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Research Article

Psychological Mechanism and Exercise Intervention of College Students' Problematic Internet Use Based on IoT Technology

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Dangerous Internet use alludes to unreasonable utilization of the Internet that unfavorably influences individual emotional well-being, relational correspondence, social transformation, social turn of events, learning, and work. This paper aims to study how to analyze and study the psychological mechanism and exercise intervention of problematic Internet use based on the Internet of Things technology, and describe it. It addresses the question of problematic web usage, and this question is based on IoT technology. This paper then elaborates on the concept of data mining and related algorithms. It designs and analyzes the psychological mechanism and exercise intervention of college students' problematic Internet use. The experimental results showed that in the incidence of Internet addiction, gender, grade, family economic environment, and single-parent family will be affected. Moderate-intensity (50%–80% VO_2 max) aerobic and anaerobic exercise for more than 30 minutes per year has a positive effect on college students' Internet addiction.

1. Introduction

As a new type of science and technology, the Internet of Things technology is a new technological form. It uses a new type of detection technology to realize the expansion from virtual space to real physical space through the Internet. The new development and utilization of Internet of Things advancement has step by step changed people's creation, life, and perspective. It narrows the distance between people and people and things, and greatly improves the efficiency of labor production. The Internet of Things built by the third wave of the world's information industry after the computer and the Internet. As we all know, modern students are the population with the highest Internet penetration rate. Among the hundreds of millions of Internet users in China, university users top the list. At the same time, more and more students have the problem of indulging in the virtual world of the Internet. The number of Chinese students with Internet addiction has exceeded 300,000 of which 40,000 are severely Internet addicts. Internet addiction among college students has caused a series of mental health problems, ideological and behavioral problems, and even serious social problems. This not only hinders the development and success of students but also affects the long-term development of the entire country and society. Their basic psychological needs are inherent and necessary psychological needs of the body.

Problematic Internet use (PIU) refers to excessive Internet use that has adverse effects on an individual's mental health, interpersonal communication, social adaptation, study, and work. In 2018, the 42nd report released by the China Internet Network Information Center showed that among Chinese netizens in 2018, by age, the 20–29 age groups had the highest proportion of netizens. According to occupational classification, school students account for 24.8%, which is the largest percentage of the total population. In China, students seem to be a huge group of Internet users. Therefore, the problem of college students' use of the Internet has attracted much attention.

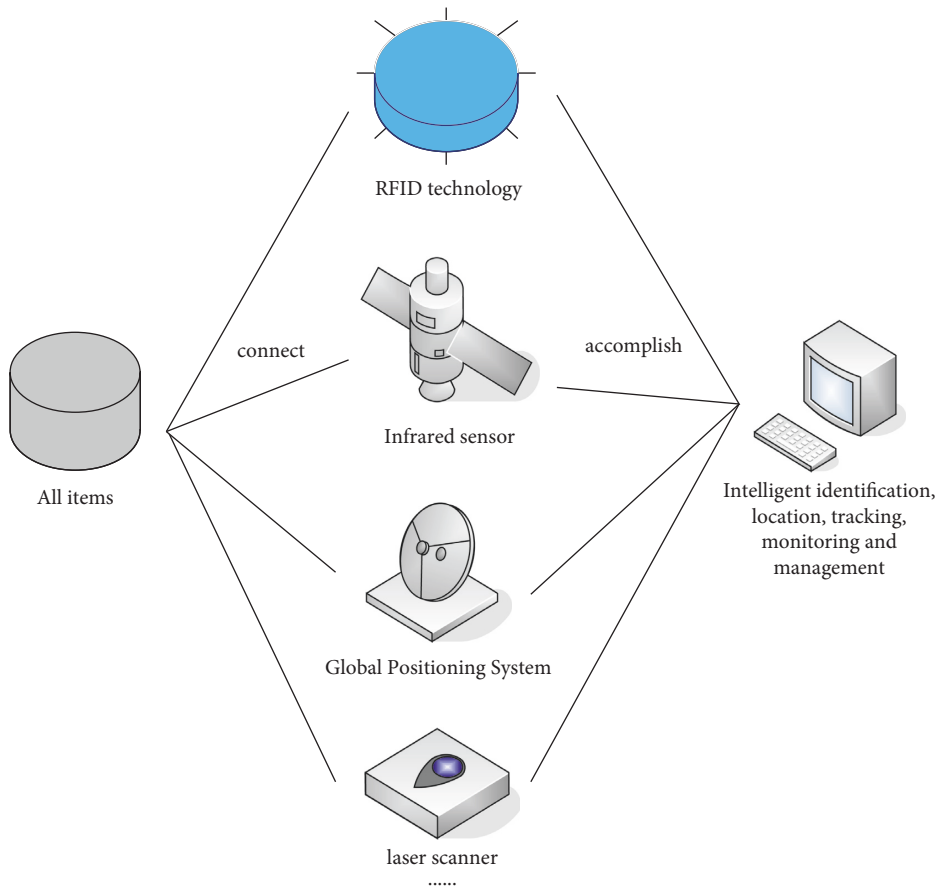

Figure 1: Conceptual diagram of the original meaning of the Internet of Things.

The innovation of this paper (1) combines the Internet of Things technology with the use of problem networks, and introduces the theory and related methods of data mining in detail. (2) In the face of the psychological mechanism of college students, it analyzes the related factors of Internet addiction. This paper concludes that gender, grade, family economic environment, and single-parent family are all affected in the incidence of Internet addiction.

2. Related Work

With the continuous development of the Internet and the popularity of smartphones, students usually spend a lot of time using the Internet, and the phenomenon of problems with Internet use is still cause for concern. Gómez et al. characterized the demographics and rates of participation in online risky experiences among Spanish secondary school students and screened for problematic Internet use [1]. Ilesanmi et al. investigated examples of Web use (PIU) and the predominance of PIU previously and during the COVID-19 lockdown, as well as the causes, impacts, and expected alleviations of PIU during lockdown [2]. Rosenkranz et al. analyzed the habit-forming capability of 8 unique Internet applications to separate male and female clients. He researched various relationships being referred to among Internet gamers and generalized Internet users [3]. Rooij et al. observationally investigated the choice of renouncing a bound together way to deal with address risky "Web use" by dividing ideas into more unambiguous application-level measures [4]. Canan et al. planned to research the conceivable relationship between the proportion of center and ring fingers and Internet habit, and whether this relationship is connected with impulsivity [5]. The essential goal of Laconi et al. was to research the connection between dangerous Internet use and online time, online movement, and psychopathology by considering diverse and distinctions in sexual orientation [6]. Li et al. planned to analyze the intervening job of a sleeping disorder on the relationship between risky Web use, including Web compulsion and online long range informal communication habit, and young adult wretchedness [7]. The point of Peker et al. was to inspect the interceding job of life fulfillment and imperativeness in the connection between young people's anxiety toward coronavirus and hazardous Web use [8]. However, their study did not explore this psychological mechanism and did not intervene in the study subjects.

3. Methods Based on IoT Technology

3.1. IoT and IoT Technology

3.1.1. Definition of the Internet of Things. The so-called Internet of Things, as can be seen from its name, refers to the "Internet of things connected with things" [9]. This concept

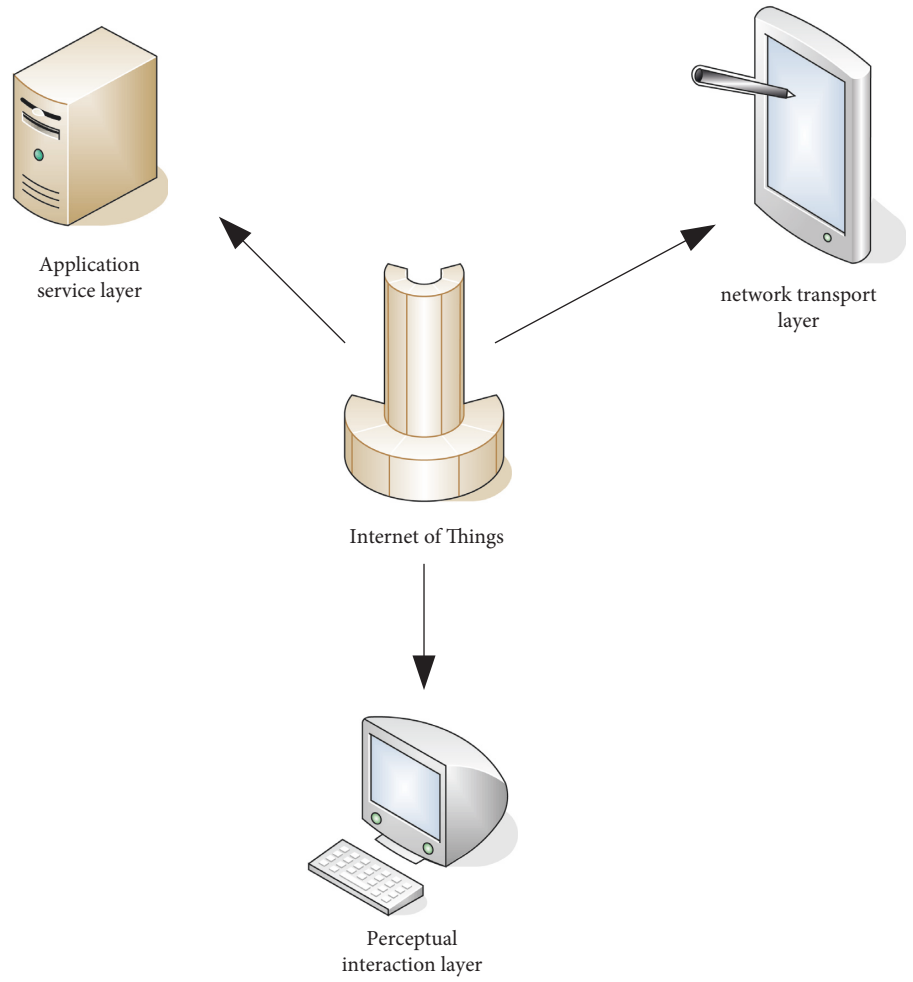

Figure 2: IoT composition system.

was proposed by the MIT Research Center in 1999, and its original meaning is shown in Figure 1.

So far, there is still no unified international standard for the definition of the Internet of Things. The author's more recognized definition of the Internet of Things is a network that realizes the comprehensive interconnection of people and people, people and things, and things and things for the purpose of perception. Its prominent feature is to obtain various information of the physical world through various perception methods. It combines the Internet, mobile communication network, etc. for information transmission and interaction, and uses intelligent computing technology to analyze and process information, thereby improving people's perception of the material world and realizing intelligent decision making and control.

3.1.2. Internet of Things Technology. The Internet of Things is a typical new field of cross-application of information technology and sensing technology. It is a huge and complex integrated information system [10]. The Internet of Things is a system composed of three main technical levels, as shown in Figure 2.

The perception layer is mainly used to collect various data. Without it, there is no information about the characteristic data of objects on the Web. Only when the perception layer technology meets the requirements, the entire Internet of Things can operate normally.

Embedded identification technology can enable the "things" in the Internet of Things to have certain intelligent data communication capabilities. The embedded technology in the Internet of Things is to add a chip to the object and integrate the chip system and the software system through the corresponding software. This enables data communication between objects and the outside world. Most of the items in the Internet of Things use embedded technology to make all things have the level of intelligent communication, and connect these intelligent items with the network [11, 12].

The network layer mainly completes functions such as long-distance transmission of information. It includes the Internet, telecommunication networks, satellite networks, radio, television, and television networks.

The application layer is mainly to process data and complete the work of service discovery and service presentation. It realizes information storage, analysis, mining, etc., and ultimately provides users with various information services and applications. It involves the computational

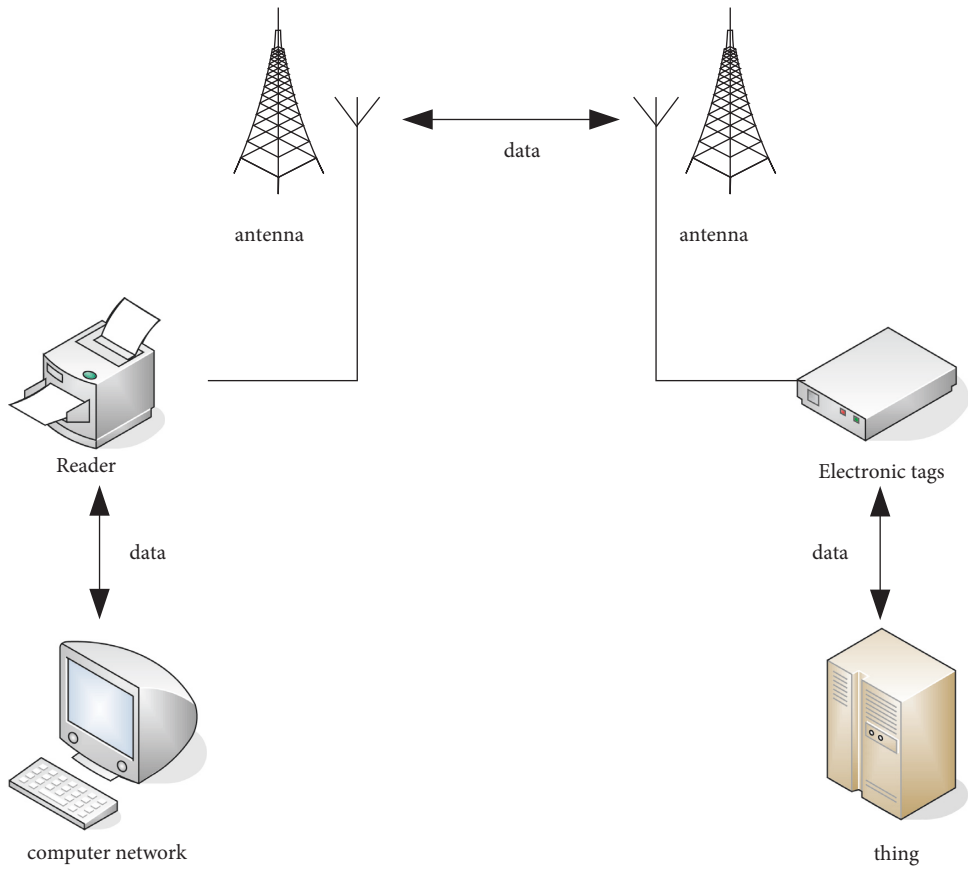

Figure 3: Components of an RFID system.

processing of large amounts of data in the application layer. The development of cloud computing technology has greatly improved the information processing capabilities of the Internet of Things. It enables IoT technology to design different solutions according to the needs of different users [13].

3.2. Key Technologies of the Internet of Things. IoT technology mainly includes intelligent perception and marking technology, network and communication technology, computing, and service push technology. Perception and marking technologies include RFID, QR codes, and sensors. Network and communication technologies include Ethernet, 3G, Bluetooth, and WIFI. Computing and service technologies include data mining and data push [14, 15].

3.2.1. RFID Technology. RFID is radio frequency identification, which also known as electronic tag. RFID is a noncontact automatic identification technology that transmits data through radio waves. It uses radio signals to read and write data and identify specific targets. RFID appeared in the 1990s. It is considered to be the most widely used best and most important technology in the field of automatic identification. The composition of RFID systems varies according to their applications and functions. But in general, it basically includes three parts: electronic tag, reader, and antenna [16]. The electronic label is attached to the object and contains a data storage area, which stores the marking information of the object. The reader/writer is used to write specific marking information into the memory of the electronic tag or read the marking information of the item from the storage area of the electronic tag, and exchange data with the electronic tag. The antenna is used to transmit and receive radio frequency signals to complete the data exchange between the electronic tag and the reader. The organization of the RFID framework is displayed in Figure 3.

Antenna used in conjunction with electronic tags and readers to transmit radio frequency signals between electronic tags and readers. Electronic labels, including coupling elements and chips, have a unique electronic code. Object-related information is stored in the encoding to identify the target object. Reader is a device that reads or writes tag information. Computer network is a RFID system that generally contains multiple readers. The reader should read the electronic tags of multiple objects and process the data. And it requires high real-time performance, so the data processing task is handed over to the computer network to complete.

3.2.2. Sensor Technology. In daily life, people use their senses to perceive information from the outside world. But the natural world is colorful and complex, and it is not enough to perceive information such as high temperature, radio

waves, speed, and electromagnetic radiation only by your own senses. Therefore, in order to perceive more information that people cannot perceive, sensors emerge as the times require. A sensor is a device that senses certain information and converts it into other forms of signals according to certain rules. Sensors can perceive information that humans cannot. They are extensions of the human sense organs. They are an important way to obtain various types of information and the primary link of automatic control [17].

(1) Composition. A sensor is a monitoring device that detects a test object. It converts it into an electrical signal or other desired signal form according to specific rules. The measured information can be various physical quantities, biomass, chemical quantities, or state quantities. The converted signal can be used for storage, display, recording, and inspection. Sensors convert the collected signals from one to another. This form is easy to identify and has certain information processing and conversion capabilities. The four components of the sensor are shown in Figure 4.

The sensitive element directly senses the element to be measured and generates a certain amount of the measured object. The conversion element converts the quantity output by the sensitive software into an electrical signal and does not directly perceive the measured object. The conversion circuit further converts the electrical signal output by the conversion element for easy recording, identification, and storage.

(2) Classification. There are a wide variety of sensors and a rich variety. The principles are different, and there are many classification methods. It is shown in Figure 5.

(3) Wireless Sensor Network. Wireless sensor network is composed of many sensor nodes, all of which are deployed in a monitoring area to form a multihop self-organizing network through wireless communication. The number of these sensor nodes is very large, the size is small, and they exist within a fixed range, which can be used to sense the information in the monitoring area and spread it out through wireless communication.

A wireless sensor network includes sensor nodes, sink nodes, and management nodes. Its structure is shown in Figure 6. Many sensor nodes are deployed in a certain area, and these sensor nodes form a network in a self-organizing manner. A sensor node collects data and transmits it to adjacent sensor nodes and then reaches the sink node. It is transmitted by the sink node to the management node, and the management node processes it and transmits it to the user.

3.2.3. Data Mining. The modern world is a data-based world with unlimited data sources. Very large datasets are stored in a central data warehouse. In recent years, methods for discovering new knowledge from raw data have exploded in order to extract valuable information from these giant datasets. Data mining methods and their applications have been widely studied [18, 19].

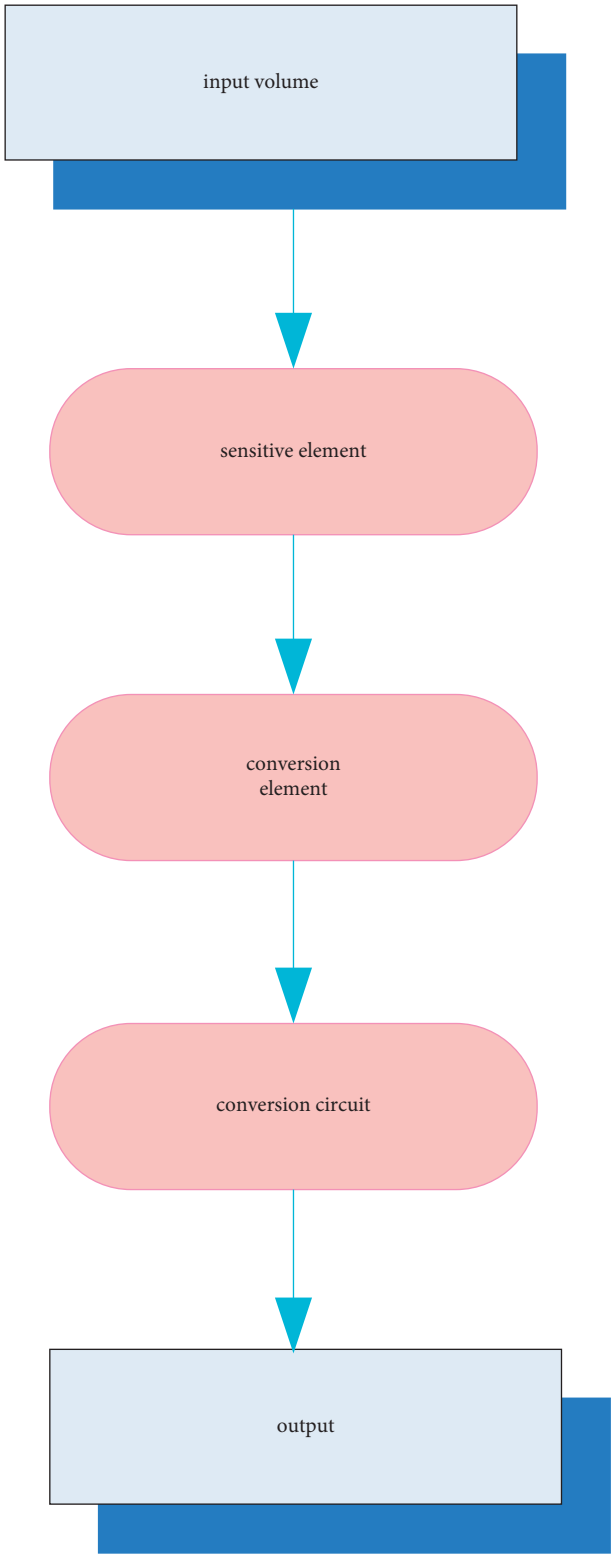

Figure 4: Composition of the sensor.

(1) Association Analysis Method. Association analysis method is a method of mining associated knowledge or information by discovering valuable attributes or association rules between items in a data warehouse. Its task is to reduce a large amount of incomprehensible, disordered data to a

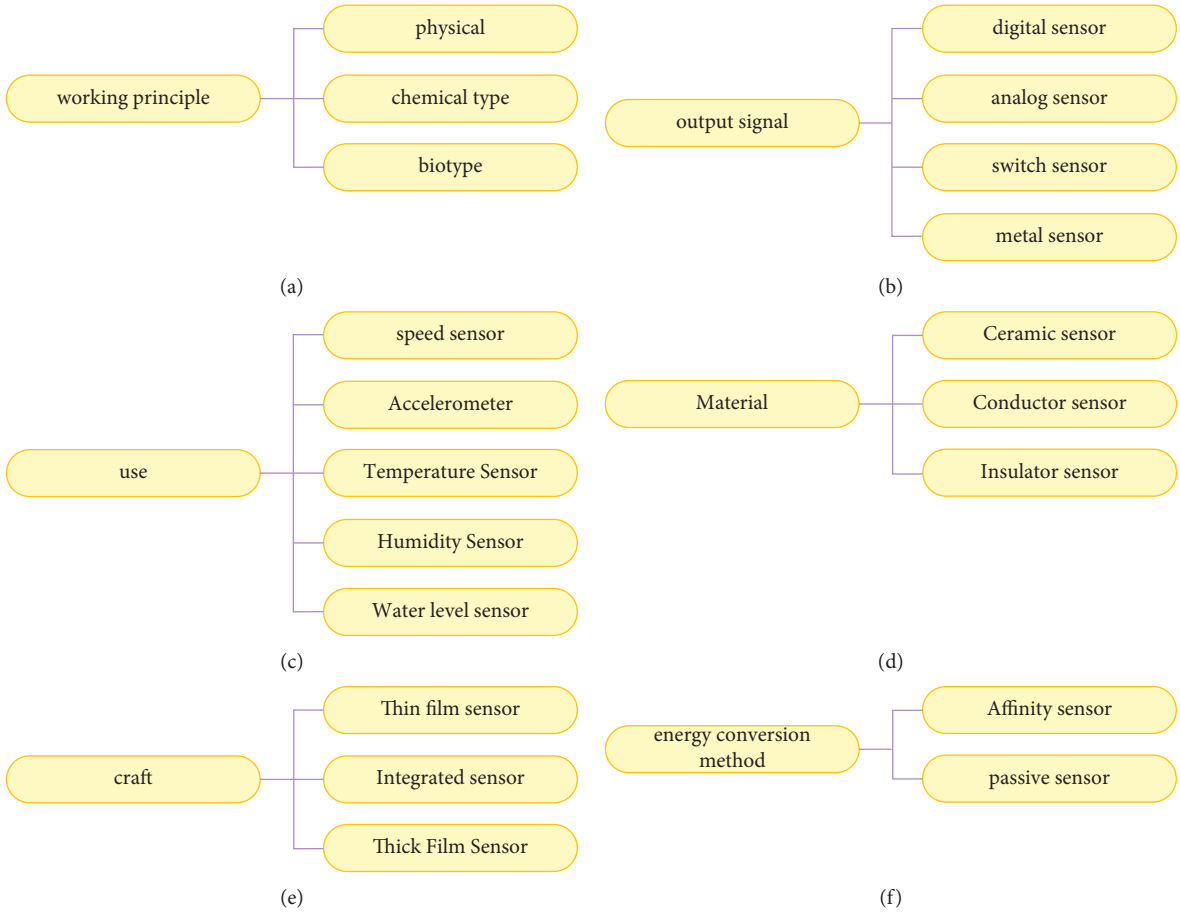

Figure 5: Classification of sensors.

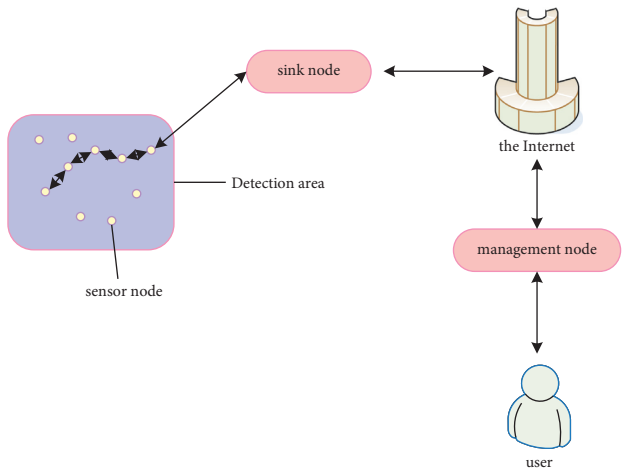

Figure 6: Wireless sensor network structure.

small amount of static data or information that is easy to observe and understand. The most classic example of the application of associative knowledge discovery in the business domain is shopping basket analysis. According to different classification standards, it has different classification methods. And the algorithm it implements is not unique, as shown in Table 1.

The core of the Apriori algorithm is a recursive algorithm based on the idea of two-stage frequency sets, which belongs to single-dimensional, single-layer, and Boolean association rules. In order to improve the algorithm performance of Apriori algorithm, some researchers proposed an FP-growth algorithm based on FP tree to generate frequent itemsets.

(2) Classification Method. In the knowledge model of data mining, classification is a more important model. The classification analysis method is also a very necessary and effective analysis method. Among the classification tools of data mining, the function of decision tree sorting is more comprehensive. The main idea is to highlight the test data and sort it correctly [20]. Decision tree learning belongs to recursive learning, which generally adopts a top-down approach. From the root node, the attribute values are compared to determine how to branch downward. Then, the comparison of attribute values is continued at each internal node of the decision tree, and according to the judgment of attribute values, branches are constructed step by step downward, and finally, a conclusion is obtained at the leaf nodes of the tree. Each path is a conjunction rule, and all paths together constitute the entire decision tree. The

Table 1: Classification of association rules and comparison of implementation algorithms.

Classification criteria	Classification	Algorithm	Analyze
Level of abstraction	Single-level association rules and generalized association rules	Apriori algorithm, FP-growth algorithm, and Eclat algorithm	Apriori algorithm is an algorithm for mining frequent itemsets of Boolean association rules, which belongs to single-dimensional and single-layer association rules; FP-growth algorithm is about an order of magnitude faster than Apriori algorithm; and Eclat algorithm adds the idea of inversion
Data dimension	Single-dimensional association rules and multidimensional association rules		
The type of value handled	Boolean association rules and quantity association rules		

Table 2: Comparison of decision tree algorithms.

Decision tree algorithm	Analysis of algorithms	Use analytics
KNN method	The K-nearest neighbor method is only related to a very small number of adjacent samples in the category decision, which can better avoid the problem of sample imbalance, but the amount of calculation is large.	It is suitable for the sample set to be divided with more overlapping or overlapping class domains.
Bayes method	A pattern classification method with known prior probabilities and class conditional probabilities. It is necessary to obtain the probability distribution of the category population and the probability distribution function (or density function) of various samples	The samples are required to be independent of each other, and the samples are large enough
Reverse KNN method	It can reduce the computational complexity of KNN algorithm and improve the efficiency of classification	It is suitable for automatic classification of the class domain with a relatively large sample size. If the sample size is small, it is easy to cause misclassification.
ID3 algorithm, C4.5, C5.0, and CART (classification regression tree)	Using divide and conquer strategy, ID3 algorithm is the representative of each algorithm, and other algorithms are improved based on its principle, and use information gain to find the attribute field with the most information in the database to establish the node of the decision tree.	It has the characteristics of simple description and fast classification speed, and is suitable for large-scale data processing.

decision tree algorithm is relatively mature, and its comparative analysis is shown in Table 2.

(3) Neural Network Classification Learning. As shown in Figure 7, it assumes that the input layer of the BP network has an input signal I, and the hidden layer consists of J neurons. Finally, there are K signals at the output level. The input of the neuron is denoted by v, and the output is denoted by u. The thresholds of neurons introduced into the hidden layer and output layer are $x_0 = -1$ and $y_0 = -1$, respectively. It inputs vector $X_k = (X_1, X_2, \ldots, X_i, \ldots, X_n)^D$, and then, the output vector of the hidden layer corresponding to any training sample $X_k = (X_1, X_2, \ldots, X_i, \ldots, X_n)^D$ is $Y = (y_1, y_2, \ldots, y_i, \ldots, y_m)^D$. The actual output is $Q = (q_1, q_2, \ldots, q_k, \ldots, q_l)^D$, while the expected output is $p = (p_1, p_2, \ldots, p_k, \ldots, p_l)^D$. The weight w_{ii} from the input layer to the hidden layer is the weight w_{ik} from the hidden layer to the output layer, and d is the number of repetitions of the learning process.

When X_k is used as an input sample to operate through the output layer, it can be obtained as follows:

For the hidden layer, there are

$$\begin{aligned} v_j^J &= \sum_{i=0}^{A} w_{ij}^A x_{ni} \quad j = 1, 2, \ldots, J, \\ u_j^J &= f\left(\sum_{i=0}^{I} w_{ij}^I x_{ni}\right) \quad j = 1, 2, \ldots, J. \end{aligned} \tag{1}$$

For the output layer, there are

$$\begin{aligned} v_k^K &= \sum_{j=0}^{J} w_{jk}^J x_j^J \quad k = 1, 2, \ldots, K, \\ u_k^K &= f\left(\sum_{j=0}^{J} w_{jk}^J x_j^J\right) \quad k = 1, 2, \ldots, K. \end{aligned} \tag{2}$$

From the above four equations, it can be obtained as follows:

$$y_{nk} = u_k^K = f\left(v_k^K\right) = f\left(\sum_{j=0}^{J} w_{jk}^J x_j^J\right) \quad k = 1, 2, \ldots, K. \tag{3}$$

The above is the basic framework of the three-layer BP neural network.

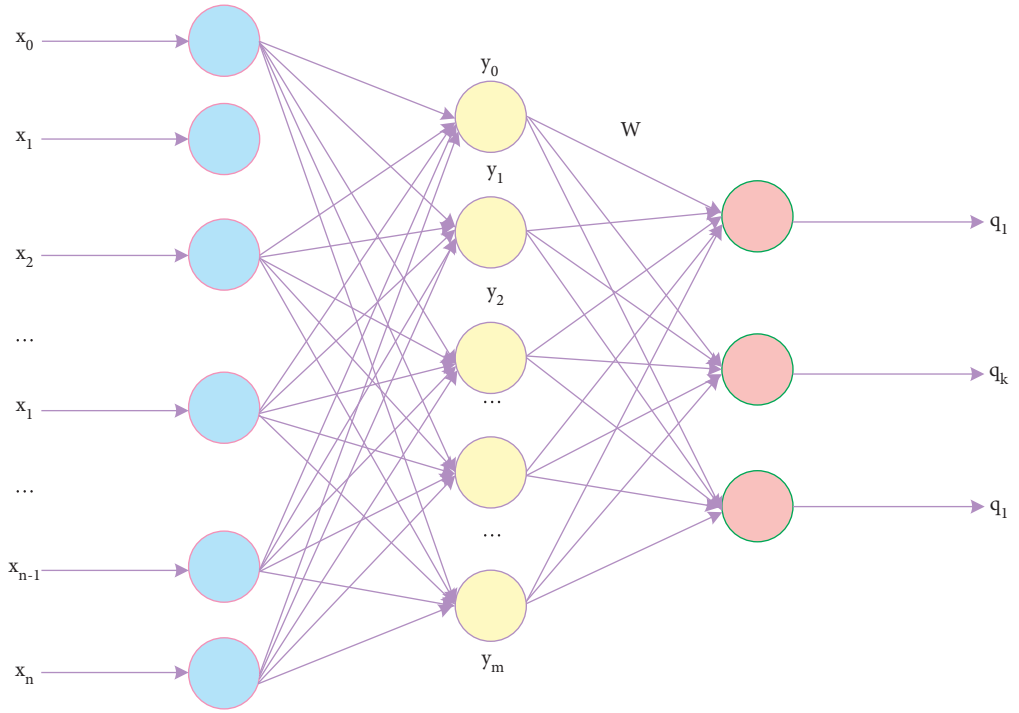

Figure 7: Three-layer BP network structure diagram.

The sum of error energies θ results from the unequal relationship between the expected and actual outputs obtained during network operation

$$\theta(d) = \frac{1}{2}\sum_{k=1}^{K}\left(p_{nk} - q_{nk}\right)^2. \tag{4}$$

It sets $\theta_{nk}(d)$ to be the error signal obtained through the output layer during forward propagation

$$\theta_{nk}(d) = p_{nk}(d) - q_{nk}(d). \tag{5}$$

It propagates the error signal from the output stage to the input stage during the back-propagation of the error signal. It performs hierarchical adjustments to the network and modifies the network weights.

In order to gradually reduce the error, it must be corrected in the direction of the negative gradient of the weights. It was found that the weight correction amount Δw_{ik} is proportional to the negative tilt direction of the error, namely

$$\begin{aligned}\Delta w_{ik} &\infty -\frac{\Re\theta(d)}{\Re w_{jk}},\\ \Delta w_{ik} &\infty -\frac{\Re\theta(d)}{\Re w_{ij}}.\end{aligned} \tag{6}$$

Because differentiable functions are transitive, it is obtained as follows:

$$\frac{\aleph\theta(d)}{\aleph w_{jk}} = \frac{\aleph\theta(d)}{\aleph\vartheta_{nk}(d)}\cdot\frac{\aleph\vartheta_{nk}(d)}{\aleph y_{nk}(d)}\cdot\frac{\aleph y_{nk}(d)}{\aleph v_k^K(d)}\cdot\frac{\aleph v_k^K(d)}{\aleph w_{jk}(d)}. \tag{7}$$

In

$$\begin{aligned}\frac{\aleph E(d)}{\aleph w_{jk}(d)} &= \vartheta_{nk}(d),\\ \frac{\aleph\vartheta_{nk}(d)}{\aleph y_{nk}(d)} &= \vartheta_{nk}(d),\\ \frac{\aleph y_{nk}(d)}{\aleph v_k^K(d)} &= g'\left(v_k^K(d)\right),\\ \frac{\aleph v_k^K(d)}{\aleph w_{jk}(d)} &= u_j^J.\end{aligned} \tag{8}$$

Then

$$\begin{aligned}\frac{\aleph\theta(d)}{\aleph w_{jk}(d)} &= -\vartheta_{nk}(d)\cdot g'\left(v_k^K(d)\right)\cdot u_j^J,\\ \eta_k^K &= -\frac{\aleph\theta(d)}{\aleph v_k^K(d)}\\ &= -\frac{\aleph\theta(d)}{\aleph u_k^K(d)}\cdot\frac{\aleph v_k^K(d)}{\aleph v_k^K(d)}\\ &= g'\left(v_k^K(d)\right)_{nk}(d).\end{aligned} \tag{9}$$

So, there are

$$\begin{aligned}\vartheta_k^K &= y_{nk}(d)\left(1 - y_{nk}(d)\right)\cdot\vartheta_{nk}(d)\\ &= -y_{nk}(d)\left(1 - y_{nk}(d)\right)\cdot\vartheta_{nk}\left(p_{nk}(d) - q_{nk}(d)\right).\end{aligned} \tag{10}$$

The correction of w_{jk} is

$$\begin{aligned} w_{jk} &= -\mu \frac{\aleph\theta(d)}{\aleph w_{jk}} \\ &= \mu\left(-\frac{\aleph E(d)}{\aleph v_k^K(d)}\right) \cdot \frac{\aleph v_k^K(d)}{\aleph w_{jk}} \\ &= \mu \vartheta_k^K(d) \cdot u_k^K(d). \end{aligned} \tag{11}$$

In the next iteration, the weight of any node from hidden layer J to output plane K is

$$w_{jk}(d+1) = w_{jk}(d) + \Delta w_{jk}(d). \tag{12}$$

The weight correction value from the input layer to the hidden layer is similar to the above adjustment method, as follows:

$$\begin{aligned} \frac{\aleph\theta(d)}{\aleph w_{ij}(d)} &= \frac{\aleph\theta(d)}{\aleph v_j^J(d)} \cdot \frac{\aleph v_j^J(d)}{\aleph w_{ij}} \\ &= \frac{\aleph\theta(d)}{\aleph v_j^J(d)} \cdot x_{ni}(d). \end{aligned} \tag{13}$$

It sets the local gradient

$$\begin{aligned} \eta_j^J &= -\frac{\aleph\theta(d)}{\aleph v_j^J(d)} \\ &= -\frac{\aleph\theta(d)}{\aleph u_j^J(d)} \cdot \frac{\aleph v_j^J(d)}{\aleph v_j^J(d)}. \end{aligned} \tag{14}$$

In

$$\frac{\aleph u_j^J(d)}{\aleph v_j^J(d)} = g'\left(v_j^J(d)\right). \tag{15}$$

For

$$\theta(k) = \frac{1}{2}\sum_{k=1}^{K} \vartheta_{nk}^2(d). \tag{16}$$

So

$$\begin{aligned} \frac{\aleph\theta(d)}{\aleph u_j^J(d)} &= \sum_{k=1}^{K} \vartheta_{nk}(d) \cdot \frac{\aleph\vartheta_{nk}(d)}{\aleph u_b^B(d)} \\ &= \sum_{k=1}^{K} \vartheta_{nk}(d) \cdot \frac{\aleph\vartheta_{nk}(d)}{\aleph u_k^K(d)}(d) \cdot \frac{\aleph u_k^K(d)}{\aleph u_j^J(d)}. \end{aligned} \tag{17}$$

3.3. Problematic Internet Use. The definition of problem Internet use has evolved from Internet addiction to pathological Internet use and problem Internet use. While the definitions and nomenclature of such behaviors are not identical, the definition of such behaviors includes behaviors that are most typically problematic with Internet use. Under the influence of nonaddictive substances, people use the Internet excessively. Internet addiction can cause people to sit in front of a computer or use a cell phone for long periods of time. This behavior can lead to decreased vision, shoulder and back muscle strain, disturbed sleep rhythms, decreased appetite, indigestion, and decreased immune function. Although they did not swallow any addictive substances, the problem netizens lived in poor living conditions due to excessive Internet addiction. For example, their lives are not healthy. Some people may spend a lot of time on the Internet and indulge in Internet fantasies. This can lead to a reduction in their social activities in real life and cause some people to experience problems such as carelessness at work and study. On the other hand, problematic Internet users face some emotional problems such as depression and anxiety. Individuals may experience symptoms such as insomnia and irritability. Therefore, it is very important to study the psychological factors that influence individuals' problem behaviors when using the Internet.

Table 3: Age, gender, and professional distribution of the tested.

Group	Grade		Profession		Total
Grade	Male	Female	Science	Liberal arts	
Freshman	118	136	134	120	254
Sophomore	124	152	167	109	276
Junior year	112	140	155	97	252
Senior year	132	86	143	75	218
Group	486	514	599	401	1000

4. Psychological Mechanism and Exercise Intervention Experiment of College Students' Problematic Internet Use

4.1. Questionnaire Survey on Internet Addiction among College Students

4.1.1. Research Objects. The subjects of the study were college students in a university, and a total of 1000 questionnaires were distributed. Because it is an on-site investigation, the effective rate is 100%. There were 486 boys and 514 girls. The distribution of grades and genders is shown in Table 3.

4.1.2. Statistical Tools. SPSS13.0 is used for data analysis and processing, t-test, variance analysis and χ^2 test, correlation analysis, regression analysis, etc.

4.2. Questionnaire Survey Results

4.2.1. Analysis of Gender, Grade, and Major Differences. Among the college students, there is a significant correlation between gender and Internet addiction (as shown in Figure 8(a)) ($\chi^2 = 21.20$, $P < 0.001$). The probability of male college students in the survey sample is 10.29% (50 people), and the probability of female college students is 3.89% (20 people). Male college students are significantly more than female college students, indicating that boys are more prone

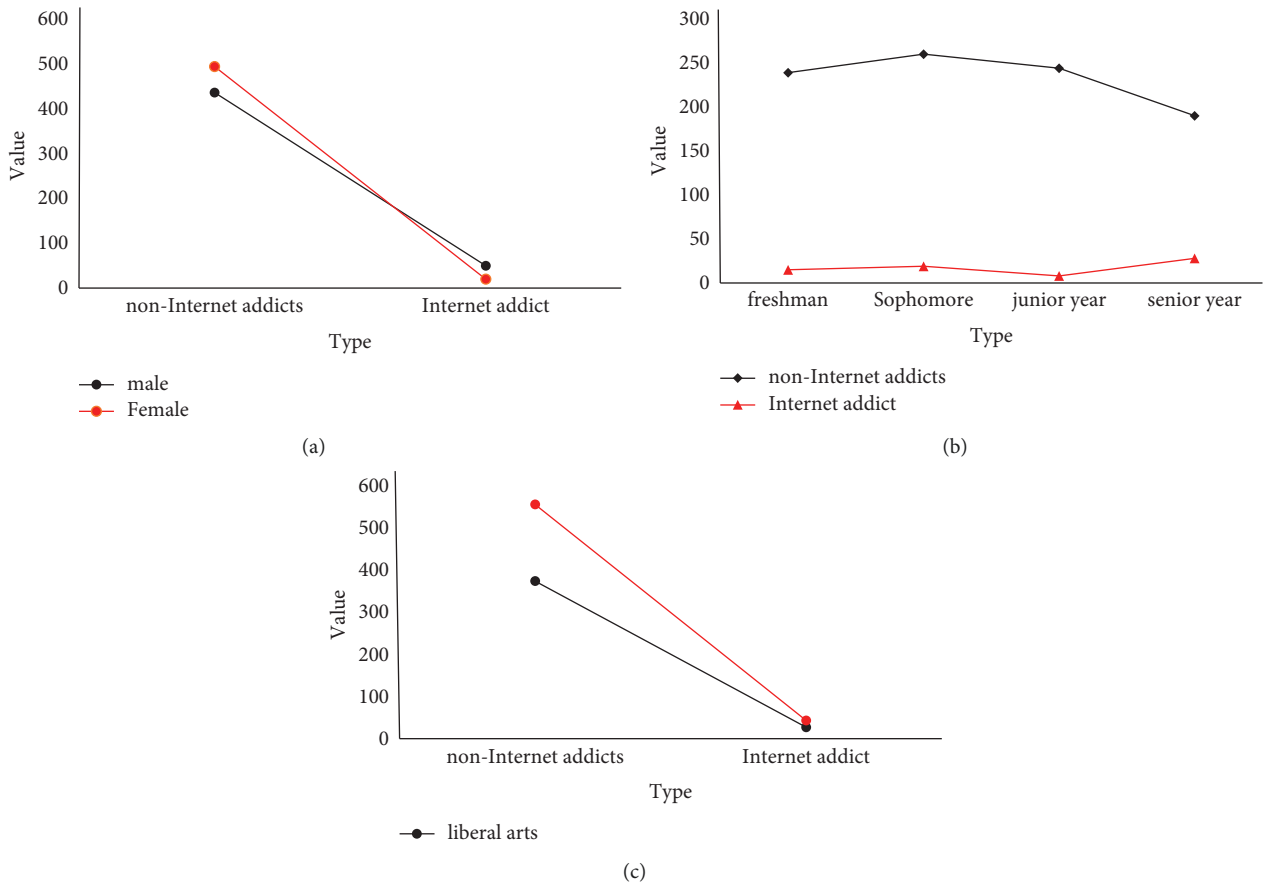

FIGURE 8: Comparison of gender, grade, and major differences. (a) Comparison of differences in the incidence of Internet addiction among college students of different genders. (b) Comparison of differences in the incidence of Internet addiction among college students of different ages. (c) Comparison of differences in the incidence of Internet addiction among college students with different majors.

to Internet addiction problems. The analysis of the degree of addiction of students with Internet addiction showed that the average score of boys was higher than that of girls, reaching a significant level ($t = 3.35$, $P < 0.05$).

Among college students, there was a significant correlation between grade and Internet addiction in the research on the probability of occurrence of Internet addiction (as shown in Figure 8(b)) ($\chi^2 = 27.30$, $P < 0.001$). The detection rate of freshmen was 5.90% (15 people), 6.88% (19 people), 3.17% (8 people) in the third grade, and 12.84% (28 people) in the fourth grade. There is a trend of significantly higher addiction rates in graduating grades. In the degree of Internet addiction, with the increase of grade, the degree of addiction also deepened, but it did not reach a significant level ($F = 1.50$, $P > 0.05$).

Among the college students, in the research on the probability of occurrence of Internet addiction, there was a significant uncorrelation between major and Internet addiction (as shown in Figure 8(c)) ($\chi^2 = 0.81$, $P > 0.05$). The detection rate of science students was 7.18% (43 people), and the detection rate of liberal arts students was 6.73% (27 people). The incidence rate of science students was higher than that of liberal arts students, but it did not reach a significant level. Taking major as a variable, the degree of Internet addiction of college students was analyzed. The degree of addiction of science students was significantly higher than that of liberal arts students, and the difference between the average levels reached a significant level ($t = 5.41$, $P < 0.05$).

4.2.2. Analysis of Family Differences. In the college student population, there is a significant correlation between family economic environment and Internet addiction in the research on the probability of occurrence of Internet addiction (as shown in Table 4 for details, $= 10.10$, $P < 0.05$). The probability of occurrence of household annual income of less than 3,000 yuan is 7.87% (17 people), the probability of occurrence of economic income between 3,000 and 10,000 is 11.17% (23 people), and the probability of occurrence of 10,000–30,000 yuan is 3.09% (12 people), and the detection rate of more than 30,000 people was 9.47% (18 people). Children from upper-middle-income families have the lowest addiction rate, and children from high-income families have the highest Internet addiction rate.

Among the college students, the probability of occurrence of Internet addiction was studied, whether there was a significant relationship between single-parent families and Internet addiction (as shown in Table 4) ($\chi^2 = 19.28$, $P < 0.001$). The detection rate of Internet addiction among

Table 4: Comparison of differences in the incidence of Internet addiction among college students affected by family factors.

Research variables	Classification	Non-Internet addicts (%)	Internet addicts (%)	Total	χ^2	P
Annual household income (yuan)	Less than 3000	199 (92.13%)	17 (7.87%)	216	10.10	0.015
	3,000 to 10,000	183 (88.83%)	23 (11.17%)	206		
	10,000 to 30,000	376 (96.91%)	12 (3.09%)	388		
	More than 30,000	172 (90.53%)	18 (9.47%)	190		
Single-parent family	Yes	63 (80.77%)	15 (19.23%)	78	19.28	0.02
	No	871 (94.06%)	55 (5.94%)	926		

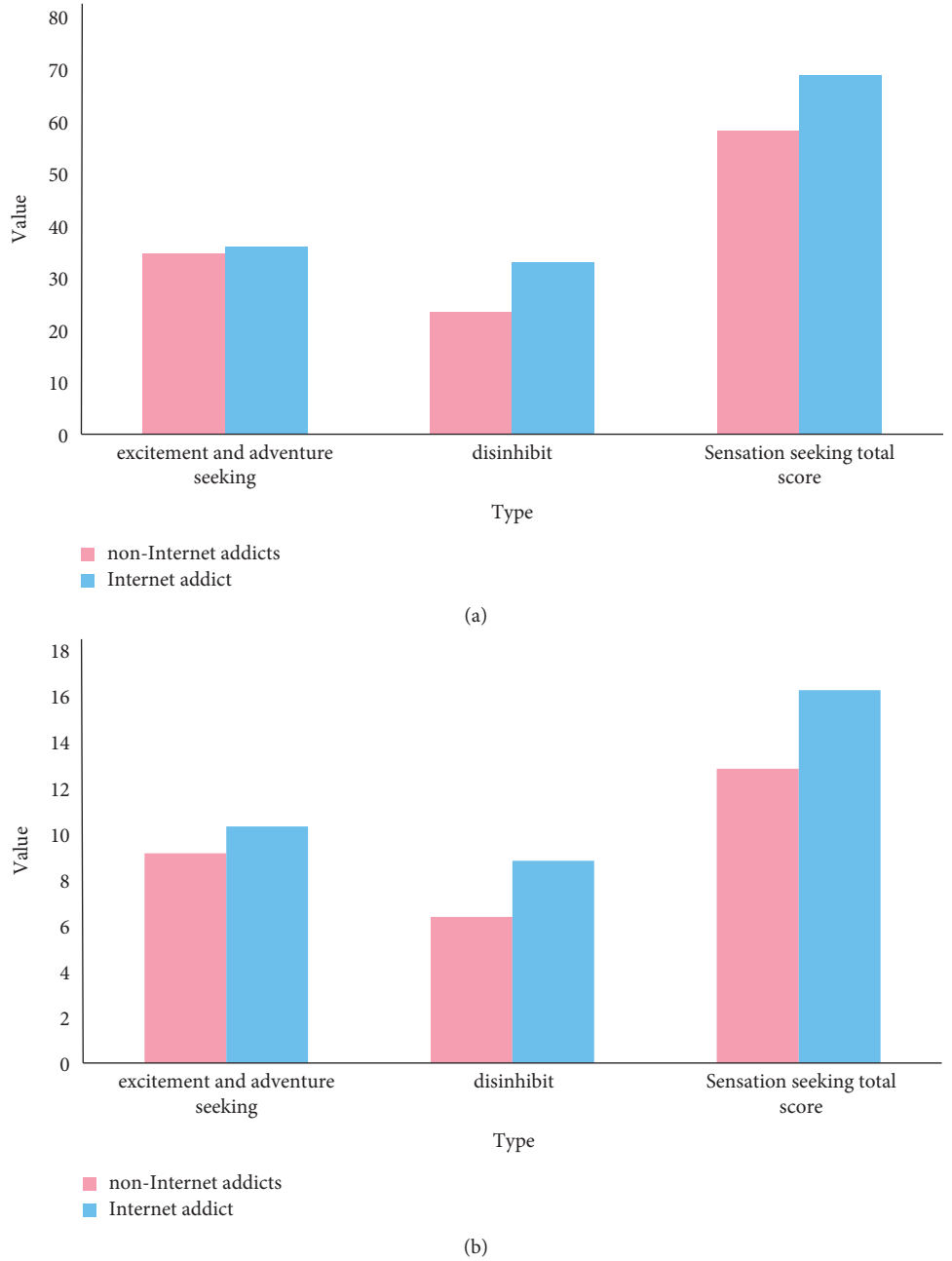

Figure 9: Differences in sensory seeking between the two groups. (a) Mean differences in sensory seeking between the two groups. (b) Differences in sensory seeking SD between the two groups.

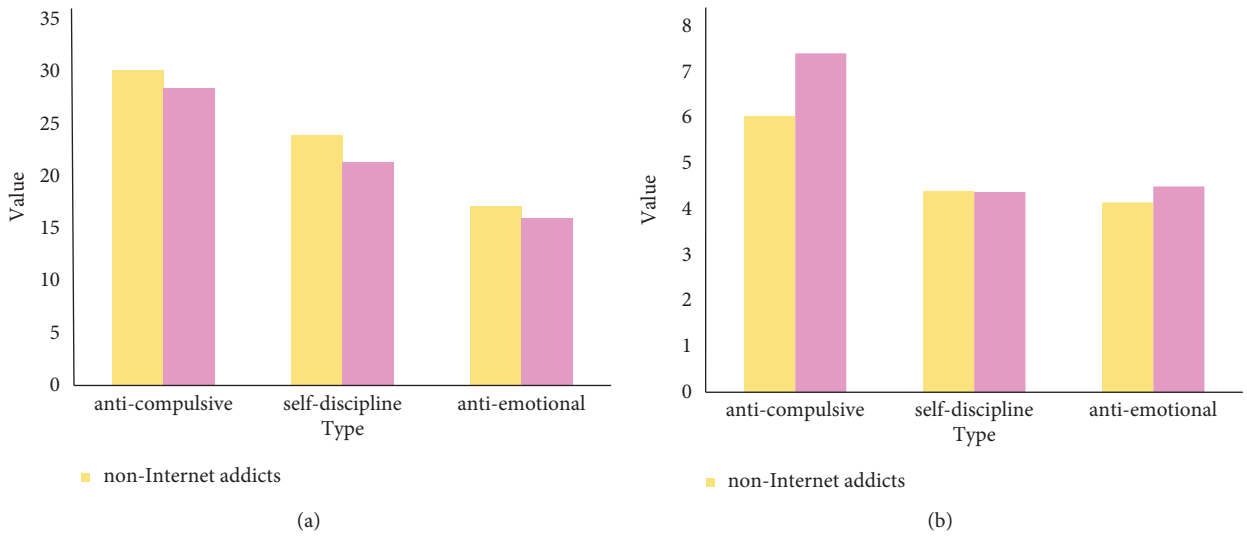

Figure 10: Difference test of self-control between the two groups. (a) Mean differences in self-control between the two groups. (b) SD difference between the two groups in self-control.

students from single-parent families was 19.23% (15 people), and the incidence of Internet addiction among non-single-parent college students was 5.94% (55 people), indicating that students from single-parent families were more prone to Internet addiction problems.

4.2.3. Difference Tests between Two Groups in Different Dimensions. The tactile inquiry contrast test between the Internet habit bunch and the nonenslavement bunch is displayed in Figure 9. The disinhibition score and complete score of tactile looking for in the Internet dependence bunch were essentially higher than those in the non-Internet enslavement bunch ($t = 13.10$, $t = 7.31$, $P < 0.001$); there was no tremendous contrast between the scores of fervor and experience looking for between the Internet habit bunch and the nonfixation bunch($t = 1.12$, $P > 0.05$).

The difference test of self-control between the two groups is shown in Figure 10. The anticompulsion, self-discipline, anti-emotional scores, and total scores of self-control in the Internet addiction group were significantly lower than those in the non-Internet addiction group ($t = -2.49$, $t = -5.02$, $t = -2.74$, $P < 0.001$).

4.3. Exercise Intervention for College Students with Internet Addiction. The use of sports to intervene in Internet addiction should specifically analyze the specific causes of Internet addiction among addicted students, and select corresponding exercise programs. The intensity, time, frequency, and other exercise prescriptions should be determined according to the specific reasons. College students are willing to look online for their interpersonal and self-actualization needs. Basketball can improve the negative reactions and psychological state of netizens. Badminton is accompanied by an increase in blood flow and oxygen intake, which has a good effect on the central nervous system, stimuli, and nervous system, resulting in positive and antidepressant effects in the mood of Internet-addicted students. Depending on the cause of the addiction, individuals performed alternative exercise three times a week for 0.5 to 2 hours each. For those who are addicted to the Internet due to lack of communication with others, we organize regular, collaborative team sports; for those who are not confident, we organize sports for athletes whose learning is challenging; timed sports or competitions were organized for athletes who could not control their time; those who were bored were assigned a more interesting exercise program for 18 weeks.

The results show that exercise intervention has a good effect on correcting students' Internet addiction, but it is better to choose an appropriate exercise program according to the specific cause of the addiction. Regardless of the cause of Internet addiction, the stimulation of the human body by intermittent high-intensity exercise will immediately stimulate the practitioner's right brain and enter into a pleasant atmosphere. At the same time, increased blood flow and oxygen intake during exercise stimulate the central nervous system, thereby promoting the formation of positive emotions and expectations in Internet addicts. Exercise can strengthen achievement incentives, correct psychological barriers, improve physical and mental health, and achieve the purpose of getting rid of Internet addiction.

The current sports intervention research on Internet addiction students mainly uses aerobic sports badminton, basketball, and volleyball (including games, training, and competitions). The target heart rate is maintained at 130~150 minutes/minute, 40~60 minutes/time, 3 times a week, plus 55%~65% of the maximum force, 8~12 times per set. According to the strength training cycle of different functional equipment, a total of 3 groups, each 30–40 minutes, exercise twice a week for Internet addiction students prescribed intervention research. The results showed that the Internet addiction among college students improved in all aspects, and the body composition indicators of the

intervention subjects also changed. Therefore, exercise prescription has a good effect on college students who rely on the Internet to get rid of Internet addiction and obtain a reasonable body composition. On this basis, high-intensity intermittent exercise was used 3 times a week for 8 weeks to intervene students with Internet addiction. Each workout consists of a 10-minute warm-up, 30 minutes of high-intensity intervals, and a 10-minute cooldown. Among them, high-intensity interval training consists of 10 cycles, and each cycle includes 1 minute of corridor high-intensity exercise and 2 minutes of interval exercise. Operation on the runway requires an operating speed of 7.5 to 9.3 km/h and an inclination of 10%. The results show that high-intensity interval exercise intervention has a good effect on the withdrawal of Internet addiction among college students.

5. Discussion

First of all, through the study of relevant knowledge points in literature works, this paper has initially mastered the basic knowledge related to problematic Internet use and analyzed how to research the psychological mechanism and exercise intervention of college students' problem Internet addiction based on the Internet of Things technology. It expounds the technical concepts and algorithms of the Internet of Things, studies sensor technology, explores data mining, and analyzes the applicability of exercise intervention in the psychological mechanism of college students' problematic Internet use through experiments.

The development of the Internet has changed the way people receive information and understand the world. The advent of smartphones has brought great changes to people's way of life. The way people use the Internet has also shifted from computers to mobile devices, a feature of multiple access. With the increasingly rich network functions and the increasing convenience of the network, the psychological characteristics of network users have also undergone corresponding changes.

Through experimental analysis, this paper shows that moderate-intensity (50%~80% VO_2 max) aerobic and anaerobic exercise, more than 30 minutes each time, has a positive corrective effect on Internet addiction symptoms. It is better to select appropriate intervention studies. Internet addiction exercise programs for different reasons are more effective, but there are few studies on this aspect. Therefore, future research should further select intervention objects to achieve multiplier effect with half the effort.

6. Conclusions

The problem of Internet addiction among college students has long appeared and has shown a rapid development momentum and bad influence, which has aroused extensive attention from all walks of life. Different scholars have discussed the causes of college students' Internet game addiction from various disciplinary perspectives, and a large number of attempts have emerged for the prevention and treatment of college students' Internet addiction, and the main results are concentrated in the fields of medicine and psychology. A large number of Internet addiction treatment centers have sprung up like mushrooms after a spring rain, and they are making a lot of money. From a medical perspective, it is believed that the treatment of Internet addiction must be drug therapy or even physical therapy such as electric shock; from the perspective of psychology, Internet addiction is considered to be a mental disease, and psychological counseling is advocated to solve it. In fact, Internet addiction of college students is a complex social problem, which is caused by a combination of factors.

Data Availability

Data will be available on request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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