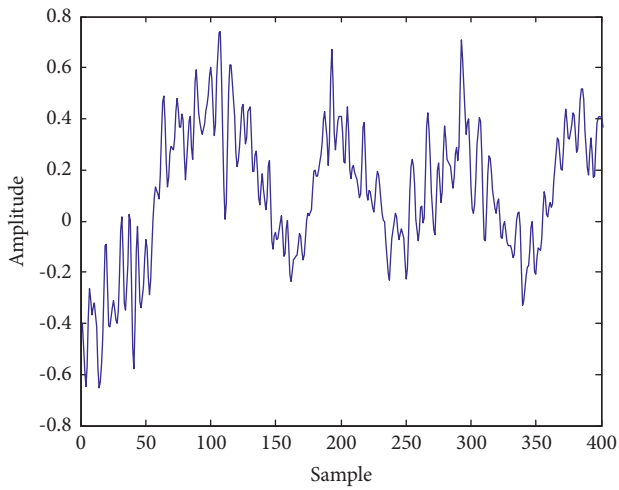

Figure 5: Distribution of characteristics of college students' mental health quality evaluation.

severe terror, severe paranoia, and severe psychosis. We compare the test confidence level, and the results are shown in Table 2.

According to Table 2, the confidence level of college students' mental health quality evaluation by this method is high and the reliability is good. The evaluation results can accurately reflect the depression, stress, anxiety, and other emotions related to college students' mental health. The somatization, interpersonal relationship, depression, and paranoia obtained by the evaluation have significant differences ($P < 0.05$), while other factors have no significant differences. Somatization and depression were significantly lower than the norm ($P < 0.05$), while interpersonal relationship and paranoia were significantly higher than the norm ($P < 0.05$).

Table 2: Confidence level test of college students' mental health quality evaluation.

Test objects	Somatization	Hostile	Depressed	Terrifying
1	42.433	357.603	12.443	55.348
2	41.740	262.636	14.590	54.443
3	41.109	319.317	13.238	53.620
4	40.982	357.451	11.885	53.455
5	40.705	430.681	13.189	53.093
6	40.692	157.821	11.794	53.076
7	40.263	175.267	12.053	52.517
8	41.428	218.104	13.010	54.036
9	41.996	240.533	14.601	54.777
10	40.626	85.719	12.287	52.991
11	40.452	273.452	12.123	52.764
12	42.238	387.355	13.854	55.093
13	40.165	228.598	11.816	52.389
14	42.974	335.016	11.845	56.053
15	40.596	84.266	13.391	52.951
16	40.458	94.439	12.084	52.771
17	37.819	81.497	12.871	52.617
18	39.472	303.630	11.791	54.917
19	38.467	32.405	12.916	53.519
20	38.134	433.097	14.141	53.056

To sum up, the college students' mental health quality evaluation model based on computational intelligence has high confidence level, good reliability, good performance, and can effectively respond to depression, stress, anxiety, and other emotions related to college students' mental health, with significant differences.

5. Conclusions and Prospects

5.1. Conclusion. The following conclusions are drawn from the above research:

This method has a high confidence level and good reliability. The evaluation results can accurately reflect the depression, stress, anxiety, and other emotions related to college students' mental health. Somatization, interpersonal relationship, depression, and paranoia obtained from the evaluation have significant differences ($P < 0.05$), and other factors have no significant differences. Somatization and depression were significantly lower than the norm ($P < 0.05$), and interpersonal relationship and paranoia were significantly higher than the norm ($P < 0.05$).

5.2. Prospect

(1) Schools should actively communicate with students' parents to comprehensively improve college students' psychological quality and psychological coping ability, so as to build a mental health education mechanism based on the classroom and supplemented by extracurricular activities. At the same

time, the screening mechanism of psychological problems should be continuously improved. The selection of scales and the use of reasonable statistical methods must be comprehensive and objective. When abnormal psychological symptoms of college students are found, timely and effective intervention should be carried out.

(2) The mental health of college students will be affected by the outside world, such as society, native family, and school, but its essence still lies in the appropriate self-regulation. College students are intellectuals in the contemporary social group, who have high social expectations, and their self-requirements are relatively high-level and high-quality. Therefore, it is very important to strengthen college students' self-regulation and control of their own mental health, and improve their self-education level and their awareness of psychological crisis. In daily study and life, we should objectively understand ourselves, actively accept ourselves, and strengthen self-education. This aspect should be further studied next.

Data Availability

The data are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.

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