Logistic Regression Analysis of Social Environmental Factors and Smoking Behavior of College Students

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Abstract. Teenagers are the people who should be paid more attention to in smoking control work, among which college students are a special group. It is of great theoretical and practical significance to study the smoking behavior and its influence factors of college students. This study constructed an index system of social environmental factors from four dimensions of family environment, peer environment, campus environment and off-campus environment, and applied binary logistic regression to explore the main social environmental factors affecting college students' smoking behavior in the index system. The study tested the fitting and optimization effect of the regression model, and drew several conclusions through data analysis: social environmental factors are closely related to college students' smoking behavior; family environment, peer environment, campus environment and off-campus environment all contain factors that have weak significant impact on college students' smoking behavior; six indexes of social environmental factors have a significant impact on college students' smoking behavior, among which the no smoking sign in universities is the key index affecting college students' smoking behavior; college students' rebellious psychology should be fully considered in smoking control actions, and the indexes of social environmental factors should be reconsidered based on this. The relevant conclusions provide a theoretical basis for the formulation of smoking control policies in universities, and further improve the pertinence and effectiveness of campus smoking control measures, which has guiding significance for the practice of smoking control for college students.

Keywords: Social environment, College students, Smoking behavior, Influence factors, Logistic regression

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1. Introduction

China is the world's largest producer and consumer of tobacco and the largest victim of tobacco. More than one million people die from tobacco related diseases nationwide every year.

WHO (World Health Organization) once pointed out that "the most cost-effective way of all health interventions is to control tobacco, and the most effective way of all public health interventions is to control tobacco on campus". Relevant research results show that youth is the main period of smoking behavior formation. Teenagers are undoubtedly the population that needs to be paid close attention to in smoking control work. As an important part of teenagers, college students are a special group. They are in a critical period of life development, as well as a key period of the formation of world outlook, outlook on life and values. They are in the special period of minors and early adulthood, which is also an important stage of developing living habits. After breaking away from the shackles of "exam-oriented education" and the discipline of their parents for many years, they advocate personality and freedom and reject all constraints. Therefore, they are vulnerable to the negative atmosphere of society and bad habits. It is of great theoretical and practical significance to study the smoking behavior and its influence factors of college students.

Relevant research has been supported by a variety of mature theories, including social learning theory, cognitive development theory, problem behavior theory and social identity theory. Guided by one or more theories, many scholars have explored the content, function and mechanism of the influence factors of smoking behavior of a specific group from multiple perspectives. From the current research results, the influence factors mainly include: physiological factors (such as gender and age), psychological factors (such as personality characteristics, self-esteem, stress, negative life events), social environment (such as family factors, peer factors and other social factors), etc. It is undeniable that the relevant research results provide a valuable theoretical basis for the prevention and intervention of smoking behavior of college students. However, it is not difficult to find from the existing literature that the research in this area needs to be enriched. First of all, there are many scholars who pay attention to the smoking behavior of teenagers, but there are relatively few studies on the smoking behavior of college students. Although college students belong to the youth group, they also have their own particularity. There are great differences between the university campus environment and the middle school campus. Therefore, it is of great practical significance to study the influence factors of college students' smoking behavior. Secondly, the samples are mostly limited to a university or a city in the existing relevant research, and the research samples are lack of representativeness. In addition, the coverage of research objects is also narrow, and the relevant research of medical college students is significantly more than that of non-medical college students. In fact, there will be significant differences in smoking behavior among college students in different regions and majors. Therefore, the research in the field of campus smoking control should comprehensively control the smoking status of college students, explore the main factors affecting college students' smoking behavior, and provide theoretical guidance for targeted campus smoking control.

Therefore, relevant research results at home and abroad in recent years are summarized. Focusing on social environmental factors, logistic regression analysis is used to explore the main

factors influencing college students' smoking behavior to provide theoretical basis for the formulation of smoking control policies in universities, and further improve the pertinence and effectiveness of campus smoking control measures.

2. Literature Review and Index System Construction

2.1 Family Environment

Smoking control experts and scholars have long taken family factors as an important observation point to predict students' tobacco use. The main points of relevant research can be summarized as "three close correlations", including: family structure is closely related to students' smoking behavior; parental behavior is closely related to students' smoking behavior; parenting style is closely related to students' smoking behavior. First, family structure is closely related to students' smoking behavior. Griesbach, Amos and Currie conducted a comparative study of teenagers in seven European countries. The study found that teenagers in remarried families had the most common smoking behavior, while teenagers living with their biological parents had the least. Deleire and Kalil's explored the relationship between family structure and smoking behavior from the perspective of comprehensive index evaluation. The study found that students in Grade 12 living in single parent families, remarried families and cohabiting families were more likely to have smoking behavior than students in Grade 12 living in original families. Second, parents' attitude and behavior towards tobacco are closely related to teenagers' dangerous behavior. For example, Tyas and Pederson found that students with smoking atmosphere in their families were more likely to smoke than their peers. Avenevoli and Merikangas found that parents who opposed smoking and non-smoking parents greatly reduced the probability of teenagers using tobacco. Third, parenting style is significantly related to smoking behavior of students. Academic circles have always regarded parenting style as two aspects: parental support and parental monitoring. Several scholars have found that high-level family support and moderate-level discipline control significantly reduce the possibility of smoking behavior. Chassin et al. found that parents' low support and low control were more likely to make teenagers have smoking behavior and smoke more frequently. In addition, family economic conditions, as one of the factors causing teenagers' smoking behavior, have also attracted the attention of some scholars.

2.2 Peer Environment

Many experimental studies show that peer environment is an important factor affecting college students' smoking behavior. Social learning theory holds that individuals will imitate important role models by observing them. Friends and peers undoubtedly set an example model for college students, and college students are likely to smoke by imitating their peers. The empirical results of many scholars have further verified this conclusion. The research results of Conrad et al. show that the establishment of students' behavior patterns is largely influenced by their best friends. Harakeh, Engels and Lichtenstein found that imitating peer smoking is an important mechanism for college students to continue smoking. The research results of

Pederson et al. show that the number of smoking friends and their attitude towards smoking are the main influence factors of college students' smoking. Fang Xiaoyi et al. also confirmed that peer smoking behavior and peer smoking attitude can affect students' smoking behavior. In addition, peer social support is generally considered to be a positive factor in personal life, which plays a significant role in hindering stress events, bad behaviors and diseases. However, when analyzing the relationship between peer social support and students' smoking behavior, scholars found that there was a positive correlation between them. The more social support, the more likely students were to have smoking behavior, which was related to the status of smoking friends.

2.3 Campus Environment

University campus has always been known as "small society", which has the characteristics of large scope of students' communication, high degree of freedom of activities, strong students' autonomy and so on. Studies have shown that college is the stage with the highest incidence of initial smoking among young students, and it increases with the increase of grade. According to the external influence theory, college students' smoking is mainly affected by peers' smoking behavior and sharing of cigarettes. Graham, Marks and Hansen found that college students were easily influenced by their smoking peers and thus had smoking behaviors. They will smoke because they come into contact with their peers who smoke, or mistakenly think that smoking is a behavior related to social norms, or mistakenly take smoking as a path to increase social acceptance. Since the SMART plan was put forward by the Institute for Health Promotion & Disease Prevention Research of the University of Southern California, more and more countries and regions have paid attention to preventing teenagers from smoking. China's Ministry of Health started the activity of "smoke-free campus" in 1993, and universities have also adopted various tobacco control actions with their own characteristics, such as setting up smoking control health education courses, smoking behavior group intervention, using social psychology model to improve students' awareness of smoking control, and so on. In the construction of smoke-free campus, universities formulate action plans, formulate and improve rules and regulations, strengthen publicity, broaden communication channels, enhance the awareness of smoking control responsibility of leaders at all levels, smoking control in public places and other measures to continuously improve the ability of smoking control advocacy action. As for measurement tools, Xing Rui et al. developed a quantitative evaluation of smoke-free campus standards including nine main contents.

2.4 Off-Campus Environment

Openness and inclusiveness is the proper meaning of the university spirit. The university campus is located in a city. The environmental factors of the city are bound to have an impact on the smoking behavior of college students. Ji Chengye et al. found that there were regional differences in teenagers' smoking behavior, showing that the west was more than the middle, and the middle was more than the east. Liu Zheng et al conducted a survey of ten universities in Beijing. The results showed that the smoking volume of students from Beijing was higher than

that of students from other places. Therefore, the strength of tobacco control and the overall environment in the city where the university is located are the factors that can't be ignored.

Based on the above research results and following the views of most scholars, the social environment structure is divided into four aspects: family environment, peer environment, campus environment and off campus environment. Combined with the characteristics of college students, an index system of social environmental factors composed of 8 analysis dimensions and 20 observation indicators is constructed, as shown in Table 1.

Table 1 Index system of social environmental factors

Social environment structure	Analysis dimension	Observation indexes	Index code
Family environment	Parental smoking behavior	Whether the father smokes	X1
		Whether the mother smokes	X2
	Family attribute and structure	Home location	X3
		Family economic status	X4
		Family structure	X5
	Family parenting mode	Severity of parental discipline	X6
		Emotional warmth of family	X7
Peer environment	Peer example model	Peer smoking behavior (5 best friends)	X8
		Peer smoking attitude	X9
	Peer social support	Does your partner have persuasive behavior	X10
		Social support from peers	X11
Campus environment	Smoking atmosphere	Does your roommate smoke	X12
		whether someone smokes in the classroom	X13
		whether someone smokes in public places on campus	X14
	Smoking control intervention and strength	Effectiveness of school smoking control publicity	X15
		Coverage of "no smoking" signs in universities	X16
		Do stores in universities sell tobacco related products	X17
Off-campus environment	Urban tobacco control strength	Effectiveness of smoking control in public places in the city	X18
		Number of tobacco advertisements in the city	X19
		Effectiveness of outdoor smoking control in the city	X20

3. Modeling and Empirical Analysis

3.1 Logistic Regression

Logistic regression is a kind of generalized linear regression. Generally, logistic regression model is established for two purposes: the first is to mine the information hidden in the data to explain the dependence between independent variables and dependent variables; the second is to predict the probability of occurrence or non-occurrence of certain events. The logistic regression model can be expressed as:

$$P = \frac{\exp\left(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_m X_m\right)}{1 + \exp\left(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_m X_m\right)}$$

Where, β_0 is a constant term, $\beta_1, \beta_2, \ldots, \beta_m$ are partial regression coefficients.

The logistic regression model can be expressed in the following linear form:

$$Logit(p) = \beta_0 + \beta_1 X_1 + \ldots + \beta_m X_m$$

3.2 Logistic Regression Modeling

Smoking behavior is a complex psychological and social behavior. Referring to the standardized recommendations of WHO on the survey method of smoking among minors, smoking is defined as four levels: smoking every day (more than one cigarette a day), smoking every week (1-6 cigarettes a week), occasional smoking (less than one cigarette a week), and no smoking (never smoking or quitting smoking). The dependent variable of this study is a binary classification variable, so the binary logistic regression model is used to explore the dependence between social environmental factors and college students' smoking behavior. This study took 20 indexes of social environmental factors (as shown in Table 1) as independent variables, of which X1, X2 and X8 were binary classification variables and the rest were multi-classification variables. "Whether college students smoke" was set as y, including the above four situations. y=1 indicates no smoking (the fourth) and y=0 indicates smoking (the first three). The independent and dependent variables were imported into SPSS25.0 statistical software for binary logistic regression analysis to understand the relevant factors that significantly affect the smoking behavior of college students.

3.3 Data Source and Reliability and Validity Test

According to the above index system (Table 1), this study compiled a questionnaire on "Social Environmental Factors and Smoking Behavior of College Students". These questionnaires were distributed to college students, and a total of 1240 valid questionnaires were collected. To make the research sample more representative and the coverage of research objects as balanced as possible, 310 samples from 21 provinces, autonomous regions and municipalities directly under the central government were selected in this study, including college students in Beijing, Shanghai, Chongqing, Heilongjiang, Hebei, Henan, Shandong, Gansu, Shanxi, Xinjiang, Sichuan, Guizhou, Yunnan, Hunan, Hubei, Jiangxi, Anhui, Guangxi, Guangdong, Jiangsu and Zhejiang. The majors include 44.8% in science and engineering, 23.2% in liberal arts, 12.5% in

art and 19.3% in others. When testing the reliability and validity of the questionnaire data, KMO is 0.793 and Cronbach coefficient is 0.594. Generally speaking, the questionnaire data has passed the reliability and validity test and is suitable for subsequent data analysis.

3.4 Result Analysis

3.4.1 Model Test

Insignificant relevant variables were eliminated based on the forward stepwise regression method of maximum likelihood estimation. After 8 iterations and fitting optimization, the logistic regression model of smoking behavior of college students finally obtained the significance test results of the model (see Table 2). As can be seen from the table, the degree of freedom "df" of the regression model is 8, and the significance Sig is 0.89, which is greater than 0.05, indicating that there is no significant difference between the fitted value of the model and the actual value, so the fitting effect is good and has certain statistical significance. In addition, the regression model Cox & Snell R^2 and Nagelkerke R^2 are 0.461 and 0.719 respectively, which are acceptable. This study focuses on the analysis of influence factors, so they have little impact. The prediction accuracy before the regression model is 79%, and the prediction accuracy using the regression model is 90.6%. The optimization effect of judgment rate is good.

Table 2 Model checking table

	Hosmer and Lemeshow Test			Model Summary		
Step	Chi-square	df	Sig.	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	0	0	0	234.305[a]	0.238	0.37
2	1.68	2	0.432	200.333[a]	0.317	0.493
3	4.162	3	0.244	180.991[b]	0.358	0.558
4	9.62	7	0.211	166.789[b]	0.387	0.603
5	5.301	8	0.725	154.530[c]	0.411	0.64
6	7.524	8	0.481	141.098[c]	0.436	0.678
7	3.679	8	0.885	130.485[c]	0.455	0.708
8	3.618	8	0.89	126.540[c]	0.461	0.719

3.4.2 Result analysis

The independent variables are introduced step by step based on the forward stepwise regression method of maximum likelihood estimation provided by SPSS. Through the probability test of the statistics of maximum likelihood estimation, the variables with insignificant influence are eliminated. Finally, it is found that six indexes: X3, X7, X8, X9, X16 and X17 enter the regression equation, as shown in Table 3. It should be noted that when SPSS performs logistic regression, 0 (the first classification) is used as the reference group for grouping and comparison by default. Therefore, it is necessary to analyze other different

situations corresponding to the reference group.

Table 3 Parameters of logistic regression model

Variables in the Equation						
	B	S.E.	Wald	df	Sig.	Exp(B)
X3			14.105	2	0.001	
X3(1)	-2.312	0.717	10.381	1	0.001	0.099
X3(2)	-0.522	0.733	0.507	1	0.476	0.594
X7			10.952	3	0.012	
X7(1)	0.560	1.827	0.094	1	0.759	1.751
X7(2)	-2.399	0.783	9.399	1	0.002	0.091
X7(3)	-0.141	0.575	0.060	1	0.806	0.868
X8-1(1)	-1.208	0.605	3.986	1	0.046	0.299
X8-2(1)	-1.616	0.639	6.385	1	0.012	0.199
X8-4(1)	-2.421	0.611	15.693	1	0.000	0.089
X9			17.818	3	0.000	
X9(1)	-3.155	1.701	3.442	1	0.064	0.043
X9(2)	-3.098	0.837	13.707	1	0.000	0.045
X9(3)	-0.899	0.705	1.626	1	0.202	0.407
X16			11.487	3	0.009	
X16(1)	1.569	1.033	2.310	1	0.129	4.804
X16(2)	2.427	0.751	10.453	1	0.001	11.327
X16(3)	0.679	0.613	1.225	1	0.268	1.971
X17			9.444	2	0.009	
X17(1)	-1.862	0.848	4.825	1	0.028	0.155
X17(2)	-2.102	0.686	9.398	1	0.002	0.122
Constant	6.057	1.089	30.947	1	0.000	427.019

From B values and significance Sig in the table, two sets of B values in X3 are negative, Sig=0.001<0.05, indicating that "home location" has a significant negative effect on college students' smoking behavior. It is worth noting that relative to the reference group X3 ("city") of 0, the B values of X3(1) ("rural areas") and X3(2) ("township") are -2.312 and -0.522 respectively, which means that the negative effect of home in rural areas is larger and that of home in township is smaller. Compared with college students from urban families, they are more likely to have smoking behavior.

For the independent variable X7 in the parameter table, Sig=0.012<0.05, indicating that "emotional warmth of family" has a significant effect on college students' smoking behavior. From several groups of data, relative to the reference group X7 ("college students never get emotional help and support when needed") of 0, the B value of X7(1) ("college students may not get emotional help and support when needed") is 0.560, and Exp(B) is 1.751, greater than 1. The B values of X7(2) ("college students can get emotional help and support most of the time when needed") and X7(3) ("college students can certainly get emotional help and support when

needed") are -2.399 and -0.141 respectively, which are negative values. It can be concluded that family upbringing with occasional emotional warmth has a positive effect on college students' smoking behavior, that is, they are less likely to use tobacco products. It is worth noting that a certain increase in the value of the independent variable will lead to the doubling of the dependent variable. For example, relative to X7, X7(1) increases by 0.560 units on average, while college students show a 1.751 times greater advantage in staying away from tobacco than X7. However, the other two cases show directional changes: when the degree of giving emotional warmth reaches "most cases", the negative effect is greater; when the degree of giving emotional warmth reaches "all cases", it also shows negative effect, but the force decreases significantly.

For the independent variable X8 "peer smoking behavior (five best friends)" in the parameter table, three groups of data enter the regression equation. X8-1 (1), X8-2 (1) and X8-4 (1) respectively indicate that the three friends do not smoke. Sig values are 0.046, 0.012 and 0.000 respectively, which are less than 0.05, and B values are -1.208, -1.616 and -2.421 respectively, which are negative, showing that the "peers don't smoke" index has a significant negative effect on college students' smoking behavior, and no smoking of good friends is easy to cause college students' smoking behavior.

For the independent variable X9 in the parameter table, Sig = 0.000<0.05, showing that the "peer smoking attitude" index has a significant effect on college students' smoking behavior. Relative to the reference group X9 ("all in favor of smoking") of 0, B values of X9 (1) ("majority approval"), X9 (2) ("majority disapproval") and X9 (3) ("disapproval") are -3.155, -3.098 and -0.899 respectively, which are negative. Therefore, "peer smoking attitude" has a significant negative effect on college students' smoking behavior. It is noteworthy that, compared with the case of "disapproval", the B values of "majority approval" and "majority disapproval" show a cliff like decline, and the difference between the values is small. This means that although "disapproval" has a negative impact on college students' smoking behavior, the force is small. When some peers approve of smoking, the negative force will be significantly increased no matter how many or less people approve of smoking.

For the independent variable X16 in the parameter table, Sig =0.009<0.05. Relative to the reference group X16 ("rare to see") of 0, the B values of X16 (1) ("general"), X16 (2) ("more") and X16 (3) ("everywhere") are 1.569, 2.427 and 0.679 respectively, which are positive, and the Exp(B) are 4.804, 11.327 and 1.971 respectively, which are greater than 1, indicating that the index "coverage of 'no smoking' signs in universities" has a significant positive effect on college students' smoking behavior. When the sign coverage reaches the "more" level, it has the greatest positive effect on reducing college students' smoking behavior. If it is at the "general" level, it will also have an ideal positive effect. However, when the sign can be seen "everywhere", although there is still a positive effect, the force decreases significantly. In addition, from the performance of this group of data in Exp(B), it can be seen that each small step of independent variable optimization will bring a large increase in dependent variable. For example, relative to X16, when X16(1) increases by 1.569 units on average, the advantage reflected in the positive

effect of college students' smoking behavior is 4.804 times that of X16; relative to X16(1), when X16(2) increases by 2.427 units on average, the advantage reflected in the positive effect of college students' smoking behavior is 11.327 times that of X16(1).

For the independent variable X17 in the parameter table, Sig=0.009<0.05, showing that the index of "whether the stores in universities sell tobacco related products" has a significant effect on college students' smoking behavior. Relative to the reference group X17 ("they're sold in every store") of 0, the B values of X17 (1) ("some stores sell them") and X17 (2) ("none") are -1.86 and -2.102 respectively, which are negative. To sum up, the two cases of "some stores sell them" and "none" will play a negative role in varying degrees on college students' smoking behavior. It should be noted that when there is "none" in universities, the force is greater.

From the parameter table, the regression model of college students' smoking behavior can be expressed as:

Logit(p)= -2.312X3(1)-0.522X3(2)+0.560X7(1)-2.399X7(2)-0.141X7(3）-1.208X8-1(1)
-1.616X8-2(1)-2.421X8-4(1)-3.155X9(1)-3.098X9(2)-0.899X9(3)+1.569X16(1)
+2.427X16(2)+0.679X16(3)-1.862X17(1)-2.102X17(2)+6.057

4. Discussions and Conclusions

4.1 Research Discussions

4.1.1 Social environmental factors are closely related to college students' smoking behavior

Using the method of binary logistic regression analysis, it is found that multiple social environment indexes have a significant impact on college students' smoking behavior. The indexes that significantly affect college students' smoking behavior include "home location" (X3), "emotional warmth of family" (X7), "smoking behavior of peers" (X8), "smoking attitude of peers" (X9), "coverage of "no smoking" signs in universities", (X16) and "do the stores in universities sell tobacco related products" (X17). The above six index variables are distributed in family environment, peer environment and campus environment, that is, they cover most dimensions of the index system of social environmental factors (only one dimension of off-campus environment has no significant impact indexes), indicating that social environmental factors are closely related to college students' smoking behavior. Exploring the impact of social environmental factors on college students' smoking behavior has theoretical and practical value. The laws found from it have guiding significance for the improvement of the quality of smoking control for college students.

4.1.2 Family, peer, campus and off-campus environments all contain factors that have no significant impact on college students' smoking behavior

Through stepwise regression, the study excluded 14 independent variables with weak significance, including "whether your father smokes (X1)", "whether your mother smokes (X2)", "family economic status (X4)", "family structure (X5)", "severity of parental discipline(X6)", "whether the companion has persuasive behavior (X10)", "social support from peers (X11)",

"does your roommate smoke (X12)", "whether someone smokes in the classroom (X13)", "whether someone smokes in public places on campus (X14)", "effectiveness of smoking control publicity in universities (X15)", "effectiveness of smoking control in public places in the city (X18)", number of tobacco advertisements in the city (X19)" and "effectiveness of outdoor smoking control in the city(X20)". What needs special attention is that there are four analysis dimensions without indexes entering the regression equation: parental smoking behavior, peer social support, campus smoking atmosphere and urban tobacco control, which happen to be distributed in the four social environment structures of family environment, peer environment, campus environment and off-campus environment. Among them, the off-campus environment has only one analysis dimension, so the significance of all indexes of off-campus environment on college students' smoking behavior is not strong. It can be seen that according to the existing research results, the above 14 indexes are undoubtedly important influence factors of tobacco use among college students. However, compared with the six indexes entering the regression equation, their influence is relatively small and the significance of influence is not strong. When carrying out smoking control activities for college students, the state, society and universities should pay attention to consciously investing limited resources into higher significant indexes.

4.1. 3 No smoking signs in universities are the key indicators affecting college students' smoking behavior

Standardizing the posting of no smoking signs is a common means of smoking control and an important way to create a smoke-free campus environment. When exploring the influence factors of college students' smoking behavior, it is found that the no smoking signs in universities play an ideal positive role in controlling college students' tobacco use. The results of data analysis show that as long as the sign coverage reaches the "general" level or above, there will be a significant positive force, and the force will rise step by step with the expansion of coverage. When reaching the "everywhere" level, i.e. posting too many no smoking signs, the force will decrease significantly. This result provides a clear working idea for the action of smoking control in universities. No smoking signs deemed to lack innovation should be given more attention. When posting, the coverage should be appropriate, and the most ideal state is "more".

4.1. 4 Reconsideration of social environmental factors based on college students' rebellious psychology

From the above literature results, non-smoking peers, peers' opposition to smoking and the ban on the sale of tobacco products on campus will reduce the possibility of tobacco use by college students. However, the results of the data analysis are intriguing: non-smoking peers, peers' disapproval of smoking and few or no tobacco products on campus are the "triggers" for smoking behavior among college students. This result should attract our attention and give enlightenment to the practice of smoking control in campus. The university stage is a special period of students' self-improvement and self-correction. Due to various factors, some college students who are in the "gap" between puerility and maturity unconsciously return to rebellion.

They are willing to criticize and seek independence, often make unusual actions to attract the attention of others, and often "sing the opposite tune" to show their independent personality. It is not difficult to understand the above "strange" data results. The smoking behavior and attitude of peers are no longer the model easy to be imitated as described by the social learning theory, and the prohibition of tobacco products in universities is not a simple measure to ban smoking, but a rebellious psychology "you dare not, but I dare"; "you disagree, but I have to try"; "if the school doesn't sell cigarettes, I have to buy them". Therefore, it is necessary to give full consideration to the rebellious psychology of college students in the smoking control action, and on this basis to reconsider the indexes of social environmental factors to carry out the smoking control work more targeted.

4.2 Conclusions

Two aspects should be paid special attention to in the discussion of the influence factors of college students' smoking behavior. First, college students have their own particularity and should not be confused with teenagers. The differences between college students and other youth groups in all aspects of social environment should be fully considered in the research. Second, the research samples should be more representative, and the research objects should cover a wider range of majors and regions, so as to provide theoretical guidance for targeted campus smoking control actions. Therefore, this study constructs the index system of social environmental factors, and uses logistic regression analysis to explore the main factors affecting college students' smoking behavior in the index system. The results show that the three dimensions of family environment, peer environment and campus environment all contain indexes that significantly affect college students' smoking behavior; the influence of all indexes of off-campus environment on college students' smoking behavior is not significant; the no smoking signs in the universities play a significant positive role in controlling the use of tobacco by college students, the posted coverage on the campus should be appropriate, and the control effect is the best when the number of signs is "relatively large". In addition, there is a surprising discovery that the data analysis results show that: when peers do not smoke, peers do not approve of smoking, and there is little or no sale of tobacco products on campus, it is more likely to cause the smoking behavior of college students. This consideration stems from the rebellious psychology of college students, and thus the indexes of social environmental factors should be reconsidered. In the future, experts and scholars in the field of smoking control can strengthen the cross integration with psychology, pedagogy, sociology and other disciplines, and explore the influence factors and intervention measures of college students' smoking behavior with richer and diversified theoretical support. The influence factors including physiological environment, psychological environment and social environment should be systematically studied, and a theoretical model should be constructed to help universities take comprehensive smoking control.

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