Structural Equation Model of Problem Behavior of College Students

Chunming Xu[1], Can Wang[2, *], Nan Yang[3]

{email address[1]:652196979@qq.com, [*]Corresponding author email address[2]: 297413904@qq.com, email address[3]: 872949965@qq.com}

[1]Student affairs office of Dalian University of Science and Technology, No.999-26, Bingang Road, Lvshunkou Economic Development Zone, Dalian City, Liaoning Province, China

[2]School of Information Science and Technology of Dalian University of Science and Technology, No.999-26, Bingang Road, Lvshunkou Economic Development Zone, Dalian City, Liaoning Province, China

[3]School of Economics and Management of Dalian University of Science and Technology, No.999-26, Bingang Road, Lvshunkou Economic Development Zone, Dalian City, Liaoning Province, China

Abstract. Through the questionnaire survey of college students, it is known that the main factors affecting the problem behavior of college students are: gender, grade, academic performance, classmate relationship, parenting style and so on. A structural equation model was established with gender, academic performance and student relationship as explicit variables, moral character, academic performance, communication, personality, emotion, love and sex as exogenous latent variables, problem behavior as endogenous latent variables, and each subscale factor as markers.

Keywords: College students; Problem behavior; Structural equation model

1 Introduction

Problem behavior can be defined as abnormal behavior that violates group behavior habits and standards. The main reasons for problem behavior are frustration, depression, mental trauma and so on. For students who have just entered university, they have stepped into a scaled down society from a simple high school campus, where their academic intensity has been reduced, but they need to participate in associations and social practices.[1] However, college students themselves are mentally immature and lack the ability to deal with complex things and interpersonal relationships, and some small things or setbacks are likely to evolve into extreme behaviors.

For ideological and political educators in colleges and universities, students with problematic behaviors need special attention and timely intervention.

Structural Equation Modeling (SEM) is a very good method in social science research. The method was developed in the 1980s, but it was not well known in China." In the fields of social science, economy, market, management, etc., sometimes it is necessary to deal with the relationship between multiple causes and multiple results, or it may encounter variables that

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cannot be directly observed (i.e., latent variables), which are not well solved by traditional statistical methods.[2]Since the 1980s, structural equation model has been developed rapidly, which has made up for the shortcomings of traditional statistical methods and become an important tool for multivariate data analysis.

1.1 Simultaneous processing of multiple dependent variables

Structural equation analysis can consider and deal with multiple dependent variables simultaneously. In regression analysis or path analysis, even if multiple dependent variables are shown in the chart of statistical results, each dependent variable is still calculated one by one when the regression coefficient or path coefficient is calculated.[3] Therefore, the chart seems to consider multiple dependent variables at the same time, but ignores the existence and influence of other dependent variables when calculating the influence or relationship of one dependent variable.

1.2 Allowing measurement errors in independent variables and dependent variables

Attitude, behavior and other variables, often contain errors, can not be simply measured by a single index. Structural equation analysis allows measurement errors in both independent and dependent variables.[4] Variables can also be measured by multiple indicators. The correlation coefficients between latent variables calculated by traditional methods may differ greatly from those calculated by structural equation analysis.

1.3 Simultaneously estimate factor structure and factor relationship

Suppose that to understand the correlation between latent variables, each latent variable is measured by multiple indicators or topics. A common practice is to calculate the relationship between latent variables (i.e., factor) and topics (i.e., factor load) with factor analysis for each latent variable, and then get the factor score as the observed value of latent variables, and then calculate the factor score as the correlation coefficient between latent variables. These are two separate steps.[5]In structural equations, these two steps are done at the same time, i.e. the relationship between factors and problems and the relationship between factors and factors are considered at the same time.

1.4 Measurement models that allow greater elasticity

Traditionally, we only allow each subject (index) to be subordinate to a single factor, but structural equation analysis allows more complex models. For example, when we write math tests in English to measure a student's math ability, the test scores are subordinate to both the math factor and the English factor (because the scores also reflect English ability). It is difficult for traditional factor analysis to deal with multiple factors dependent on one index or to consider the models with relatively complex dependency relationships such as higher-order factors.

This paper starts with the factors that affect the problem behavior, and establishes an analysis model in order to provide help for the ideological and political educators in colleges and universities.

2 Research purpose

From an empirical point of view, this study compiled a questionnaire on problem behaviors of college students, conducted a questionnaire survey, and explored the types and causes of common problem behaviors of college students. Focus on the study of gender, grade, major, academic performance, classmate relationship, family and other variables on the impact of problem behavior, establish the structure equation model of problem behavior of college students, for college students mental health education and clinical intervention to provide effective scientific basis, which helps college students to improve the individual and group psychological quality, enhance the ability to adjust to psychological confusion, has important theories and practical significance.[6]

3 Research method

The questionnaire was designed with reference to the Behavioral Problem Scale for College Students compiled by Chen Huichang et al., and was formally used after consultation and prediction with experts. The stability coefficient of the questionnaire was 0.784 and the internal consistency coefficient (a coefficient) was 0.801.[7] The questionnaire included six dimensions: moral questions, academic questions, communication questions, personality questions, emotional questions, love and sex questions. The questionnaire will be bound into a book and distributed to encourage the subjects to truthfully answer the questionnaire content, so as to ensure the authenticity and effectiveness of the questionnaire.

4 Results

4.1 Gender and grade on problem behavior

The influence of gender and grade on problem behavior of college students. Results can be seen from Table 1, the average score of boys in problem behavior is significantly higher than that of girls, and the difference is very significant. This shows that boys have more serious problems in this respect than girls. In general, students of all grades differ significantly in problem behavior.[8]From freshman to senior year, the juniors' average score on problem behavior was higher than that of freshmen, sophomores and seniors, indicating that junior year is a sensitive period, more serious than other grades

Table 1. Gender and grade on problem behavior

Gender and grade	Number	AVG Value
Male	412	249.52
Female	387	237.14
Freshman	207	247.09
Sophomore	211	250.67
Junior	197	239.06
Senior	181	246.94

4.2 Academic performance, friendship, major on problem behavior

Table 2 Results show that: academic performance of college students have an impact on problem behavior. Students with academic performance in the lower reaches had the most serious problem behaviors, followed by those in the middle reaches and those in the upper reaches. In the dimension of relationship with classmates, students with tense relationship with classmates have the most serious problem behavior, followed by ordinary students and good students have the least. The difference of problem behavior in the dimension of student relationship is very significant, which indicates that the quality of student relationship directly affects the occurrence of problem behavior. There was no significant difference in problem behavior on major. Science and engineering students scored slightly higher on average than arts students.

Table 2. Academic performance, friendship, major on problem behavior

Factors	Rank	Number	AVG Value
Academic performance	Top	174	211.24
	Medium	487	269.85
	Bottom	138	298.46
Friendship	Good	579	224.06
	Moderate	198	263.98
	Bad	22	300.02
Major	Liberal arts	312	231.53
	Science and technology	487	267.45

4.3 The educational level of parents, the way of education on problem behavior

As can be seen from Table 3, college students are generally affected by parents' different educational levels. The influence difference of problem behavior was not significant. However, with the exception of those with very low educational level (primary school and below), the more educated the parents were, the more likely their children were to have problematic behaviors, especially those whose parents had a graduate degree or above, with an average score of 310.95. According to the mean value of parenting styles, among the four parenting styles, indulgent education has the most serious problem behaviors, followed by spoiling, autocracy, and democracy. The parenting styles have the most significant difference in problem behaviors. It can be seen that the influence of parents' education style on problem behavior is particularly important.

Table 3. The educational level of parents, the way of education on problem behavior

Factors	Rank	Number	AVG Value
The educational level of parents	Primary school and below	78	271.49
	Middle school	213	266.81
	Undergraduate	476	232.46
	Postgraduate or above	32	310.95
The way of education	Autocracy	67	298
	Democracy	589	237.19
	Coddling	98	281.53
	Indulgence	45	321.85

4.4 Family structure, family economic status on problem behavior

As can be seen from the results, in terms of family structure, although there is no significant difference among the four types of family structure on the whole, college students whose parents have died are significantly higher than other college students in this problem behavior, which should arouse our attention.[9] The difference of family economic status of college students in problem behavior is not significant, which indicates that family economic status is not the main cause of problem behavior.

Table 4. Family structure, family economic status on problem behavior

Factors	Rank	Number	AVG Value
Family structure	Parents	663	251.09
	Single parent	127	261.21
	Both dead	1	281.36
	Others	8	252.95
Family economic status	<=5000	197	250.84
	5000-10000	389	257.89
	10000-30000	169	241.53
	>=30000	44	259.85

Structural equation model is a powerful research tool in the fields of psychology, behavior, education and social sciences. Its biggest feature is that it adopts multiple observable variables to reflect the hidden variables that are difficult to be directly and accurately measured. At the same time, it can estimate the potential structural relationship between hidden variables . In this study, factors contributing to the total score of problem behavior include gender, grade, academic performance and classmate relationship.[10]A structural equation model was established with gender, academic performance and classmate relationship as explicit variables, moral character, academic performance, communication, personality, emotion, love and sex as exogenous latent variables, problem behavior as endogenous latent variables, and each subscale factor as markers. The theoretical model is modified by model modification index.

The results show that gender and academic performance have significant direct and indirect effects on problem behavior. Student relationship has significant direct effect on problem behavior, but there is no significant indirect effect. Moral problem is the root of other problematic behaviors, and it has an obvious effect on academic problems, communication problems, love and sex problems. Among the six dimensions of problem behavior, emotional problem, communication problem and personality problem are three important problems.

5 Conclusion

There are significant gender and grade differences in problem behaviors of college students. The problem behaviors of male students are obviously more than that of female students, and the problem behaviors of junior students are the most serious.

The problem behaviors of college students with different academic records are significantly different, and the problem behaviors of students with poor academic records are obviously more than those of students with good academic records; The problem behaviors of college students

with different classmate relationships are significantly different, and the problem behaviors of students with tense classmate relationships are significantly more than those of students with good classmate relationships.

The obtained structural equation model of problem behavior of college students has a good fitting effect, and it is an acceptable model, which can be used as a theoretical model of problem behavior of college students.

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