Research on hierarchical dynamic AHP score evaluation system within the scope of graduate five education

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Abstract: The study on the graduate students' comprehensive quality evaluation system based on the "Five Educations in Parallel" concept aims to construct a comprehensive, scientific, and operational evaluation mechanism to enhance the quality of graduate education. This paper first analyzes the deficiencies in the current comprehensive quality evaluation system for graduate students in higher education institutions, pointing out that the existing evaluation system overly emphasizes academic performance, neglecting the balanced development of moral, physical, aesthetic, and labor education. This imbalance reduces students' enthusiasm for participating in extracurricular and social activities. In response, this paper proposes a comprehensive evaluation system based on the five dimensions of moral, intellectual, physical, aesthetic, and labor education, employing the Analytic Hierarchy Process (AHP) to construct the corresponding hierarchical model. The study combines qualitative and quantitative methods to scientifically determine the weights of each dimension, thereby creating a suitable comprehensive quality evaluation system for graduate students. The findings indicate that this system significantly contributes to implementing the "Five Educations in Parallel" educational policy and cultivating high-quality talents that meet the requirements of the new era. It effectively promotes the comprehensive development philosophy in graduate education, ensuring students' balanced growth in all five areas. Ultimately, this paper provides new evaluation standards and references for graduate education in higher education institutions through empirical research and theoretical analysis.

Keywords: graduate education; five-education integration; AHP model; student development

1. Introduction

At present, the comprehensive quality evaluation system of graduate students in colleges and universities is not sufficient and imperfect, which will directly affect the quality and effect of graduate talent training. At present, the evaluation of graduate students in colleges and

universities mostly focuses on the performance, especially in the evaluation of scholarships and honorary titles, and the academic performance often plays a decisive role. This way of evaluating only according to the level of professional achievement directly affects the enthusiasm of students to participate in other sports and voluntary service activities. Therefore, the construction of the comprehensive quality evaluation system for graduate students based on the "five education" should not only consider the effectiveness of the measures and the enthusiasm of students to participate, but also understand the characteristics of students in different grades and different majors. As well as the specific reasons for students to participate in the activities, so as to make a better plan. In the implementation process, it is necessary to adhere to the basic principle of comprehensive evaluation, record the development of students in five aspects of moral education, intellectual education, physical education, aesthetic education and labor education in time, and organize and score the data collected in a semester or a school year, and finally give the ranking according to the number of classes or majors, so as to objectively reflect the specific performance of each student. Specific research ideas and methods are as follows:

(1) According to the "five education" classification of moral, intellectual, physical, American and labor, the evaluation rules are refined, and each piece of content is taken into account to ensure that the evaluation indicators are objective and scientific. In the specific setting of the comprehensive quality evaluation system for graduate students, the total percentage is calculated, with moral education accounting for 16%, intellectual education accounting for 60%, and physical education and aesthetic education and labor education accounting for 8% each. For students who are not active in participating in activities, corresponding penalties should be given. The final score of the comprehensive evaluation is the total score of moral, intellectual, physical, American and labor minus the penalty score. The evaluation of intellectual education, physical education, aesthetic education and labor education adopts the combination of qualitative evaluation and quantitative evaluation. The course scores, competition scores, physical test scores and volunteer hours can be quantitatively scored. The scores of learning attitude and civilization are calculated by the way of self-evaluation $\times$ 25% + mutual evaluation $\times$ 25% + instructor evaluation $\times$ 50%. Finally, the "five education" quality evaluation results of each graduate student were comprehensively evaluated.

(2) In the implementation process, it is necessary to adhere to the basic principle of comprehensive evaluation of "five education" quality, record the development of students in five aspects of moral education, intellectual education, physical education, aesthetic education and labor education in time, and organize and score the data collected in a semester or academic year, and finally give the ranking according to the number of classes or majors, so as to objectively reflect the specific performance of each graduate student.

(3) To construct the comprehensive quality evaluation system of postgraduate students, we should adhere to the political guidance and value guidance, build a complete system of comprehensive training of moral, intellectual, physical, American and labor, and integrate the comprehensive quality evaluation of five education into the development of university disciplines, teaching and research, talent training and other aspects, and plan and design from

the overall height. Establish a complete set of student comprehensive evaluation records, inspection, sorting, scoring, publicity, recommendation system, and fully mobilize the professional course teachers, instructors, class committee, student union and other aspects of strength, full implementation. The results of comprehensive quality evaluation of graduate students should be rationally and effectively used as an important reference basis for scholarship evaluation, student cadre selection and employment recommendation. In the selection of postgraduate cadres and the promotion of the best to join the Party, according to the score of each graduate student's comprehensive quality evaluation appraisal table, the students with higher scores are given priority. Create a good atmosphere in which everyone actively participates in the comprehensive quality evaluation, gradually reverse the wrong tendency of "only achievement theory", adhere to the comprehensive development of "five education", and cultivate high-quality talents who truly meet the needs of the society.

2. Main research contents of the project

Therefore, it is necessary to construct a comprehensive quality evaluation system for graduate students based on the "five education", and how to cultivate them into qualified construction talents of the motherland in the future according to their different conditions after admission.

This program is based on the experience and experience of the applicants in the process of guiding and cultivating graduate students, according to the different sources, different qualifications and different backgrounds of the students, during the graduate training period, by setting academic goals for each student at the beginning of graduate school, by "developing at least one sports hobby, participating in at least one competition and winning at least one award, at least participate in the preparation of a patent or soft work, publish at least one high-level paper, participate in at least one public welfare activity" policy to cultivate students, encourage students to participate in various activities, all-round development, has made some small achievements accumulation. Let the students in the postgraduate study process, learn to be motivated, live a happy life, physical protection, moral no mistakes, build a good teacher-student interaction and communication mechanism in time, let teachers and students become friends, let graduate students learn to achieve, moral hone, become compound talents to meet the requirements of the future construction of the country.

This project intends to build a set of hierarchical dynamic AHP score evaluation system covering the five education of graduate students through statistics, psychology and management related frontier theories and real graduate training data, so as to better help graduate tutors and colleges master the education situation of the five education of graduate students and improve the quality of graduate training.

3. Introduction to AHP hierarchical method

Analytical Tomograph (AHP) decomposes the highest level factors into target level, criterion level, measure level, *etc.* The core of this method is to calculate the weight of each level separately, and finally get the overall comprehensive weight. The basic steps are as follows:

(1) Build the hierarchy

When applying analytic Hierarchy Process (AHP) to research, it is necessary to construct a hierarchical model first, which is divided into goal level, criterion level and scheme level. The number of levels is related to the complexity of the problem to be studied.

(2) Construct the pairwise comparison matrix

The comparison judgment matrix of each layer is constructed, and the elements of each criterion layer have different proportions in the target layer.

In the eyes of decision makers are not the same, generally using 1–9 scaling method to construct the judgment matrix. See Table 1:

Table 1. Scaling method.

Scale	Implication
1	Both elements are equally important
3	The former is slightly more important than the latter
5	Comparing the two elements, the former is obviously more important than the latter
7	Comparing the two elements, the former is strongly more important than the latter
9	The former is more important than the latter
2,4,6,8	The median of the above adjacent judgments
reciprocal	If the ratio of importance of element i to element j is a_{ij}, then element j is more important than element i. The ratio of importance is $a_{ji} = 1/a_{ij}$

(3) Determination and consistency test of the weight of each layer evaluation index relative weight：

$$W' = (w_1', w_2', w_3', \dots, w_n')^T \tag{1}$$

It can be done by the square root method：

$$M_i = \prod_{j=1}^{n} a_{ij} (i = 1,2,\dots,n) \tag{2}$$

The product of the row assignments of the judgment matrix：

$$W' = \sqrt[n]{M_i}(i = 1,2,\dots,n) \tag{3}$$

Then, the normalization process：

$$W' = (w_1', w_2', w_3', \dots, w_n')^T, i = 1,2 \dots, n \tag{4}$$

$$W_i = \frac{w_i'}{\sum_{i=1}^{n} w_i'} (i = 1,2,\dots,n) \tag{5}$$

Then $W = (w_1, w_2, \dots, w_n)^T$ is the weight of each index.

A consistency check is then performed. If the test passes, then the feature vector is normalized to obtain the weight we want. If the test fails, we need to go back to the previous step to reconstruct a new judgment matrix. Perform the following steps.

1) Consistency metrics $CI = \frac{\lambda_{max} - n}{n-1}$,

2) Consistency metrics RI, see Table 2:

Table 2. Average stochastic consistency index.

n	1	2	3	4	5	6	7	8	9	10	12	13	14
RI	0	0	0.52	0.89	1.12	1.24	1.36	1.41	1.46	1.49	1.54	1.56	1.58

3) Calculate the consistency metrics RI

$$\mathrm{CR} = \frac{CI}{RI},\qquad(6)$$

If $\mathrm{CR} < 0.1$, the consistency is considered to be in the acceptable range; if $\mathrm{CR} > 0.1$, the consistency is in the unacceptable range and the judgment matrix needs to be corrected.

(4) Calculate the comprehensive weights and consistency checks

The resultant weight vector of the index is the relative weight of the index with respect to the topmost index, which is the final result we need to obtain.

4. Introduction of relevant research on the cultivation of students with five educations

In the modern history of China, Mr. CAI Yuanpei was the first educational thinker who proposed that "military education, utilitarianism education, citizen moral education, world outlook education and aesthetic education should not be neglected in education", and advocated the combination of five educations, which was a remarkable feature of CAI Yuanpei's educational thought. From today's educational point of view, the "five education" education is the harmonious development of moral, intellectual, physical and aesthetic education, is in line with the requirements of historical development at that time, is the feudal education and the semi-colonial to semi-feudal education purpose negation, in the history of our country education thought is also a huge progress. From the perspective of personnel training, it also conforms to the educational law of people's all-round development.

On September 10, 2018, the General Secretary stressed at the National Education Conference on Teachers' Day that it is necessary to build an education system that conforms to the socialist education with Chinese characteristics and comprehensively cultivates morality, intelligence, physical fitness, the United States and labor. In recent years, there have been more relevant research results in this field in China.

In 2021, Song [1] proposed that colleges and universities are important places for personnel training, and to cultivate comprehensive talents with all-round development of morality, intelligence, physique, the United States and labor, it is necessary to build a complete evaluation system and incentive mechanism for students' comprehensive quality, so as to encourage students to cultivate their morality in moral education activities, deepen the connection with theoretical knowledge in intellectual education and sports activities, and grasp the direction of life in aesthetic education and labor education practice. So as to achieve the goal of college talent training. The core explanation of the students' comprehensive quality evaluation system based on the "five education simultaneously" is made, including the implementation of the fundamental goal of talent training with the guidance of goal driving; Guided by collaborative evaluation, we insist on full participation, whole process recording and comprehensive evaluation. With innovative activities as the guide, enhance students' enthusiasm to participate in "five education" activities; Guided by systematic growth, we will help the comprehensive development of morality, intelligence, physical beauty and labor, *etc*., and train socialist builders and successors with all-round development of morality, intelligence, physical beauty and labor. In addition, it also proposed the combination of qualitative evaluation and quantitative evaluation, in the specific setting of

students' comprehensive quality evaluation system, the score value of the five education evaluation system should be reasonably set according to the total score percentage, and the evaluation rules should be detailed according to the "five education" classification, taking into account each content setting, so as to ensure the objective and scientific evaluation indicators. In 2021, Deng [2] proposed a five-education evaluation system of "six dimensions in one" in response to the requirements of vocational and technical education. He pointed out that the comprehensive quality of students is directly related to career development and is an important indicator to measure the quality of college talent training. The "six-dimension integrated" developmental evaluation system focuses on students' all-round and whole-process evaluation, which can effectively promote the all-round development of students' quality while ensuring the comprehensive content, scientific method and operability of the evaluation system. The content of the evaluation system includes six dimensions of moral education, intellectual education, physical education, aesthetic education, labor education and ability. AHP (Analytic Hierarchy Process) algorithm is used to evaluate the weight of each dimension and evaluation index. The implementation of the evaluation system covers class teachers, counselors, professional teachers, *etc.*, with the participation of multiple subjects, fully embodies the profound connotation of "all staff education"; The application of the evaluation results is mainly "diagnostic", the existing problems are analyzed, and the improvement measures are put forward, so as to give full play to the guiding, identification, diagnosis, regulation and improvement of the evaluation results, and promote the overall improvement of the comprehensive quality of students. In order to cultivate the new era, new direction, new pattern of development to adapt to high-quality talents. In his master's degree thesis of Nanjing University of Technology in 2019, Zhang [3] proposed a specific path for the development of humanistic quality education in colleges and universities through in-depth study of CAI Yuanpei's educational thought of "five education simultaneously". He aimed at the problem that the research of CAI Yuanpei's educational thought by previous scholars did not combine with the concrete educational problems in China. In particular, the combination with humanistic quality education is not close enough, so on the basis of the current development of humanistic quality education in colleges and universities, we can prescribe corresponding "prescriptions" from CAI Yuanpei's educational ideas and methods, and combine the humanistic quality education practice model of 2011 College of Nanjing University of Technology, and put forward more specific and feasible suggestions. It mainly includes three points, the concept of "perfect personality" should carry out the humanistic quality education; "Five education simultaneously" to achieve full coverage of humanistic quality education; "Education Independence" is committed to creating a good humanistic quality education atmosphere. In 2021, Pu [4] of Northeast Petroleum University, based on the training of applied talents, will explore how colleges and universities can cultivate high-quality applied talents in line with the requirements of The Times from the perspective of "simultaneous development of five education" under the background of large social demand for applied talents and popularization of higher education. Through the literature research method, the author has grasped the current theoretical research and practical research status of the "five education simultaneously" as well as the current status of applied talents training

in local undergraduate colleges, comprehensively applied the three concepts, deeply explored the connotation and requirements of the "Five education simultaneously" era, and summarized the knowledge, ability and quality structure of applied talents from the perspective of "Five education simultaneously" under the connotation requirements. Based on this, through comparative analysis of the data obtained from the official website of the university and other channels, the results achieved and main problems existing in the current application-oriented talent training of local undergraduate colleges and universities under the perspective of "five education simultaneously" are analyzed and summarized, and corresponding solutions are proposed. It also proposes that we should strengthen the evaluation of aesthetic education, labor education and physical education, perfect the evaluation system of teaching quality, including the evaluation subject, evaluation content, evaluation method and evaluation mechanism construction. For example, the evaluation subject, strengthen the social evaluation and the third party evaluation. In terms of evaluation content, aesthetic education, labor education and sports evaluation indexes are added. In terms of evaluation methods, the combination of qualitative analysis and quantitative analysis is adopted. In view of the single method in the evaluation of labor education, aesthetic education and physical education in local undergraduate colleges, the combination of qualitative analysis and quantitative analysis can be adopted. Starting from the establishment of aesthetic education, labor education, moral education evaluation institutions and the establishment and improvement of relevant systems, the establishment and improvement of the long-term mechanism of normal "five education simultaneously" evaluation. On the one hand, local undergraduate colleges and universities that have not established aesthetic education, labor education and moral education evaluation institutions should establish corresponding institutions of aesthetic education, labor education and moral education. On the other hand, we should strengthen the institutional construction, formulate the system of aesthetic education, labor education and moral education, and on this basis, we should strengthen the work force construction of aesthetic education, labor education and moral education institutions, and clarify their respective functions. In 2022, Zhang [5] of Ningxia University conducted a study on "Five-education integration" in colleges and universities in the new era, and proposed that "Five-education integration" is not only an educational value in the new era, but also an important embodiment of the educational thinking mode and practice paradigm in the new era to keep pace with The Times, mainly through the interaction and influence of internal and external factors of "Five-education". Make each element not only maintain its independence but also highlight its integrity. "Five-education integration" is not only an educational means, but also an educational purpose. The emphasis is on realizing the organic integration of "Five-education" and promoting the all-round development of students through "Five-education mutual education". The author points out that "Five-education integration" is an important way for colleges and universities in the new era to realize the mutual development of "Five-education", give full play to the real effect of "three-all" education, and train "all-round" development talents. We should follow the basic principles of Marxist theoretical guidance, the Party's overall leadership and seeking truth from facts, and clarify the internal relationship and operation principle of "Five-education

integration". Make the knowledge, ability and quality of "five education" reach mutual integration and exchange, and maximize the value of integration and education. The rapid development of the new era has not only boosted the pace of "five-education integration" in colleges and universities, but also highlighted the practical problems such as insufficient coordination, poor coupling and little practical effect. In this regard, to achieve the goal of "five education integration" in colleges and universities, it is necessary to integrate the "five education" in the systematic integration of different disciplines and different fields, from the perspectives of value identification, education goal, education system and evaluation mechanism to penetrate and integrate each other, so as to achieve the goal of moving people with shape, feeling people, and culture people, and the effect of edutainment into fun and nourishing things silently.

In addition, in recent years, there have been studies on the "five-education integration" system and related methods for middle schools and primary schools [6–8]. However, specific and operable evaluation and operation schemes combining qualitative and quantitative methods have not been proposed for specialized polytechnic institutions, especially for colleges and universities featuring information-based education such as Beijing University of Post. Therefore, we need to base on the reality of Beijing University of Posts and Telecommunications, especially the graduate talent training reality of the network Security Institute, to build the relevant executable "five education integration" graduate training and evaluation system.

5. The training and evaluation AHP system of "Five-Education Integration" for postgraduates in the College of Network Security of Beijing Post

5.1. The hierarchical structure model of postgraduate comprehensive quality evaluation system based on AHP

First of all, based on the Marxist theory of all-round human development, we implement the General Secretary's goal of cultivating socialist builders and successors with all-round development of morality, intelligence, physical fitness, the United States and labor, fully explore the five dimensions of moral education, intellectual education, sports, aesthetic education and labor education, and use AHP (Analytic Hierarchy Process) algorithm to decide the weight of each evaluation index [9–19]. To construct a comprehensive, scientific, implementable development evaluation system conducive to promoting the overall improvement of students' comprehensive quality.

1) Establish the hierarchical structure model of comprehensive quality evaluation system. As shown in Figure 1, the "student comprehensive quality evaluation system" is the target level, and the five dimensions of "moral education, intellectual education, physical education, aesthetic education, labor education and ability" and the evaluation indicators under each dimension are the criteria level. Here, we specially increase relevant professional skills for graduate students of the School of Network Security. For example, teamwork ability and social ability in network protection action and hacker attack and defense competition are added as evaluation dimensions. These dimension data can be scored after evaluation at the

program level, which is divided into self-evaluation, classmate evaluation, class teacher (counselor) evaluation, class teacher evaluation, evaluation team review, evaluation supervision, feedback evaluation results, record and record. Finally, the overall construction of comprehensive quality evaluation system hierarchical structure model.
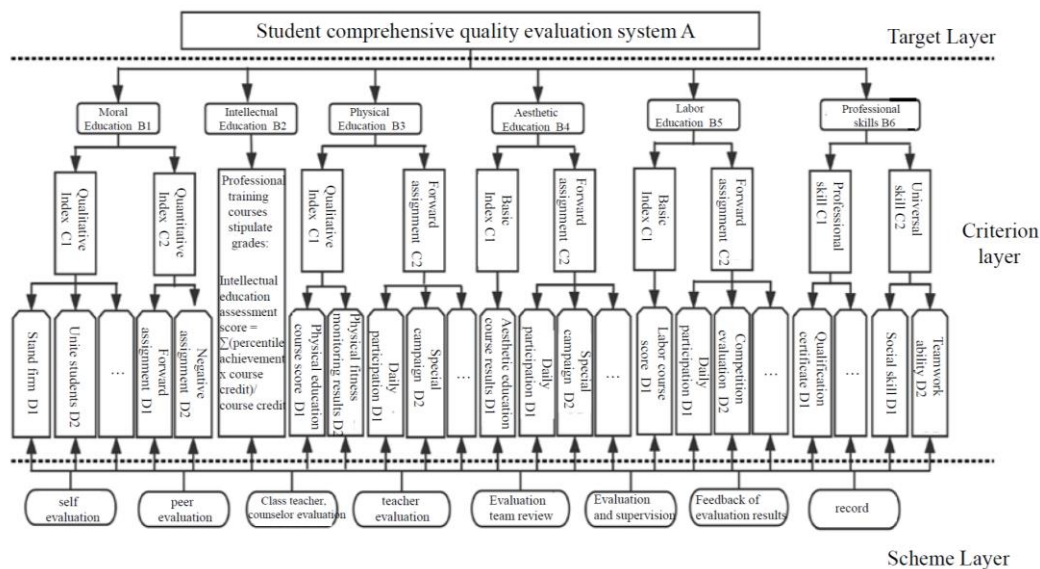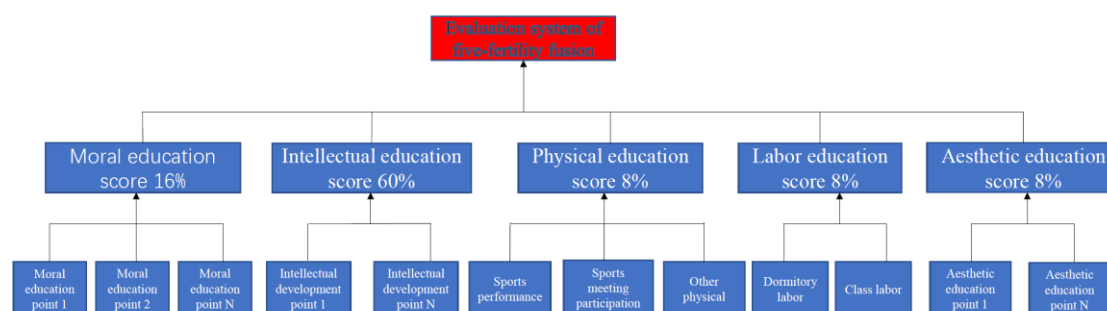

Figure 1. An AHP model-based hierarchical structure model of postgraduate comprehensive quality evaluation system.

2) Construct a pair comparison matrix. Matrix assignment adopts expert consultation method, evaluation expert group collective discussion voting method, fuzzy analytic hierarchy process and other methods to evaluate the importance of each indicator, construct A-Bi, Bi-Ci, Ci-Di pair comparison matrix, and determine the weight of each indicator.

3) Carry out hierarchical sorting and one-time test. The hierarchical uniordinal arrangement is determined by consistency test.

4) The total hierarchical ranking and its consistency test are carried out. Finally, taking goal-oriented positioning as a reference, the corresponding indicators are added or reduced according to the actual situation of different schools, different grades and different majors, and the weights of each indicator are determined through the above steps to build a developmental evaluation system of "five-education integration" of students' comprehensive quality.

The initial distribution of weight scores calculated by the specific AHP model is as follows (Figure 2):

Figure 2. The comprehensive quality evaluation and scoring system of postgraduate students.

5.2. A four-level index system for the evaluation of postgraduate comprehensive quality

By exploring the formation process of other indicator systems, this paper analyzes the reasons for the comprehensive quality evaluation of graduate students, and establishes relevant first-level indicators, second-level indicators, third-level indicators and fourth-level indicator systems, as shown in Table 3.

Table 3. Four-level index system of postgraduate comprehensive quality.

measuring object	Primary index	Secondary index		Three-level index	Four-level index
	Ethics and studies	Ideological, moral and cultural cultivation	Moral education score	Teacher evaluation	Positive evaluation–negative evaluation–neutral evaluation
				Peer evaluation	Positive evaluation–negative evaluation–neutral evaluation
			Intellectual score	course grade	Excellent–Good–Medium–Pass
				Paper	Number of high-level papers published
				Patent and soft	The number of patents is soft
	Culture and fitness	Physical health, labor and aesthetics	Physical education score	Physical education results	Excellent–Good–Medium–Pass
				Sports meeting participation	Whether to participate in the sports meeting and win the place
				Other sports activities	Participate in school football/basketball/badminton, *etc.*
			Labor score	Dormitory labor	Complete dormitory duty activities regularly
				Class labor	Regularly complete class and classroom duty activities
				Laboratory labor	Complete laboratory cleaning activities regularly
			Aesthetic score	Book reading	Read classic books and write book notes
				Participation in cultural activities	Participate in various cultural and artistic activities

6. Question design of psychological evaluation scale for graduate students

Appendix I

Personality inventory

1. I always look forward to making new friends or meeting more people
2. I know what someone is doing is wrong, but I still don't want to tell them what to do
3. I often have fun thinking about difficult problems and finding solutions
4. I want to do a fixed and simple job
5. I get along well with the people around me. Everyone is nice
6. I always keep myself busy. I feel uncomfortable if I don't do something
7. Since I was a child, I have always been on the lookout for people who want to cheat me
8. There have been many times when I have felt very happy and excited for no reason
9. It's hard for me to keep doing things as long as people are watching
10. I always lack confidence in myself to take risks and try new things
11. I show my feelings easily and quickly
12. Haven't been interested in anything lately
13. I'm always nervous about talking to people I don't know. I don't know what to say
14. I often give ideas and help out in group activities
15. I'm alone most of the time, and I like it that way
16. I usually act quickly and it is difficult for me to think through the issues that should be considered
17. I am very efficient and can do a lot in a short time
18. Do what I think is right, no matter what others say
19. You can see that everywhere I go, people are talking about me behind my back
20. I haven't been able to sleep lately because of worries
21. I often find it annoying to be constantly disturbed by people around me
22. I often miss opportunities because I am too timid to make up my mind quickly
23. I am often so excited that I even cry
24. I also feel lonely and lonely when I am with other people
25. I want to meet other people, but rarely initiate them
26. I often make people angry by telling them what to do
27. I don't understand why some people smile at me
28. What do I dislike most about staying around and doing nothing
29. I always answer people very readily
30. I have no qualms about arguing even with leaders
31. I don't think even family members should trust each other completely
32. I avoid people I don't like on the road
33. Getting along with people often hurts my feelings over little things
34. I'm often disturbed when I'm doing something
35. I often regret my decisions after making them
36. I can't shake off the feeling that I'm a useless person

37. I don't like to stand out in front of the leader

38. When I'm with others, I don't like to talk much and I'm always willing to listen to others

39. I often revise my plan just before I act

40. I often think it would be great if I could do something drastic, like drugs

41. When I encounter difficulties, I still believe in the future and am cheerful and optimistic

42. I often vent my anger and then feel it was wrong

43. I think people are lazy if they are not supervised

44. I often fantasize about impossible things

45. I always pay attention to others' every move so that I know who is good and who is bad

46. I often get upset because I can't control my nervousness about blushing in front of others

47. In recent weeks, I have been feeling that something is going to happen

48. Recently I have been sweating a lot and feel very nervous

49. I have few friends of the opposite sex

50. I'm not interested in organizing group activities

51. When I am talking to someone, I often forget his presence and suddenly fall into deep thought

52. I often get angry with people who do things slowly

53. I study and work very efficiently

54. I will never forgive or forget when someone insults or embarrases me

55. When someone is very nice to me, I always wonder what his real purpose is

56. I think sometimes my brain works well, sometimes it doesn't. It's irregular

57. I always feel annoyed by being watched

58. I think most people know that I'm pretty average

59. Even the little things often surprise me

60. There aren't many things in life that make me happy

6l. I don't like to associate with other people unless I'm sure they like me

62. I always feel nervous in front of leaders or elders

63. I think about everything very well. Think, or I will worry

64. I often play jokes and roughhouse with others.

65. I usually do things faster than others

66. I will never live an ordinary life. I must do something unusual

67. As far as I am concerned, everyone should consider his own interests first

68. I can't seem to sleep. I get up as tired as when I go to bed

69. I often get in the way of my work and study because of little things in life

70. If I was different, everyone would look at me. It would be embarrassing

71. I have a lot of thoughts running around in my head

72. Even though it was a long time ago, I often thought about my past failures in detail

73. I always get on well with others

74. I always think things over by myself first

75. I always play it safe in life to avoid making mistakes

76. Compared with others, I am less talkative

77. People usually think of me as reserved and serious

78. If someone criticizes my mistakes, I will immediately point out something wrong with that person

79. I often find that others have done something wrong and are not willing to correct it

80. I often want to talk to my friends

81. I'm often told I'm too sensitive

82. When unexpected things happen, I feel overwhelmed and nervous

83. My mood changes quite a lot in a day or two

84. I often feel upset and tired

85. I always find it difficult to make new friends

86. I'm good with people and company

87. I often think quietly by myself

88. I like the lively atmosphere during festivals

89. I always adapt myself quickly to a new environment

90. I will never tolerate others looking down on me

91. When I speak or act, I often wonder what other people are thinking and feeling

92. I often get so caught up in my thoughts that I don't even notice what's going on around me

93. Even if things go well now, I'm afraid they won't last

94. I often get depressed when I meet with difficulties

95. I get emotional easily

96. What makes me happy in life

97. I can barely speak a few words a day

98. I am often embarrassed in front of others

99. I would have done it, but my carelessness often made a mess of it

100. I often judge things immediately, but then I know I'm wrong

101. My mood is generally always cheerful

102. I never sit by myself at a party

103. I just lack the good fortune of others

104. I think fantasy, although unrealistic, is a kind of pleasure

105. I often find it difficult to do things to my satisfaction

106. When things go wrong, I tend to blame myself

107. I often get upset soon

108. I don't like to think alone

109. I don't panic in large crowds

110. Although I talk about everything in front of my friends, I am afraid of talking in public

111. I always think deeply about problems

112. I often get angry and complain

113. I walk fast

114. When I'm bored, I look for a little stimulation

115. It is difficult for others to fully appreciate my value and never give it the value it deserves

116. I often get restless and restless

117. I often take trifles to heart and forget them

118. I can do things without worrying

119. I often shed tears when I watch tragic stories in movies and television

120. I often feel that I have too little energy to do things well

Appendix II

Graduate student Y-G personality test answer sheet

Student number_____ College _____ gender_____

practice

01		02		03		04	
05		06		07		08	

01	13	25	37	49	61	73	85	97	109
02	14	26	38	50	62	74	86	98	110
03	15	27	39	51	63	75	87	99	111
04	16	28	40	52	64	76	88	100	112
05	17	29	41	53	65	77	89	101	113
06	18	30	42	54	66	78	90	102	114
07	19	31	43	55	67	79	91	103	115
08	20	32	44	56	68	80	92	104	116
09	21	33	45	57	69	81	93	105	117
10	22	34	46	58	70	82	94	106	118
11	23	35	47	59	71	83	95	107	119
12	24	36	48	60	72	84	96	108	120

Conflicts of interests

The authors declare no conflicts of interest.

Authors' contribution

Conceptualization, Xiaolong Deng and Junwen Lu; methodology, Tianxu Zhang and Jiqqian Liu; writing—original draft preparation, Xiaolong Deng, Junwen Lu, Tianxu Zhang and Jiqqian Liu; writing—review and editing, Xiaolong Deng, Junwen Lu, Tianxu Zhang and Jiqqian Liu; supervision, Xiaolong Deng. All authors have read and agreed to the published version of the manuscript.

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