

Research Article

Prediction of Cognitive-Behavioral Therapy using Deep Learning for the Treatment of Adolescent Social Anxiety and Mental Health Conditions

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Cognitive-behavioral therapy is a type of psychosocial intervention which aims to reduce the mental health conditions like depression, anxiety disorder, and others. Similarly, deep learning is a type of machine learning and artificial intelligence that imitates how humans gain certain types of knowledge. In this paper, deep learning has been used to effectively alleviate teenagers' social anxiety and improve their social ability and the quality of social relations. It aims to conduct an in-depth study on the diagnosis and treatment of cognitive behavior therapy in teenagers based on deep learning. First, it constructs the cognitive behavior diagnosis and treatment evaluation system of adolescent social anxiety and divides the system function into functional, structural, and database design. Then, the correlation prediction model between cognitive behavior therapy and adolescent social anxiety is constructed based on a multiobjective evolutionary algorithm. The risk and protective factors in adolescent growth are screened from the perspectives of people, family, school, and society. The fuzzy itemset support of different factors is defined. The vector of adolescent social anxiety expression index's weight is calculated. The subjective and objective factors of social anxiety in adolescents are extracted based on the grey correlation degree. The correlation prediction model between accurate cognitive behavior therapy and adolescents' social anxiety is established to complete the prediction research, diagnosis, and treatment effect. Simulation experiments show that the proposed method has good feasibility and high prediction accuracy. It can effectively alleviate the social anxiety of teenagers.

1. Introduction

One of the most frequent types of pediatric diseases is anxiety disorders. According to research, juvenile anxiety disorders are linked to social and family factors. If left untreated, academic impairment is likely to remain, and children are more likely to acquire anxiety problems later in adolescence and age [1]. Clearly, being able to intervene early in the treatment of these illnesses would be advantageous. Promising cognitive-behavioral therapy (CBT) for childhood anxiety disorders, such as social phobia, separation anxiety disorder, and generalized anxiety disorder, has been developed over the previous two decades [2, 3]. According to these studies, CBT can be effective for various problems

when used alone or in conjunction with sertraline and when given individually or as a family treatment. Despite the fact that at least eight early studies have shown the efficacy of approaches such as in vivo desensitization, filmed, live, and participant modeling, graded exposure, reinforced practice, and verbal self-instruction in treating fears or specific phobias in preschool- and kindergarten-age children, protocols for treating the other major childhood anxiety disorders have primarily been evaluated in school-age children and adolescents [4]. Although some studies lowered the age of inclusion to 5 or 6.12, they typically included a limited number of the youngest children (mean sample ages of 11.03 and 7.8 years, respectively) and did not look at the outcomes individually for this age group [5].

According to research from the 1950s and 1960s, 40–60% of people with panic disorder were unaffected or improved just a little. Although some of these publications found no significant change in participants after various periods, the results of retrospective studies conducted after the availability of approved anxiety drugs are also variable [6]. There is also a perception that younger children were not developed enough to benefit from cognitive-behavioral therapies. It may have contributed to the underrepresentation of younger children in trials using CBT protocols for severe childhood anxiety disorders. Recent research, however, has cast doubt on these beliefs. For starters, investigations have revealed that preschoolers develop chronic anxiety disorders at about the exact incidence as older children. Factor-analytic studies have indicated that preschoolers' symptom presentations are similar to those in older children. Moreover, numerous organizations have recently begun experimenting with CBT procedures for various anxiety issues in young children [7].

In the case of adolescents, relevant studies show that interpersonal skills and relationship quality are the main factors affecting teenagers' mental health [8]. Junior high school students are in the early stage of adolescence, which is a significant turning point in life. Some developed countries have a wide range of research objects for social anxiety. It has a very high incidence and comorbidity rate. It is one of the primary diseases that affect students' mental health in the adolescent stage [9]. It has an essential impact on adolescents' life, learning, personality improvement, and future development. Therefore, this paper explores teenagers' social anxiety in depth, hoping to use appropriate, feasible, and practical implementation methods to provide experience for alleviating teenagers' social anxiety, mental health education courses, and activities. It will promote teenagers' mental health, improve interpersonal communication, and increase social adaptability.

The innovations of this paper are as follows:

- (1) We construct a cognitive behavior diagnosis and treatment evaluation system for adolescent social anxiety. Next, we built the correlation prediction model between cognitive behavior therapy and adolescent social anxiety based on a multiobjective evolutionary algorithm. Also, we established the correlation prediction model between accurate cognitive behavior therapy and adolescent social anxiety.
- (2) We made a comparison with other prediction models to evaluate the effectiveness and novelty of our work. The proposed method can effectively alleviate teenagers' social anxiety and improve teenagers' social ability. Our work has much better performance as compared to existing work in terms of complexity and accuracy and is highly effective for alleviation of adolescent social anxiety

The rest of the research paper is organized as follows; Section 2 will explain all the related work linked to this research. Section 3 sheds light on the evaluation system of cognitive behavior diagnosis and treatment of adolescent

social anxiety. Similarly, Section 4 elaborates on the predictive modeling of the relationship between cognitive-behavioral therapy and adolescent social anxiety based on deep learning. In addition, Section 5 explains the analysis of experimental results conducted in this research. Finally, concluding remarks have been described in Section 6.

2. Related Work

With the progress of the times, the emphasis on teenagers' psychological problems has gradually increased. An in-depth study on teenagers' social anxiety has been carried out, and some results have been achieved. It identified the potential categories of alexithymia and the relationship between social anxiety and depression to provide the basis for promoting the positive development of emotion and mental health of college students [10]. The Alexithymia Scale, social anxiety scale, and the self-rating depression scale of the center for flow survey were used to carry out a questionnaire survey. The relevant data were analyzed by profile analysis and logistic regression analysis. Logistic regression analysis showed that, after controlling the demographic variables, college students' good emotional expression and discrimination were negatively correlated with depressive symptoms and social anxiety. Relevant conclusions show that the alexithymia of college students is distributed according to categories. The potential categories are different from social anxiety and depressive symptoms. In the education related to mental health, schools should scientifically formulate specific programs for the cultivation and intervention of college students' emotional regulation ability to promote the positive development of college students' psychology. However, it should be noted that this method has not alleviated college students' social anxiety [11]. Firstly, this paper expounds on the impact of anxiety of mobile social media measures on teenagers' mental health, analyzes the influencing factors, and establishes a model. It enriches the integration of teenagers' behavior theory in psychology and puts forward targeted psychological counseling and related intervention programs for social media users. Using the model framework based on I-PACE theory, this paper analyzes the model elements of adolescent social media users from four dimensions to establish the relationship model of adolescent social media, analyze the interaction-driven relationship between different elements, and determine the path of linkage between factors. The cognitive behavior method is used to specifically intervene in social media and establish a scientific service and management system for teenagers' social media users, but this method has not alleviated the teenagers' social anxiety [12]. It mainly takes teenagers in the context of content-based social media as the research object and conducts an in-depth study on the main factors and the internal correlation mechanism between different factors influencing the formation of content-based teenagers' social media social anxiety.

From the perspective of the generation characteristics provided by content youth social media, taking the theory and calculation of expectation confirmation as the theory and basis, the theoretical research model is established with

the relevant theories of cognitive psychology and information behavior under the framework of social media. The data is obtained by questionnaire survey, and then the model is tested. The experimental results show that teenagers' expectation of confirmation will be positively affected by the content and service quality. In contrast, system quality will have little impact on teenagers' expectation confirmation. Teenagers' willingness to continue to use and perceive popularity will impact their stress perception. However, the intensity is easily restricted by the psychological elasticity of individual quality. Therefore, it does not improve teenagers' social ability [13]. Through group treatment of cognitive behavior, the effect of emotional regulation efficiency of adolescent patients with social anxiety was observed. Firstly, 61 adolescents with social anxiety were divided into CBGT (cognitive-behavioral group therapy) groups by lot for 12 weeks of treatment. There were 32 and 29 cases in the control group without any treatment. The social anxiety scale and emotion regulation self-efficacy scale were used to evaluate the social anxiety and emotion regulation efficacy of adolescent social anxiety patients. The two groups of adolescent social anxiety patients were scored. The results showed that, after 12 weeks of treatment, the score of the social anxiety scale of adolescents in the CBGT group was significantly lower than that before treatment and the self-efficacy of emotion regulation was improved compared with that before treatment. The difference between the control group and the 12th week was not statistically significant. The conclusion shows that CBGT can effectively improve the symptoms of adolescents' social anxiety and improve the self-efficacy of emotion regulation. However, due to the complex process, the treatment cycle is long [14].

3. Evaluation System of Cognitive Behavior Diagnosis and Treatment of Adolescent Social Anxiety

This section sheds light on the overall design of adolescent social anxiety cognitive behavior diagnosis and treatment evaluation system, functional, structural design of cognitive behavior diagnosis and treatment evaluation system for adolescents' social anxiety, and database design. It will help clarify the evaluation system of cognitive behavior diagnosis and treatment of the adolescent. The explanation is as follows.

3.1. Overall Design of Adolescent Social Anxiety Cognitive Behavior Diagnosis and Treatment Evaluation System. The design idea of cognitive behavior diagnosis and treatment evaluation system for adolescent social anxiety is to combine new computer technology with artificial intelligence and medical technology to build a human-computer interaction and intelligent evaluation system. It will realize the scientific and correct evaluation of adolescent social anxiety patients. Figure 1 shows the evaluation system of the B/S (Browser-Server) mode. In Figure 1, the client browser only undertakes less logical operations. Most of the operations in the system functions are realized through the

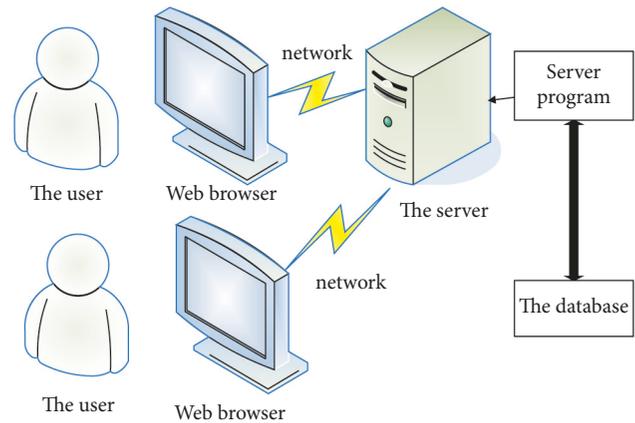


FIGURE 1: Browser/server architecture.

server, thus forming a three-tier structure framework of the client, browser, and server. The evaluation system of this model can effectively reduce the development, maintenance, and upgrade costs of the evaluation system. It simplifies the operation process of the client and effectively improves the system's efficiency [15].

Adolescent social anxiety patients send a request to the web server through the browser. The browser displays the requested data of adolescent users, such as pictures or videos, while receiving the file [16]. After receiving the request, the server sends the request to the database server that stores the data for execution and returns the results from the database server to the system browser in the form of an HTML file [17].

3.2. Function and Structure Design of Cognitive Behavior Diagnosis and Treatment Evaluation System for Adolescents' Social Anxiety. The cognitive behavior diagnosis and treatment evaluation system of juvenile social anxiety includes three modules. They are evaluation, audit, and qualification modules. According to relevant doctors' actual positions and titles, correctly divide the roles of superior doctors and ordinary doctors, and set the operation authority for different roles. The operation authority of superior doctors is higher than ordinary doctors. It has the function of qualification review. Figure 2 shows the functional design of the module of the cognitive behavior diagnosis and evaluation system for adolescents' social anxiety.

The overall functional modules of the system are described in Figure 2.

3.2.1. Youth User Registration and Login. After registration, new users can only enter the cognitive behavior diagnosis and treatment evaluation system. Before dividing the operation authority of new users, they must submit their real information for qualification and authentication, and the superior doctor decides whether they are qualified to enter the evaluation page. It can effectively avoid malicious registration and chaotic management [18].

There are two ways for users to log in: user name login and mobile phone number login. After registration, users

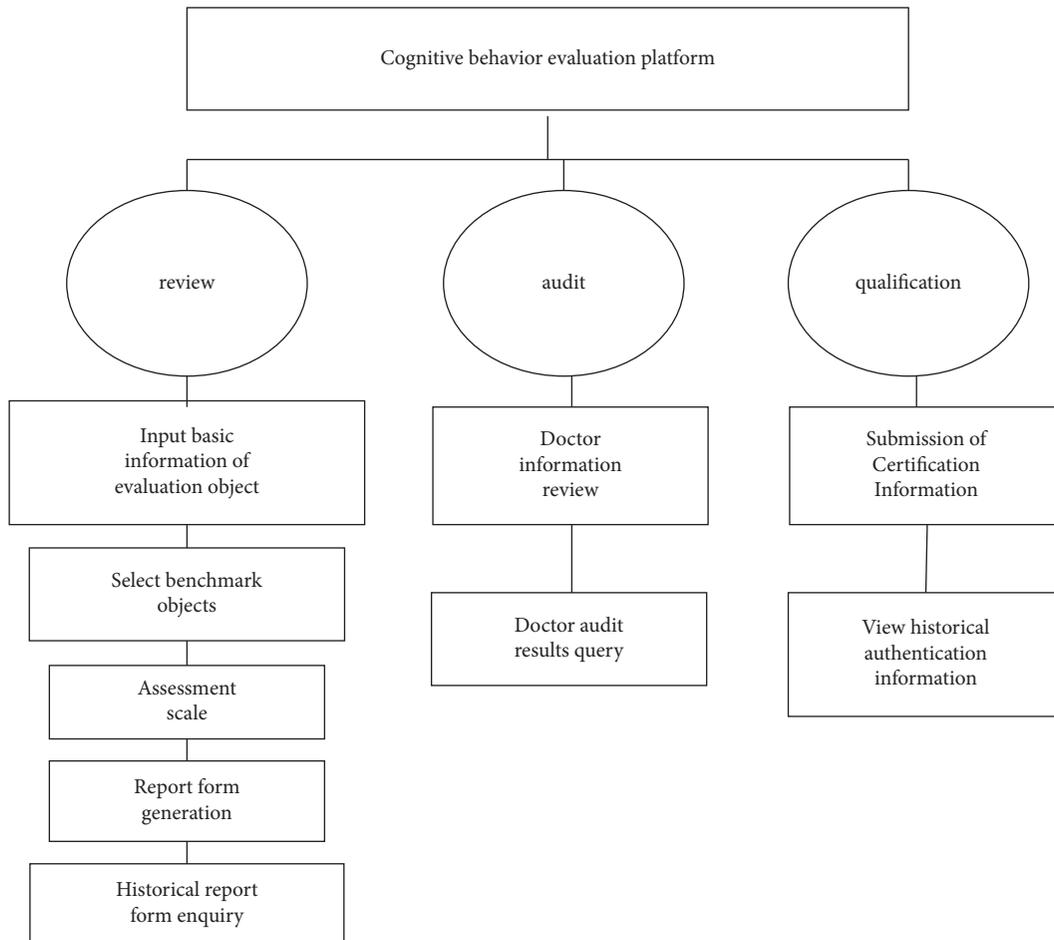


FIGURE 2: Functional design of main modules of the cognitive behavior evaluation platform.

must enter the correct user's name and password on the login page of the cloud platform to enter the diagnosis and treatment evaluation platform. It is convenient for users to log in to the system even if they forget their password [19].

3.2.2. User Evaluation Module. New users can conduct evaluation operations after completing the registration and review. Currently, users (doctors) registered on the evaluation platform can only conduct cognitive function evaluation on the evaluation object (adolescent social anxiety patients) entered into the account. Patient information and evaluation results cannot be shared among evaluation doctors. It can effectively avoid the disclosure of patient information.

3.2.3. User Audit Module. The qualification review function of the cognitive behavior evaluation platform for adolescent social anxiety can provide doctors with the ability to review the qualification information submitted by new users, reject or receive operations, and perform the cognitive behavior evaluation function only after reviewing new users. In addition, the qualification review page can also query and display the review status of subordinate users. After passing the audit, if the new user registers under the professional

title, he/she will obtain the audit qualification. If not, he will be a general evaluation doctor. The superior doctor can choose to refuse or accept the operation.

3.2.4. User Qualification Authentication Module. The qualification certification of adolescent social anxiety cognitive behavior evaluation platform can carry out qualification certification for login users. The newly added users must fill in the certification and submit the certification [20]. They can only use the system evaluation function after being reviewed and confirmed by the superior doctor. If the review fails, the new user can continue to submit the qualification certification and view the user's historical certification information on the page.

3.2.5. Structure of Cognitive Behavior Evaluation System. The use process of the cognitive behavior evaluation platform is shown in Figure 3. It shows the current cognitive behavior evaluation platform for adolescent social anxiety. Doctors are only allowed to register and review the qualification of subordinate doctors or evaluate patients according to their needs. According to web page prompts, the above operations can be realized by logging in to relevant web pages through the browser.

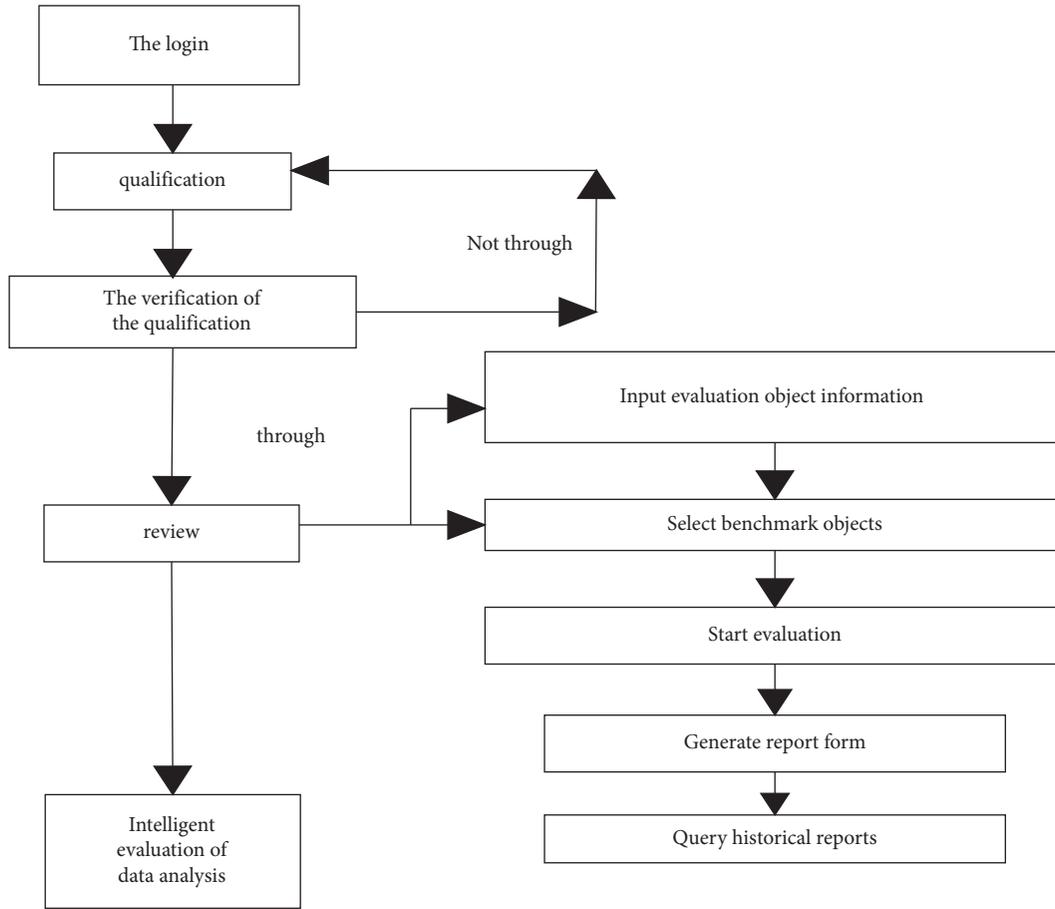


FIGURE 3: Flow chart of using cognitive behavior evaluation cloud platform.

3.3. *Database Design.* The database of adolescent social anxiety cognitive behavior evaluation system mainly refers to the abstraction of the analyzed information after analyzing the users’ needs. It is used to obtain the system information world structure and implement the database. The database in the system contains many relational tables. This paper specifically represents the doctor’s table and patient table.

3.3.1. *Doctor Table.* This table stores the basic information of login users (doctors). It includes the user ID, gender, and audit status. The basic information structure of doctors is represented in Table 1.

3.3.2. *Basic Patient Information.* This table stores all patient information entered by the current login user, including name, outpatient number, and address. The information table of adolescent social anxiety patients is represented in Table 2.

4. Predictive Modeling of the Relationship between Cognitive-Behavioral Therapy and Adolescent Social Anxiety Based on Deep Learning

This section explains the characteristics of vector acquisition of adolescent social anxiety performance weight and the establishment of a correlation prediction model. Based on

TABLE 1: Basic information of doctors of login users.

The data type	Primary key or not	The length of the	Null	The field
Bigint	Is	20	No	Id
Bigint	No	20	Is	The logged in user
Bigint	No	20	Is	Position
Bigint	No	20	Is	The title
Varchar	No	50	Is	The name
Tinyint	No	1	Is	Gender
Int	No	11	Is	Age
Bigint	No	20	Is	Audit doctor ID
Tinyint	No	1	Is	Review the status

deep learning, it will help clarify the predictive modeling of the relationship between cognitive-behavioral therapy and adolescent social anxiety. The explanation is as follows.

4.1. *Vector Acquisition of the Weight of Adolescent Social Anxiety Performance Characteristics.* In the process of predicting and optimizing the correlation between cognitive-behavioral therapy and adolescent social anxiety, the risk and protective factors of adolescent growth are screened

TABLE 2: Basic information of patients.

The data type	Primary key or not	The length of the	Null	The field
Bigint	Is	20	No	Id
Bigint	No	20	Is	The logged in user
Varchar	No	50	Is	The name
Varchar	No	50	Is	Outpatient service no.
Varchar	No	50	Is	In the hospital
Varcher	No	50	Is	ID number
Tinyint	No	1	Is	Gender
Varcher	No	200	Is	Address
Varcher	No	500	Is	Note
Timestamp	Is	0	No	Creation time

from the perspectives of individuals, school, family, and society. The support degree of factor fuzzy itemset is defined. The vector of morphological feature index weight of adolescent social anxiety is calculated. The detailed steps are as follows.

Use (1) to obtain all the factors causing teenagers' social anxiety:

$$D = \frac{[Xy]_{N \times n+1}}{X} \quad (1)$$

In (1), X represents the factors that cause teenagers' social maladjustment, y represents the social events that aggravate teenagers' social maladjustment, N represents the category attributes of different factors, and n represents the function of membership on attributes.

The factors causing adolescents' social anxiety mainly come from social stress, traumatic events, or the accumulation of individual environmental stress [13]. In the process of teenagers' growth, the factors that affect their growth are risk and protective factors. These two factors are two extremes of the same variables. Whether the variable is a certain factor depends on the score of the corresponding variable of the adolescent individual, not the attribute of the variable itself [14]. Therefore, the risk factors and protective factors in the growth process of teenagers are screened out from all factors in formula (1). It is assumed that $(Z_1, Z_2 \dots Z_n)$ represents the different attributes of all factors causing teenagers' social anxiety. Formula (2) is used to calculate the value of Category attribute Z_{n+1} as

$$Z_X = \frac{(Z_{n+1}) \times D_k}{x_k \cdot [Z_1, Z_2 \dots Z_n] \times D} \times A_i Z_{n+1}. \quad (2)$$

In formula (2), x_k represents the samples of different factors causing teenagers' social anxiety, (Z_{n+1}) represents the function of attribute Z membership, D_k represents the fuzzy membership value of attribute k of teenagers' social anxiety factors, and A_i represents the number of attribute k membership functions.

If D_f represents the sample of unknown factors of adolescent growth, r_j represents the fuzzy correlation between adolescent growth factors and family, school, and

society and screens the risk factors and protective factors of adolescent growth according to the calculated Z_{n+1} .

$$Fu = \frac{r_j \times FS(\langle Z: R \rangle) \cup (\langle Y: C \rangle)}{FS \times D_f \times Z_X \times Z_{n+1}}. \quad (3)$$

In formula (3), FS represents the growth factors of teenagers and the fuzzy association rules between people, families, schools, and society. $\langle Z: R \rangle$ represents the growth factors of teenagers and the risk factors of people, families, schools, and society. $\langle Y: C \rangle$ represents the growth factors of teenagers and the protective factors of people, families, schools, and society.

Through formula (4), the fuzzy itemset support of risk factors and protective factors is defined and expressed as

$$\hat{y}_k = \frac{\arg \max(v) \times q^l \times Fu}{FS(\langle Z: R \rangle) \times (\langle Y: C \rangle)}. \quad (4)$$

In formula (4), $\max(v)$ represents the fuzzy frequent item sets of different factors, q represents the analogy setting of samples of different factors, and l represents a new index for evaluating the support of fuzzy item sets of different factors.

Here, S_B represents the manifestation of teenagers' social anxiety, S_A represents the manifestation of being at a loss, and S_Q represents the manifestation of rapid heartbeat. Substitute formula (4) into formula (5) to obtain the vector of characteristic index weight of adolescent social anxiety:

$$vc(r_j) = \frac{\sum v_p \cdot \hat{y}_k \times f_1(S_A) \times (S_B) \times (S_Q)}{f_\Delta \times f_\xi \times f_\phi}. \quad (5)$$

In formula (5), v_p represents the distinction between the characteristic membership functions of the manifestations of adolescents' social anxiety, f_1 represents the number of characteristic variables of the manifestations of adolescents' social anxiety, f_Δ indicates the morphological characteristics of being at a loss, f_ξ indicates the characteristics of the manifestations of heartbeat acceleration, and f_ϕ indicates the manifestations of adolescents' cognitive behavior [17, 18].

4.2. *Establishment of Correlation Prediction Model.* On the basis of obtaining the weight vector of the morphological characteristics of adolescents' social anxiety, a correlation prediction model is established. The specific process is as follows.

$(Z_{ij})_{n \times m}$ represents the weight of different factors of teenagers' social anxiety and $(V)_{n \times m}$ represents the vector ranking the different factors of teenagers' social anxiety. Based on the above acquisition of $vc(r_j)$, the vector optimal value of the weight of the characteristic index of the expression form is defined. It is expressed as

$$X_\gamma = \frac{(Z_{ij})_{n \times m} \times vc(r_j)}{r_1 \times f_{i \times \eta} \times f_m \cdot f_n} \times W_{m1}. \quad (6)$$

In formula (6), W_{m1} represents the incommensurability between different factors, r_1 represents the number of

factors, f_m represents the subjective factors of teenagers' social anxiety, f_n represents the objective factors of teenagers' social anxiety, η represents the deviation of different factors, and $f_{ix\eta}$ represents the proportion of different factors of teenagers' social anxiety and meets the condition of $\eta \leq 0$.

The correlation prediction model between cognitive behavior and adolescent social anxiety is established through

$$vc(RT) = X_\gamma \times W_{m1} \frac{H(Y)}{f_{ix\eta} \times (Z_{ij})_{n \times m}} \cdot \psi. \quad (7)$$

In formula (7), ψ represents the judgment matrix of adolescents' social anxiety. The above process completes the prediction research on the diagnosis and treatment effect of adolescents' social anxiety based on deep learning cognitive-behavioral therapy.

5. Analysis of Experimental Results

In order to verify the effectiveness of cognitive-behavioral therapy based on deep learning in predicting the diagnosis and treatment effect of adolescent social anxiety, simulation experiments were carried out. 100 adolescents with social anxiety were selected for experimental data with an average age of 16 years. The system requirements for experimental data and simulation are shown in Table 3.

Table 4 shows the prediction time comparison between the relevance prediction model of adolescents' social anxiety and the traditional relevance prediction model of cognitive-behavioral therapy based on deep learning proposed in this paper.

The analysis of Table 4 shows that the prediction time of the correlation prediction model proposed in this paper is different from the traditional correlation prediction model. The prediction time of the model proposed in this paper is significantly faster than the traditional method. Figure 4 shows the accuracy comparison between the correlation prediction model and the traditional model proposed in this paper. It shows that the relevance prediction model proposed in this paper can effectively improve teenagers' social anxiety prediction efficiency.

As shown in Figure 4, the accuracy of the traditional prediction model in predicting the diagnosis and treatment effect of adolescent social anxiety is not high since the experiment. With the number of experiments, the overall accuracy has not been significantly improved. The prediction accuracy of the correlation prediction model used in this paper is higher from the beginning of the experiment. The overall accuracy has been very stable with the increasing number of experiments. Figure 5 shows the stability comparison between the proposed correlation prediction model and the traditional model proposed in this paper. It shows that the relevance prediction model proposed in this paper can well predict adolescent social anxiety's diagnosis and treatment effect.

The method proposed in this paper has good overall stability at the beginning and end of the experiment. As shown in Figure 5, when the traditional prediction model

TABLE 3: System requirements.

System requirements	Recommended
The operating system	Windows 10
The processor	Intel(R)Xeon(R)
Run a memory	128 GB
The simulation environment	MATLAB

TABLE 4: Comparison of prediction time of different prediction models.

Methods	Time (s)
Methods followed in this paper	25
From traditional method	57

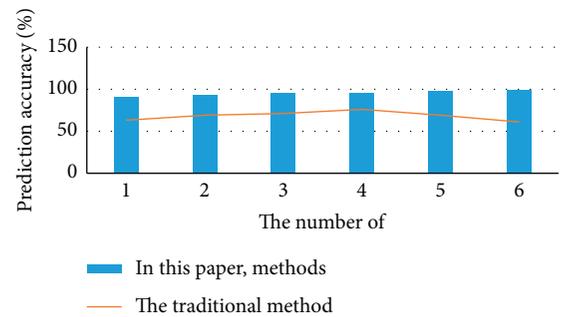


FIGURE 4: Comparison of accuracy of different prediction models.

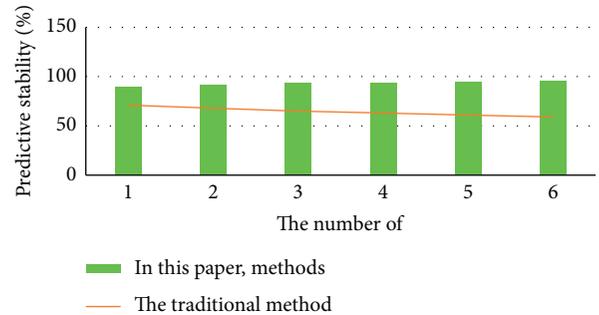


FIGURE 5: Stability comparison of different prediction models.

predicts the diagnosis and treatment effect of adolescent social anxiety, the stability of the model is 71% at the beginning of the experiment. It gradually decreases with the increase in the number of experiments. Figure 6 shows the complex comparison between the proposed correlation prediction model and the traditional model proposed in this paper.

The analysis of Figure 6 shows that the complexity of this model in predicting the correlation between cognitive behavior therapy and adolescent social anxiety is significantly lower than that of the traditional model. It shows that the overall process of this model in predicting the correlation between cognitive behavior therapy and adolescent social anxiety is relatively simple and feasible. Figure 7 shows the correlation prediction model proposed in this paper and the

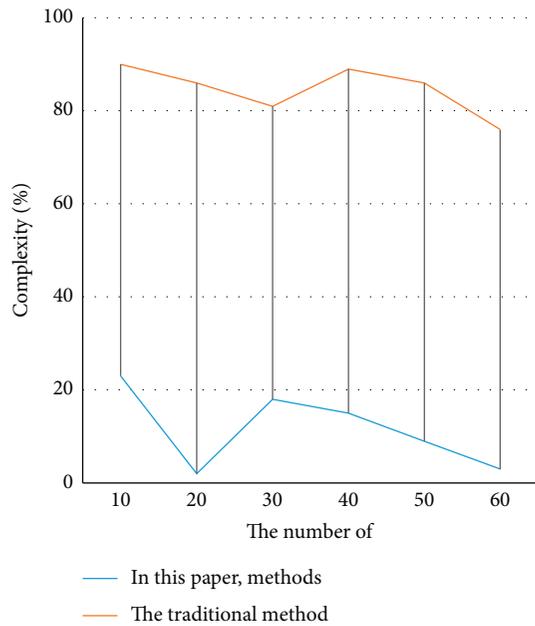


FIGURE 6: Complexity comparison of different prediction models.

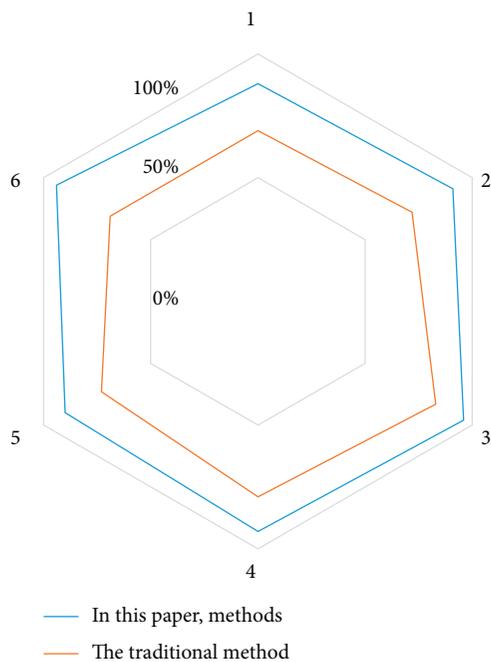


FIGURE 7: Effect of different models for alleviation of adolescent social anxiety.

effect comparison between the traditional model. The traditional model is applied to diagnosing and treating adolescent social anxiety.

Through the analysis of Figure 7, it can be seen that the effect of applying the traditional model to the diagnosis and treatment of adolescent social anxiety is poor. The cognitive behavior therapy based on deep learning proposed in this paper has a good effect on diagnosing and treating adolescent social anxiety. Therefore, because this paper constructs the correlation prediction model between cognitive behavior

therapy and adolescent social anxiety and treats adolescent social anxiety through cognitive behavior therapy, it can effectively alleviate adolescent social anxiety.

6. Conclusion

To effectively alleviate the current social anxiety of adolescents, the effect prediction of cognitive behavior therapy based on deep learning applied to the diagnosis and treatment of adolescent social anxiety was studied. Firstly, the system of adolescent social anxiety is constructed. Secondly, the correlation prediction model between cognitive behavior therapy and adolescent social anxiety based on a multi-objective evolutionary algorithm is constructed. Anxiety disorders appear to be stealthy, with a protracted clinical course, low recovery rates, and high recurrence rates, according to these studies. The existence of particular concomitant mental conditions reduced the chances of recovery and increased the likelihood of recurrence of anxiety disorders. The risk and protective factors in the growth of teenagers are screened from the perspectives of people, family, school, and society. The subjective and objective factors of teenagers' social anxiety are extracted utilizing the grey correlation degree. Similarly, the correlation prediction model between accurate cognitive behavior therapy and teenagers' social anxiety is also established. Compared with other models, the method proposed in this paper can effectively improve teenagers' social ability and is feasible. The findings contribute to our knowledge of the illnesses' nosology and management.

Data Availability

All the data are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest for publication of this paper.

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