

# Whether Existing Psychological Apps at Current Market Have Great Affects to Improve Mental Health or Not

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**Abstract.** Using the data of the 2012 and 2015 national people's mental health influence factors tracking survey, the binary Logistic regression method is used, combined with the theory of social experiment, to explore the existing psychological app on people's mental health improvement or maintenance mechanism. At present, the serious situation of mental health problems of our people has aroused wide attention in the society, strengthening the people's mental health education is the general trend, which provides an opportunity for mental health education, psychological education app in the market has also begun to emerge in large numbers, but the level is uneven. This paper is mainly experimentally verified by consulting relevant research literature at home and abroad and collecting relevant experimental data using MIMIC algorithm and RSPCA mixed ant colony optimization algorithm. The experimental results show that the vast majority of patients with psychological confusion and problems have obtained effective guidance of mental health through consultation with online psychologists in the psychological app, and obtained correct psychological guidance, which promotes the development of self-physical and mental health.

**Keywords:** APP, Mental Health, Market Statistics, Data Processing.

## 1. Introduction

Research shows that in the situation of accelerating social development, people's mental health problems become more frequent and serious, and traditional psychological counseling is an important part of guiding people's mental health development [1]. However, at this stage, due to our country's overall low degree of attention to mental health problems, resulting in its practical application effect is very little. In order to effectively and quickly solve the prominent mental health problems of the people at this stage, we must objectively realize the role and value of the existing psychological app on the market in improving mental health in this process, and then actively take relevant measures for professional development [2-3].

According to the current application and development of mobile applications, it has been widely used, and it has become an indispensable configuration for people, such as transportation, learning, consumption and entertainment [4]. On the one hand, this brings great convenience to people's study and life, on the other hand, it also brings a lot of challenges. In mobile application applications, a variety of products and advertisements are flying by. These information advertisements are easy to attract people's attention, and there are some illegal behaviors as the correct value guide [5-6]. For example, the incidence of over consumption and mobile applications are also starting campus loan services, which makes people develop a sense of vanity. In addition, there are many well-known brands of mobile applications, cosmetics, clothing, luxury and other information advertising push, leading to people began to compare with each other. Some people with strong vanity know that their economic situation is limited and still want to guide consumption psychologically, which will lead to a series of serious consequences [7-8].

In order to maintain a correct assessment of market trends through statistical analysis, modern statistical tools can be used in marketing business. In the wide application of modern letters in information technology, computers can make statistical tools intelligent and automatic [9]. Enterprises can use this software to analyze market information. SAS and SPSS statistical software can classify and summarize the customer information and product information in the market, and analyze and store the data. So as to provide complete and accurate market information for enterprises [10].

## 2. The algorithm is established

### 2.1 Mixed ant colony algorithm based on MIMIC algorithm and RSPCA

In the existing ant colony optimization algorithm, the solution of random search with strong interference makes the correlation between the solution variables too low sample solution efficiency is too low, redundancy is too high, seriously limiting the ant colony algorithm. Therefore, in the selection process of sampling scheme must overcome the correlation problem based on the above considerations, this paper first analyzes the phase between decision variables to give the solution components between the effective correlation and redundancy phase correlation definition

#### 2.1.1 Correlation between solution components

According to the literature, two decision variables and  $x_i$  are referred  $x_j$  to as related, if  $\exists x = (x_1, x_2, \dots, x_n)$  if  $x_i'$  the following  $x_j'$  conditions are met: :

$$f(x_1, \dots, x_i, \dots, x_j, \dots, x_n) < f(x_1, \dots, x_i', \dots, x_j, \dots, x_n) \Delta f(x_1, \dots, x_i, \dots, x_j', \dots, x_n) > f(x_1, \dots, x_i', \dots, x_j', \dots, x_n) \quad (1)$$

#### 2.1.2 Effective correlation between solution components

Set  $X$  as the current solution, for sample  $i$ , sampling the first part of the sample  $i$  calculator, represents a more optimized comparative calculator, that is, as long as there is a  $>_{opt}$  feasible solution, satisfied (1), then the solution part and the solution part about the target function  $f$  there is a correlation, however, the method (2) only depicts the existence of correlation between variables, does not indicate the optimization process has an effective role in promoting the part of the correlation, so define a valid correlation as follows:

$$\begin{aligned} \exists x = (x_1, x_2, \dots, x_n), x_i' = \\ \text{sample}_i(X), x_j' f(x_1, \dots, x_i', \dots, x_j', \dots, x_n) >_{opt} f(x_1, \dots, x_i, \dots, x_j', \dots, x_n) \nabla \exists x = \\ (x_1, x_2, \dots, x_n), x_i', x_j' = \text{sample}_i(X) x_j' f(x_1, \dots, x_i', \dots, x_j', \dots, x_n) >_{opt} f(x_1, \dots, x_i', \dots, x_j, \dots, x_n) \end{aligned} \quad (2)$$

where  $\nabla$  represents logical symbol "or".

#### 2.1.3 RPCA model

If the dimensionality of the search prime space is too large, it will seriously affect the ant colony calculation method. The performance of this method requires a technique to reduce the redundant correlation between solution components, and the most common technique used by continuous domain ant colony optimization algorithm and simulation algorithm to sample candidate solutions according to Gaussian density functions is the main component analysis (PCA) technique.

$$\min \|B\|_* + \vartheta \|E\|_1, S' = B + E, \quad (3)$$

Where  $\|\cdot\|_1$  is the number of models of  $\partial_1$  the matrix,  $\|\cdot\|_*$  the number of paradigms of the matrix,  $B$  is the structural matrix that needs to be  $\vartheta = \frac{1}{\sqrt{\max(m,n)}}$  restored, and  $E$  is the unknown noise matrix, which  $S'$  is the new matrix containing noise.

## 3. Experiment

### 3.1 Modeling of the existing psychological app effect rating on the market

Because the variable "improvement or maintenance of mental health problems" belongs to the second classification variable, the binary Logistic regression method is used to estimate, and the binary Logistic regression can judge the influence of multiple arguments on the cause variable at the same time.

Build a Logistic regression model:

$$P = \frac{e^{\beta_0 + \beta_1 x_1 + \dots + \beta_m x_m}}{1 + e^{\beta_0 + \beta_1 x_1 + \dots + \beta_m x_m}} \quad (4)$$

Or:

$$P = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_1 + \dots + \beta_m x_m)}} \quad (5)$$

Among them, P is the probability of the factor variable Y-1, beta 0 is the constant, beta 1, beta 2, beta m is the regression coefficient, indicating the contribution of each factor xi to P. If, Q is 1-P, then

$$Q = \frac{1}{1 + e^{\beta_0 + \beta_1 x_1 + \dots + \beta_m x_m}} \quad (6)$$

So

$$\ln\left(\frac{P}{Q}\right) = \beta_0 + \beta_1 x_1 + \dots + \beta_m x_m \quad (7)$$

Among them, it represents the number of pairs of the advantage ratio of the variable indicator, and the amount of the pair change of the advantage ratio  $\ln\left(\frac{P}{Q}\right) \beta_i x_i$  caused by each change in the factor for a unit of measurement. Therefore, this article sets the binary Logistic regression model:

$$Y = \beta_0 + \beta_i X_i + \gamma_j X_j + \varepsilon \quad (8)$$

Among them, seven variables, such as the variable "improvement  $\varepsilon$ ,  $\beta_0$  or maintenance of mental health problems", indicate the arguments, including "community psychological service level", "providing daily care needs", "on-the-house psychological counseling services", "spiritual comfort services", "organizing social and recreational activities", "providing relevant mental health knowledge", "dealing  $\beta_i$  or  $\gamma_j$ , with extreme mental illness";

### 3.2 Survey data extraction

The sample is composed of 48 young men aged 14-28 years old from middle school to university and 72 young women aged 14-28 years old with general psychological problems as the survey objects, and conducted a questionnaire survey on them. And in this part of the population, the average age of male is 19 years old, the maximum is 27 years old, the minimum is 14 years old, the average standard deviation is 3.21; the average age of female is 21 years old; the maximum is 24 years old; the minimum is 14 years old; the average standard deviation is 2.33. Two sets of questionnaires were used in this survey. The first one is about the method of using traditional psychological counseling to solve psychological problems, and the second one is about the method of using new psychological app which can improve psychological health in the market. For these 120 patients, the questionnaire is mainly divided into three parts, namely, the views on accepting and using psychological app to improve mental health problems, and the views on whether the psychological app on the market can effectively improve mental health. Finally, the experimental results conform to expectation. See the investigation report below.

### 3.3 Draw other patients with psychological confusion and problems who choose to praise the psychological app and usually do traditional psychological counseling

Because of the diversity of actual experiments, we not only randomized the survey from the society, but also used the sample survey to obtain a more comprehensive and objective evaluation between patients who were less accepting of psychological apps online but provided their views.

## 4. Experiments and results

### 4.1 The results of the questionnaire are displayed

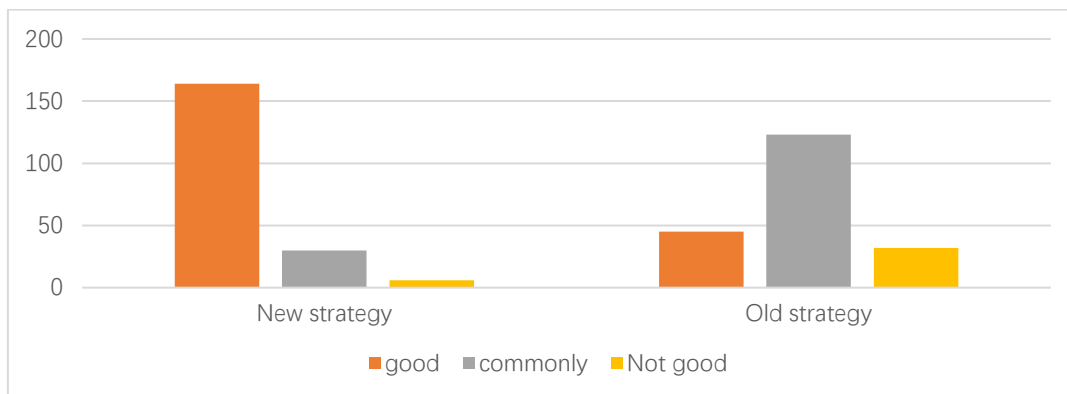
According to the analysis, the above-mentioned questionnaire results show that such as Table 1, Figure 1. Comparing the results of Table 1 with Figure 1, it is not difficult to find that people are

more inclined to choose the current new psychological app on the market to improve their psychological confusion and problems.

**Table 1.** on the community's assessment of old and new methods

Evaluation attitude Number of copies/parts	The new method	The old method	Total number of copies/servings
Good.	164	45	209
So so.	30	123	153
Not good.	6	32	38
Total number of copies/servings	200	200	400

From the data in Table 1, it is not difficult to observe the intuitive data to find that the community's welcome of the new psychological app to improve mental health methods, we can see that about 70% of the people expressed praise for the new method, compared with the previous results made the respondents more pleased, and this part of the data mainly from the previous change in attitude, indicating that the new psychological app is more popular with patients.

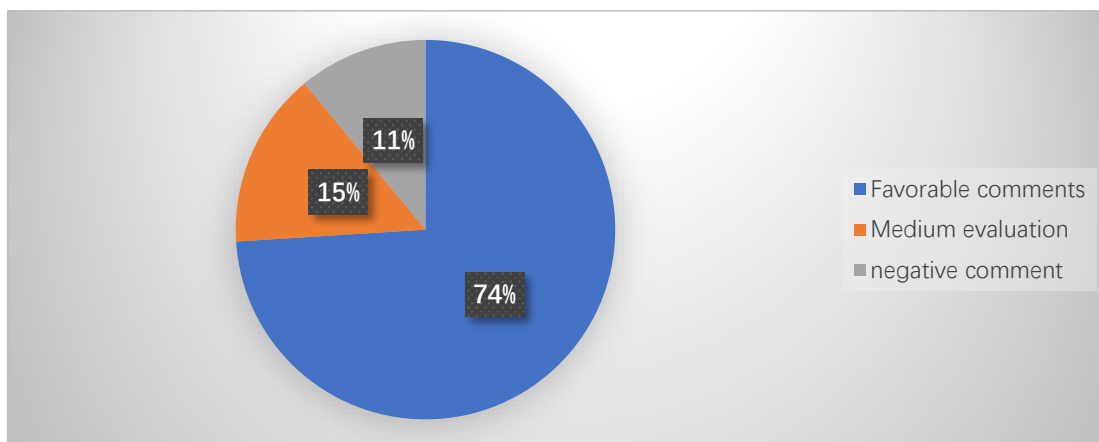


**Figure 1.** on the community's assessment of old and new methods

Figure 1 is a column chart based on Table 1, which shows the community's evaluation of old and new methods more intuitively, highlighting the advantages of new ways to improve mental health.

Through this survey, we mainly selected some of the patients who participated in the questionnaire to make further survey detailed attitudes to evaluate, in order to find better ways and ways out. But the experiment was too one-sided, so we tried to get some ideas from the bystanders, and the results were shown below.

**4.2 Other patients with psychological confusion and problems who choose to praise the psychological app and usually do traditional psychological counseling**



**Figure 2.** Other patients with psychological confusion and problems who choose to praise the psychological app and who usually do traditional psychological counseling

According to the results of the Questionnaire 2, most of the social people with mental health confusion and problems expressed obvious support and praise after using the new psychological app on the market, and said that the new method of improving mental health will be introduced to the people around them, indicating that the current market app to improve mental health is not well known in contemporary society, so we should further promote the use of this new psychological app, with patients with minor mental health confusion and problems in society as the main people, vigorously promote the technical method.

### **4.3 Promotional sales based on mobile apps**

The number of users that we register and pay for will expand through their downloads. At present, the profit model of most mobile online music applications depends on user payment and advertising revenue. First of all, users need to know and choose to download and use it further. For example, the "national campus singer competition" will let college students understand this mobile music software, then recommend its advantages and a series of music services, and then download and register an account. During the trial period, if the user's personalized design and other service features that are satisfied with new users will be developed, and the software will go further when users pay.

### **4.4 Questions about mental health**

In academia, there are different criteria for age classification of adolescents due to the understanding of the concept of youth. Among them, the use of psychology according to the characteristics of physical and mental development, the youth sector is generally divided into two groups of them between the ages of 14 and 18. Through literature, the study found that adolescent physical and mental development in the semi-mature state of children, psychological development is transitional, closed and social social and turbulent, depression, phobia, anxiety disorder, obsessive compulsive disorder, Internet characteristics of common mental health problems, such as incidental addiction. Young people will face from the family, learning school and social environment pressure will lead to different parents in the family different ideas lack of communication, respect for privacy, peer relations in school and other issues in the face of a well-developed network environment, young people are more likely to face academic pressure and exam anxiety problems by the temptation and guidance of bad information.

### **4.5 Key to market statistics**

Market Supervision Authority by the former industry and commerce, quality supervision, Food and Drug Administration, intellectual property rights, prices and other "six bureaus in one" of the overall situation, many functions, heavy responsibilities, day-to-day work is extremely complex and arduous. I think in this case, as a market supervision and management department should attach great importance to the statistical basis of work, seriously and solidly. We should fully understand the importance and urgency of doing a good job in market supervision and management and statistics. On-site supervision, management and statistical work of the statistical work has been ranked first, really formed the responsibility of making the local people responsible.

### **4.6 Comparative analysis of data processing**

Big data contains amounts of data that no one can do in a short period of time, and the importance of using conventional means to accurately capture and manage data applications is reflected in the fact that we need to extract and mine the potential value of big data from scratch for a long time, creating decision-making information assets, reapplying real-world scenarios, and creating new values. The characteristics of the data source determine the implementation of the data acquisition function in this paper. On the one hand, various documents unstructured data, such as files, files and so on, on the other hand, carried out the corresponding analysis component analysis, metadata extraction, file extraction structured data storage.

## 5. Conclusions and Limitations

The above is the author in the study to explore the current market whether the new psychological app can effectively improve mental health problems in the process, in-depth thinking about the current people's mental health confusion and serious situation of the current situation, and from the perspective of data collection and comparison of the feasibility of the new psychological app exploration and summary. Based on the above discussion, the author thinks that: Although the psychological app we do can provide some counseling for general psychological problems after testing, it is not as good as professional psychological counseling. We can only provide some reference and suggestions, but the real serious problem is to go to the hospital to find a special psychological counselor and get a reasonable solution. Moreover, because the general data samples we collected are Chinese, because of the differences in living habits and traditional values, it is not sure that the app can make appropriate judgments for people of other countries or races. So, in the future, if we have the opportunity, we will choose to interview some people from different countries and races, so as to make a multi-media interview for people of different races A systematic psychological app.

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