The Construction of Evaluation Index System of College Counselors' Core Competence

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Abstract: **Objective** *To construct an evaluation index system of college counselors' core competence, and provide reference for the selection, training and assessment of college counselors.* **Methods** *Based on the analysis of the current status of college counselors' core competence, the characteristics and needs of students' work, and guided by the theories of educational psychology and management, 28 experts were interviewed for 3 times in a semi-structured way, and a pretest was conducted for another 14 experts, and the basic contents of the evaluation index system of college counselors' core competence were preliminarily formulated. Then the Delphi method was used to carry out two rounds of consultation with the other 70 experts, and then the analytic hierarchy process was used to construct the evaluation index system. Finally, this evaluation index system was used to investigated 379 college students selected by stratified random sampling from 7 universities in Guangdong Province to determine its reliability and validity.* **Results** *The effective recovery rate of the questionnaire in two rounds of expert consultation were both 100%, the authority coefficients of expert opinions were 0.811 and 0.867, and the coordination coefficients were 0.774 and 0.808, respectively (all P < 0.05); The coefficient of variation of each evaluation index was less than 0.15, and the full score ratio was greater than 0.30, which showed the index system met the requirements of psychometrics. The final evaluation index system included 4 primary indicators, 14 secondary indicators and 50 tertiary indicators.* **Conclusion** *The research method in this study is scientific and reliable, and the evaluation index system of college counselors' core competence has good psychometric performance.*

Keywords: College Counselors, Core Competence, Evaluation Index System, Delphi Method, Analytic Hierarchy Process, Reliability, Validity

"Core competence" is the most basic and important ability that college counselors must have to shoulder professional roles, perform job responsibilities and be competent for job requirements [1-2].

Compared with world-class universities, the degree of professionalization of college counselors in China is insufficient, and their professional ability needs to be improved [3-9]. The key reason is that we lack the gold standard to evaluate the core competence of college counselors, the selection and employment method of college counselors is unreasonable, and the selection and employment work is subjective and arbitrary, which results in the low professional competence of counselors, and difficulty for counselors to compare and correct their work, so as to improve their professional ability [10].

There is no unified conclusion on the composition of "core competence" of college counselors. There are mainly the following 4 views: First, a single-dimension theory. It is considered that the core competence of college counselors is one ability [6]. Second, multi-dimensional theory. It is considered that the core competence of college counselors consists of several parallel abilities [11-13]. Third, multidimensional hierarchical theory. It is considered that the core competence of college counselors can be divided into several competence levels, and each level includes several parallel abilities [14-15].

Previous studies have the following shortcomings: First, they focus on the summary of limited work experience, and lack of rigorous factor refining process. Although a few studies [15] have made investigation into undergraduate' expectations of professional ability of counselors, the convenient sampling method is adopted, and the samples are not representative. Second, The analysis is superficial, there is no analysis of endogenous or original capability factors, and even generalized the core competence to general ability. Third, they mostly focus on theoretical analysis, lack of quantitative empirical research, and weak operability. Due to the different emphases of various studies, the conclusions are diverse. Last they mostly emphasize the ability of ideological education and the ability to deal with routine affairs, and there is little discussion on the cultivation of mental health, especially personality.

To sum up, Taking educational psychology and competency theory as the guiding principle, this study intends to build a reasonable evaluation index system of college counselors' core competence by using Delphi method [16] and analytic hierarchy process [17] based on the current status of college counselors' core competence and the characteristics and needs of student management work in China, so as to provide reference for the selection and training of college counselors.

I.   Objects and Methods

1.1 Objects

1.1.1 Consulting experts

One hundred and twelve consulting experts were selected by stratified random sampling method, including 28 experts in the field of higher education, 28 college counselors and 56 college students. Inclusion criteria: ⑴ Experts in the field of higher education: titled assistant professor or above, Master degree or above in academic rank, and having engaged in higher education research or management for more than 15 years. ⑵ College Counselors: Administrative level or above, Bachelor degree or above, having worked as college counselors for

more than 15 years. ⑶ Representative of college students: The composition of gender, grade and academic achievement is consistent with the current situation of undergraduates in Guangdong Province.

From the above consulting experts, 28 experts (7 experts in the field of higher education, 7 college counselors and 14 college student representatives) were randomly selected as interview experts, another 14 experts (7 experts in the field of higher education and 7 college counselors) as pre survey experts, and the other 70 experts as correspondence experts.

1.1.2　Survey objects

Four hundred and twenty-three undergraduates were selected by stratified random sampling from 7 colleges and universities in Guangdong Province (including Shenzhen University, Guangdong Pharmaceutical University, Dongguan Institute of Technology, Zhongkai Agricultural College, Guangzhou Xinghai Conservatory of Music, Guangdong Institute of Finance, Guangzhou Institute of Physical Education).They were investigated with the evaluation index system of college counselors' core competence. Three hundred and seventy-nine effective questionnaires were recovered, with an effective rate of 89.6%. Among them there were 207 boys and 172 girls; Age 16-25 (21.44 ± 1.58) years old, 87 freshmen, 79 sophomores, 76 junior, 72 senior and 65 fifth-year students.

1.2 Methods

1.2.1 Preliminary construction of evaluation index system

The researchers study deeply the relevant literature to understand the research progress. On this basis, they conducted three times of semi-structured interviews with 28 experts to understand their evaluation and expectation of college counselors' work abilities from multiple angles. Combined with the above literature analysis and the results of semi-structured interviews, they preliminarily drafted the item pool of college counselors' core competence evaluation index system and formed the draft questionnaire. Taking the draft questionnaire on the core competence of college counselors as the core content, the draft expert consultation questionnaire on the core competence of college counselors is formed through the panel discussion of the research group. The draft expert consultation questionnaire on the core competence of college counselors was used to conduct a pre survey on another 14 experts, and the questionnaire was modified according to the results of the pre survey to ensure that the questionnaire met the requirements of psychometrics so as to determine the expert consultation questionnaire on the core competence of college counselors, the core content of which is the preliminarily constructed "evaluation index system of the core competence of college counselors", including 4 primary indicators, 17 secondary indicators and 63 tertiary indicators.

1.2.2 Selection of indicators of evaluation system

Delphi method [16] was used to screen the preliminarily evaluation indicators, and two rounds of correspondence were conducted to the other 70 experts in the form of letter and e-mail, with correspondence instructions, experts' personal information, experts' familiarity with the subject (divided into five levels: very unfamiliar, unfamiliar, medium familiar, familiar and very familiar, and the familiarity coefficient is 0.2, 0.4, 0.6, 0.8 and 1.0 respectively) and judgment basis (divided into four categories: practical experience, theoretical

analysis, reference to domestic and foreign materials and intuition, the influence degree of which is divided into three levels: large, medium and small, with different scores respectively). Experts were asked to evaluate the indicators according to the importance (5 points for the most important, 4 points for very important, 3 points for moderately important, 2 points for unimportant and 1 point for the most important). Index screening is based on the criteria of importance assignment mean > 3.5 and coefficient of variation < 0.2 [16]. The experts in the first round put forward modification opinions on 63 indicators, and the experts in the second round put forward modification opinions on 56 indicators obtained in the first round. Combined with the modification opinions of experts and the discussion results of the research group, four primary indicators were selected, including cognitive ability, ideological and Political Education ability, students' daily affair processing ability, and crisis prevention and handling ability, as well as 14 secondary indicators and 50 tertiary indicators.

1.2.3 Questionnaire investigation

From January to March 2021, a questionnaire survey was conducted with the evaluation index system. Firstly, the investigators are trained uniformly to unify the investigation process and evaluation standards; After consistency inspection (kappa = 0.81-0.90), it meets the test requirements.

Then, a questionnaire survey was conducted by e-mail or mail. The purpose, significance and notes of filling in the form were introduced to the selected college students with unified guidance, and the subjects were required to answer independently at the specified time.

The questionnaires with missing answers≥50% were eliminated, and the missing values of the effective questionnaire were estimate and fill in with average. Epi data 3.0 were used to input data. Two researchers input the same data independently and conduct unified logic check to ensure the accuracy of the data.

50 college students were randomly selected from 379 college students who had completed the above questionnaire survey. After two weeks, they were tested again with the evaluation index system to calculate the test-retest reliability.

1.3 Data processing

Data was exported from epidata3.0 to SPSS 20.0 for statistics. Pearson correlation analysis, exploratory factor analysis, internal consistency coefficient, test-retest reliability and content validity were used to evaluate the measurement performance of the evaluation index system.

II.   Results

2.1 Enthusiasm, authority coefficient and coordination coefficient of experts

2.1.1 Enthusiasm and coordination coefficient of experts

In the first and second rounds, 70 questionnaires were distributed and 70 valid questionnaires were recovered respectively. Therefore, the enthusiasm of experts in the two rounds were both 100%. The enthusiasm, coordination coefficients and authority coefficients of experts are shown in Table 1 and table 2.

Table 1 expert enthusiasm and coordination coefficient

Round	expert enthusiasm（%）	coordination coefficient（W）	P
1	100	0.774	0.029
2	100	0.808	0.032

2.1.2 Authority coefficient of experts

The coefficient of influence degree expressed by CA is quantified as practical experience (0.8), theoretical basis (0.6), reference to domestic and foreign literature (0.4) and intuition (0.2). CS is the coefficient of experts' familiarity with the problem, which is quantified as very familiar (1.0), familiar (0.8), medium familiar (0.6), unfamiliar (0.4) and very unfamiliar (0.2). The degree coefficient of expert authority is expressed by Cr, Cr = (Ca + CS) / 2 [16]. In the two rounds of expert consultation, the degree of expert authority of the four first-class indicators is higher than 0.7, as shown in Table 2.

Table 2 Authority coefficient of two rounds of experts

Primary index	First round consultation			Second round of consultation		
	Ca	Cs	Cr	Ca	Cs	Cr
cognitive ability	0.751	0.785	0.768	0.809	0.862	0.836
Ideological and political education ability	0.774	0.914	0.844	0.849	0.943	0.896
Ability to deal with students' daily affairs	0.826	0.889	0.858	0.872	0.935	0.904
Crisis prevention and handling capacity	0.807	0.736	0.772	0.890	0.771	0.831
average value	0.790	0.831	0.811	0.855	0.878	0.867

2.2 Concentration degree and coefficient of variation of expert opinions

The concentration degree of expert opinions is expressed by the mean of scores, coefficient of variation and full score ratio [16]. As shown in tables 3 and 4, The experts' scores of the primary indicators exceed 4.00, which are high scores; In addition to research ability, the scores of other secondary indicators exceed 4.00, which belong to high scores; The coefficient of variation of each indicator is less than 0.15, which is a normal score, and the full score ratio of each indicator is more than 0.30, which is a relatively concentrated score.

Table 3 Experts' scores, opinion concentration and coefficient of variation on level I indicators

Indexes	Score	Coefficient of variation	Full Score ratio
cognitive ability	4.18±0.52	0.134	0.41
Ideological and political education ability	4.50±0.63	0.129	0.44
Ability to deal with students' daily affairs	4.74±0.58	0.096	0.35
Crisis prevention and handling capacity	4.58±0.54	0.114	0.32

Table 4 Experts' scores, opinion concentration and coefficient of variation on secondary indicators

Indexes	Score	Coefficient of variation	Full Score ratio
Learning ability	4.47±0.51	0.124	0.42
Research ability	3.86±0.56	0.146	0.31
Multicultural adaptability	4.45±0.49	0.122	0.33
Party and League building capacity	4.73±0.51	0.106	0.52
Ideological guidance ability	4.78±0.53	0.090	0.49
Moral and ethical education ability	4.96±0.50	0.074	0.56
Public opinion processing ability	4.66±0.60	0.091	0.50
Legal education ability	4.98±0.69	0.069	0.63
Understand students' abilities	5.00±0.00	0.000	1.00
Promote students' ability development	4.64±0.53	0.114	0.42
Organization and coordination ability	5.00±0.00	0.000	1.00
Communication and presentation skills	4.82±0.57	0.108	0.44
Personal characteristics of crisis intervention	4.81±0.55	0.103	0.46
Crisis response skills	4.92±0.50	0.089	0.59

2.3 Reliability of the evaluation system

2.3.1 Internal consistency coefficient

The Cronbach's αco efficient of evaluation index system is 0.827, those of four primary indicators were 0.757, 0.769, 0.745 and 0.778 respectively, and those of 14 secondary indicators are 0.762, 0.745, 0.738, 0.765, 0.733, 0.716, 0.786, 0.744, 0.766, 0.739, 0.748, 0.707, 0.726 and 0.719 respectively.

2.3.2 Test-retest reliability

The test-retest reliability coefficient of the evaluation index system was 0.895, and the test-retest reliability coefficients of the four first-class indexes were 0.848, 0.856, 0.867 and 0.862 respectively; The test-retest reliability coefficients of 14 secondary indicators were 0.803, 0.852, 0.844, 0.853, 0.851, 0.829, 0.867, 0.819, 0.806, 0.824, 0.835, 0.846, 0.834 and 0.839 respectively.

2.4 Validity of the evaluation index system

2.4.1　Content validity Indexes（CVI）

The CVI is calculated according to the relevant formula [17], the CVI value of each index is 0.807-1.000, and the average CVI of all indexes is 0.865.

2.4.2   Construct validity

(1) Convergent validity and discrimate validity

The correlation coefficients between each index and their upper level indexes were > 0.40 (all P < 0.01), and the score of each first level index was highly positively correlated with the total score of the index system (r = 0.653 - 0.826, all *P* < 0.01). The correlation coefficients among 4 primary indexes, 14 secondary indexes and 50 tertiary indexes were > 0.30 (all P < 0.01); The correlation coefficients between each secondary or tertiary indicator and its primary or secondary indicators are greater than those between it and other primary and secondary indicators. The convergent and discriminate validity of primary and secondary indicators are 100% [18].

(2) Exploratory factor analysis

Exploratory factor analysis was conducted on 50 tertiary indicators, As KMO = 0.975, Bartlett's spherical test value χ^2 = 24871.396 (*P* < 0.01), indicating that the data is suitable for factor analysis. According to the eigen value > 1, 14 principal components were extracted to explain 72.621% of the total variation. Further exploratory factor analysis was conducted on 14 secondary indicators. As KMO = 0.956, Bartlett's spherical test value χ^2 = 12513.527 (*P* < 0.01), indicating that the data is suitable for factor analysis. According to the eigen value >1, four principal components were extracted with an cumulative contribution of 84.918% [18]. The results of two rounds of exploratory factor analysis were consistent with the theoretical conception of the index system. (see Table 5)

Table 5 factor analysis results of 14 secondary indicators of the evaluation system

Primary index	Secondary index	Eigen values	Contribution rate (%)	Cumulative contribution rate(%)
cognitive ability	learning ability	3.975	5.411	5.411
	research ability	1.521	2.319	7.730
	Multicultural adaptability	3.438	5.077	12.807
Ideological and political education ability	Party and League building capacity	6.861	8.442	21.249
	Ideological guidance ability	4.694	6.030	27.279
	Moral and ethical education ability	4.803	7.231	34.510
	Public opinion processing ability	2.661	4.518	39.028
	Legal education ability	3.574	5.129	44.157
Ability to deal with students' daily affairs	Understand students' abilities	5.765	7.773	51.930
	Promote students' ability development	5.965	8.003	59.933
	Organizational adjustment ability	7.803	9.703	69.636
	Communication and presentation skills	4.244	6.026	75.662
Crisis prevention and handling capacity	Personal characteristics of crisis intervention	1.940	3.389	79.051
	Crisis response skills	3.226	5.867	84.918

2.5 Determination of indicators

From Table 6 we can see that the final evaluation index system of college counselors' core competence includes 4 primary indicators, 14 secondary indicators and 50 tertiary indicators.

Table 6 Weight analysis results of indicators of three grade of the evaluation system

Primary index	(weight)	Second class index	(Weight)	Third class index	(weight)
Cognitive ability	(0.2614)	Learning ability	(0.1352)	Ability to study independently	(0.0524)
				Learn from colleagues	(0.0341)
				Work reflection	(0.0487)
		Research ability	(0.0520)	Discovering problems	(0.0221)
				Research skills	(0.0218)
				Achievement promotion	(0.0081)
		Multicultural adaptability	(0.0742)	National cultural confidence	(0.0159)
				Multicultural vision	(0.0138)
				Multicultural inclusion	(0.0247)
				Multicultural communication	(0.0198)
Ideological and political education ability	(0.2833)	Working ability of the Party Union	(0.0725)	Party Union's theoretical knowledge	(0.0122)
				Organization of Party and League Activities	(0.0436)
				Research on students' Party construction	(0.0167)
		Ideological guidance ability	(0.0743)	Theoretical discrimination	(0.0238)
				Master the law of theory communication	(0.0168)
				Consensus cohesion	(0.0219)
				Discourse dominance	(0.0118)
		Moral and ethical education ability	(0.0626)	Distinguish right from wrong and set an example	(0.0265)
				People oriented and friendly	(0.0176)
				Combination of emotion and reason	(0.0098)
				Combination of explicit and implicit education	(0.0087)
		Legal education ability	(0.0461)	Rich content and a sense of the times	(0.0154)
				Method is novel and easy to understand	(0.0134)
				Suitable for learning and has strong guidance	(0.0074)
				From practice and easy to apply	(0.0099)
		Public opinion processing ability	(0.0278)	Understanding the law of public opinion	(0.0078)
				Master new media concepts and skills	(0.0095)
				Correctly response to public opinion emergencies	(0.0105)
Ability to deal with students' daily affairs	(0.3270)	Understand students	(0.0506)	Win students' trust	(0.0165)
				Effectively understand the situation of students	(0.0207)
				Empathy ability	(0.0134)
		Promote students' ability development	(0.1284)	Academic guidance ability	(0.0413)
				Career guidance ability	(0.0335)
				Psychological and social guidance	(0.0424)
				Sports and leisure guidance	(0.0212)

	Organization and coordination ability (0.1018)	Scientific plan	(0.0378)
		Reasonably arrange personnel	(0.0430)
		Interpersonal coordination ability	(0.0310)
	Communication and presentation skills (0.0462)	Oral expression ability	(0.0091)
		Written expression ability	(0.0073)
		Communication skills	(0.0098)
Crisis prevention (0.1283) and handling capacity	Personal characteristics of crisis intervention (0.0594)	Rich life experience	(0.0117)
		Emotional stability	(0.0154)
		Thinking flexibility and creativity	(0.0190)
		Rapid psychological response	(0.0088)
		Energy concentrated and recovery	(0.0045)
	Crisis response skills (0.0689)	Understanding and assessing crises	(0.0170)
		Ensure the safety of the parties	(0.0141)
		Effective psychological support	(0.0119)
		Effective plan and implement	(0.0259)

III. Discussion

3.1 Reliability and scientificity of the construction process of evaluation index system

The enthusiasm of experts in the two rounds of consultation was 100%, reflecting the high support and attention of experts to this study. The expert authority coefficients of the two rounds of consultation were 0.811 and 0.867 respectively, which exceeded the acceptable lower limit of 0.70 and the lower limit of 0.80 for experts to have greater confidence in the selection of content [16], indicating that the expert authority was high and ensuring the reliability of this study. The overall coordination coefficients of the two rounds of consultation were 0.774 and 0.808 respectively, which were statistically significant and higher than the acceptable lower limit of 0.70; At the same time, the scores of experts on all primary indicators and 92.9% secondary indicators (except research ability) exceeded 4.00, which were high scores; The coefficients of variation of all indexes was less than 0.15, which belonged to normal scores; The full score ratio of all indexes exceeded 0.30, which belonged to relatively centralized scores. The above results showed that the expert's opinions were highly consistent, the coordination was good, and the evaluation system was reasonable [17].

3.2 Psychometric performance of evaluation index system

The results of the questionnaire survey showed that the evaluation index system had good psychometric performance. First, the internal consistency reliability of the index system and indicators at each level were more than 0.70, and the test-retest reliabilities were more than 0.80, suggesting that the index system had good internal consistency reliability and good cross time stability.

Second, the correlation coefficient between each index and its upper-class index was > 0.4, those between various primary indexes, secondary indexes and tertiary indexes were > 0.30 (all $P < 0.01$), those between the secondary, tertiary indicators and their upper-class indexes were greater than those between the indicators and other primary and secondary indicators. The calibration success rate of convergent and discriminant validity of

indicators at each level were 100%. The above results suggested that the evaluation index system had good convergent and discriminate validity [18].

A total of 14 common factors were extracted by factor analysis of 50 tertiary indicators to explain 72.621% of the total variation. Further exploratory factor analysis was carried out on 14 secondary indicators, and four common factors were extracted to explain 84.918% of the total variation. The common factor structure extracted by the two rounds of exploratory factor analysis were consistent with the theoretical conception of the index system, indicating that the evaluation index system had good structural validity [18].

Conferences

[1]   Ministry of Education of the People's Republic of China. Regulations on the construction of counselor team in colleges and universities [OL/EB]. http://www. moe. gov. cn/srcsite/ A02/ s5911/ moe_ 621/ 201709/t20170929 _ 315781.html.

[2]   Feng Gang. Adhere to quality orientation and connotation development, and strive to improve the scientific level of college counselor team construction [J]. Research on Ideological Education, 2012, 19(11): 7-10

[3]   Xiao Xiaozhe. Comparative analysis of college student affairs at home and abroad and its enlightenment to the research on the professional ability of college counselors [J]. Journal of Higher Education, 2018, 4(4): 16-18.

[4]   Yang Donghua, Zhao Jing, Ma Leini. Characteristics and enlightenment of student affairs management in French universities [J]. Journal of Higher Education, 2016, 2(15): 4-6.

[5]   Weng Tingting. Analysis on the characteristics of student affairs management in colleges and universities in Japan and its experience and enlightenment [J]. Journal of Higher Education, 2016, 2(9): 13-14.

[6]   Zhang Yanyan. On the construction of "professionalization" core competence system of college counselors [J]. College Counselors, 2011, 1(6): 74-77.

[7]   Xiang Xin. Exploration on the path of cultivating counselors' professional core competence [J]. Industry and Technology Forum, 2015, 14(7): 240-241.

[8]   Liu Jia, Wang Linqing. Investigation and Reflection on the current situation of scientific research ability construction of college counselors -- Taking the academic papers published by counselors of China University of Geosciences (Wuhan) as an example [J]. Journal of Xinyang Normal University (PHILOSOPHY AND SOCIAL SCIENCES EDITION), 2017, 37(1): 80-85.

[9]   Zheng Deqian Investigation and Analysis on the quality and ability of college counselors [J]. School Party Building and Ideological Education, 2016, 32(5): 74-76.

[10] Li Zhongming. Research on the growth law and training strategy of excellent counselors in colleges and universities [M]. Beijing: Science Press, 2019.

[11] Ma Linhai. Paradigm transformation of college students' ideological and political education and improvement of counselors' core competence -- From the perspective of Internet thinking [J]. Journal of

College Counselors, 2015, 7(5): 49-53.

[12] Peng Xiaobei, Jiang Xiaohong, Huang Yilian. Research on vocational core competence of college counselors from the perspective of entrepreneurship and employment [J]. Going Abroad and Employment, 2011, 2(3): 48-49.

[13] Sun Haibo. The core competence required by the work of college counselors and its training countermeasures [J]. Journal of Culture, 2015, 10(8): 89-90.

[14] Wang Lixin. On the core competence and training of college counselors [J]. Southern Agricultural Machinery, 2019, 52(20): 209 – 210.

[15] He Meng. Research on the core competence construction of college counselors [D]. Shandong University (Master's thesis), 2016, 04.

[16] Foth T, Efstathiou N, Vanderspank-Wright B, et al. The use of Delphi and nominal group technique in nursing education: A review[J]. Int J Nurs Stud, 2016, 60: 112 -120.

[17] Shen Yanhong, Chang Wenhu, Peng Yingchun. How to measure the validity of the questionnaire [J]. Chinese Journal of Hospital Management, 2004, 20(11): 704- 705.

[18] Feng Yansong. SPSS22.0 statistical analysis application tutorial [M]. Beijing: Tsinghua University Press, 2015: 377-378.