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The Compilation of College Students' Mental Huagong Scale Based on Chinese Culture

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Abstract. Chinese culture contains rich positive thoughts of mental transformation, mental Huagong (MHG: 心理化功) is the embodiment of people's quality of psychological transformation. MHG refers to the Gongfu (功夫) or mental competence that transforms negative or passive into positive or advantageous mind, which is an indispensable quality for contemporary people, especially college students, to find favorable position for the use of their abilities (用武之地) in society. In order to understand the level of college students' MHG, 586 college students from ordinary universities in Guangdong Province were tested. By item analysis and exploratory factor analysis on sample 1, confirmatory factor analysis on sample 2, college students' mental Huagong scale (CSMHGS: 大学生心理化功量表) was compiled finally. The result shows that CSMHGS is composed of 35 items and 5 factors, and the cumulative variance contribution rate is 56.145%. The result of confirmatory factor analysis shows that the 5-factor model fitted well. Cronbach α coefficient of the total scale is 0.854, and the reliability coefficient of each dimension of the scale is between 0.809~0.856. It is concluded that CSMHGS has good reliability and validity, and can be used as a measuring tool for the study of college students' MHG.

Keywords. Chinese Culture; College Students; Mental transformation (心理转化); Mental Huagong (MHG: 心理化功); Scale; Kung Fu (KF, 功夫)

1 Introduction

Chinese culture takes "Tao(道)" as its core, and "Tao(道)" is the unity of opposites between "Yang(阳)" and "Yin(阴)", that is, "One Yin and one Yang are the Tao". "Yin" and "Yang" are dialectical unity of interdependency, mutual generation and restriction, reciprocal causation, and covariant(HE Yaqin, 2018). It is mainly manifested as follows: (1) two aspects in a contradiction can be separated from each other and have their respective different characteristics; (2) both of them are interdependent and inseparable, and each gives each other the meaning of existence(Hong-ze, 2018). (3) They interact, transform each other, cause and effect each other, and complement each other. (4) Each other has its own shadow in the other side, so able to be recognized by the other side. (5) The two sides are entangled together, just like quantum entanglement.

This clearly puts forward the idea of mutual transformation and interdependence between the two sides of the contradiction such as success and failure, weal and woe, good and

bad, positive and negative, etc., which reflected in mind is the interdependence and mutual transformation between contradictory mind(Bing-quan, 2021b). For example, “extreme happiness begetting sorrow(乐极生悲)” and “taking pleasure in suffering(以苦为乐)”(Bing-quan, 2021a). this kung fu(KF,功夫) or mental competences to transform contradictory mind into each other is mental Huagong(MHG, 心理化功), which includes the mutual transformation of positive and negative mind. It is the expression of this idea that “one word becomes a Buddha, the other a Demon(一念成佛, 一念成魔)”, or “whether becoming a Buddha or Demon is all in one mind(佛魔全在一念间)”, “goodness and evil depend on each other(善恶相依)”, and “afflictions is Bodhi(烦恼即菩提)”, etc.

Of course, since it is Gongfu, MHG should be positive, or have a positive effect on people. Therefore, MHG in this article is psychological Gongfu or competences that transforms negative or disadvantageous into positive or advantageous mental factors, which core is transformation(Bing-quan, 2021b). Such as turning pressure into impetus, plight into ways to hone, setback into the opportunity to success, others’ sarcasm into the drive to do better, and frustrations or failures into opportunities to enhance wisdom.

There are abundant thoughts of positive psychological transformation in Chinese culture. It is these thoughts that have created the strong MHG of Chinese nation. The reason why Chinese nation is the most excellent nation in the world is closely related to the MHG created by Chinese culture(D. H.-x. LI Bing-quan, 2020a). Chinese culture, especially the three main culture—Confucianism(D. H.-x. LI Bing-quan, 2020b; WU Run-miao, 2022), Taoism(ZENG Yi-qing, 2022) and Buddhism(Bing-quan, 2020), has profound thoughts of MHG. These thoughts have played a very positive role in the history of Chinese nation in overcoming various difficulties and hardships(艰难困苦), internal and external problems(内忧外患), and still have positive realistic value for people to overcome difficulties today.

The “failure is the mother of success(失败是成功之母)” in Chinese culture indicates that failure should be taken as to gather experience and hone psychological competences for success; “It is difficult to be a person superior to others without suffering the bitterest of the bitter(不吃苦中苦, 难为人上人)” is to take the suffering as a factor to hone people’s willpower, make oneself grow and achieve success. The mortality anxiety management of Taoism transforms death into a positive life attitude and meaning of “living towards death(向死而生)”(ZENG Yi-qing, 2022), while Confucianism sublimates death anxiety into an into the internal motivation of actively striving and continuous self-improvement to achieve three immortalities, namely, Li-de(立德, achieving and strengthening virtue), Li-gong(立功, rendering meritorious service) and Li-yan(立言, writing and propounding ideas)(D. H.-x. LI Bing-quan, 2020b; WU Run-miao, 2022), and Zen regards death as a return to the immeasurable Ben-xin(本心: original heart) or Zi-xing(自性: self-nature) by rationalization, sublimation, identification, projection and other functions(Bing-quan, 2020). All these are of great positive value for people to realize their life value, improve their spiritual realm, and prevent and treat mental problems. It is on this basis that its basic dimensions are summarized according to the main performance of MGH based on the analysis of the positive thought of mental transformation in Chinese culture, and design the problem of measuring MHG.

Daily life practice shows that people who lack or have low level of MHG often have negative mind such as flinch, inferiority, and self-denial, etc. when they encounter setbacks or failures. These negative mind become insurmountable obstacles on their life way. On the contrary, when people with high MHG encounter setbacks or failures, they usually take them

as opportunities to hone themselves, thus forming a positive mentality (taking setbacks or failures as opportunities to exercise and develop, and seeing their positive aspects), a positive attitude (I can do, I can overcome difficulties, have the courage to face difficulties and hardships, etc.), a positive response (looking for opportunities, summarizing lessons, finding remedial measures, actively finding valuable things, etc.), etc. Cultivate or enhance positive mental quality and increase wisdom by setbacks or failures. It is the reason that some people take MHG as one of the core mental competences that contemporary people should have (Z. X.-d. LI Bing-quan, 2022). From this point of view, MHG is very important for people in a highly competitive society, especially college students.

With the rapid development of society and the quick progress of science and technology, various pressure of social adaptation comes one after another, which easily makes people feel frustrated and results malignant social event when dealing with adversity or predicament, especially for college students (YANG Wei, 2021). In recent years, negative even malignant social events caused by the mental problems of college students are common occurrence. In this case, college students with poor or low level of MHG would be prone to mental problems, which would easily lead to their difficulties in achieving the expected results under the multiple tests of learning, interpersonal, employment, etc., and to make them fall into adversity and predicament so as to result them in withdrawal and giving up, and difficult to realize the value and meaning of life, or even abandon themselves and go astray. Therefore, whoever, especially college students, want to adapt to the rapid changes in society, strengthen his psychological power, and find ample scope for their abilities in the contemporary competitive and stressful society to realize the dual values of self-value and social value, it is necessary to constantly cultivate and strengthen his MHG (WU Run-miao, 2022).

Since the MHG is so important, how on earth should MHG of college students be recognized and understood, then cultivated and improved according to the existing problems? An effective tool to measure MHG is needed. Therefore, it is very important and necessary to compile CSMHGS.

2 Research process and method

2.1 Research basic thinking and processes

According to the requirements of the times, the needs of social development, the core qualities that contemporary people should have, and in combination with Chinese traditional cultural thoughts, the concept of MHG is put forward, and defined and interpreted from psychological horizon, its connotation is analyzed according to its concept. Then, according to its connotation, the dimension of MHG is initially established, and the scale is initially designed based on the detailed theoretical analysis of the questions that can measure the dimension. The scale was tested, and the questions and dimensions are carefully selected according to the test results, and the scale for college students was prepared. The scale is tested initially, its dimensions and questions are analyzed and screened according to the results of preliminary initial test. Finally, the confirmatory factor analysis is carried out and the final scale was compiled.

2.2 Object

Using random sampling, 586 college students were selected for the test from some colleges and universities in Guangdong Province, including Zhongshan University, Zhaoqing University, Dongguan Institute of Technology, Guangdong Polytechnic Normal University, Zhaoqing Medical College, etc.

Sample 1: Questionnaires were distributed by class or by random sampling. 154 questionnaires were finally recovered, after eliminating 20 invalid questionnaires, 134 valid questionnaires were finally obtained, the effective recovery rate is 87.01%. There are 34 boys and 100 girls; 26 freshmen, 29 sophomores, 53 juniors and 26 seniors. Project analysis and exploratory factor analysis is conducted out on the sample.

Sample 2: Questionnaires were distributed by class or by random sampling. 504 questionnaires were finally recovered, after eliminating 52 invalid questionnaires, 452 valid questionnaires were finally obtained, the effective recovery rate is 89.68%. There are 178 boys and 274 girls; 107 freshmen, 102 sophomores, 129 juniors and 114 seniors. Confirmatory factor analysis is conducted out on the sample.

2.3 Preparation of scale items

Relevant theories and research findings at home and abroad are collected, and sorted out, combining the research status and influencing factors of MGH, the content of the scale is refined, modified and improved repeatedly, and a preliminary scale of 60 items are formed. During the test, the subjects assessed the conformity of their actual situation with the description of the topic. The scale uses Likert's five-point scoring method, and scores from "very incongruous" to "very consistent" are 1 to 5 points respectively, while reverse questions are scored in reverse.

3 Result

3.1 Project analysis

The data obtained from sample 1 were analyzed by items, the total score was ranked from high to low, and grouped according to the standard of 27%. Independent sample t-test was conducted out for the high and low groups to test the differences between the two groups in each item, and 7 items with insignificant differences were deleted. The total score of every testee is calculated, and the correlation coefficient between score of every item and the total score are analyzed and calculated. The results show that the correlation coefficient between the remaining 53 items and the total score is 0.2~0.6, all reaching significant level.

3.2 Exploratory factor analysis

Since the items in the scale have been classified into five clear factors in advance, the number of common factors to be extracted can be set to 5 before factor analysis(Ming-long, 2010). Then, on the basis of project analysis, exploratory factor analysis can be carried out for the project. According to the result of factor analysis, the KMO value is 0.833, which is a good degree index. Because Bartlett's sphericity test is significant ($\chi^2=4268.61$, $df=1378$, $P=0.000$), there is a high possibility of common factors among variables, and suitable for exploratory factor analysis. The exploratory factor analysis uses principal component analysis and orthogonal rotation method to generate 12 factors with characteristic root greater than 1, and the cumulative variance interpretation rate is 68.3%. Items are deleted according to the following criteria: (1) The item load is less than 0.5; (2) The cross load is too close; (3) The items that do not conform to the theory. Exploratory factor analysis would be carried out again after deleting each item unqualified. Finally, a total of 18 items was deleted and 35 items were retained. The principal component analysis is conducted out again. The results of the gravel map show that the model is optimal when the extracted common factor is 5, the interpretation rate is 56.145%, and the KMO value is 0.854. See Table 1 for factor analysis. Table 1 shows that CSMHGS is composed of five factors. According to the results of exploratory factor

analysis, the corresponding load of each item is between 0.5~0.8, and the five factors account for 56.145% of the variation. The results show that the scale's structure and content are acceptable.

The five factors are named according to the project meaning contained in the factors. The 1st factor includes questions 10, 11, 18, 47, 51, 52, 58 and 60, named "wisdom transformation(WT). The 2nd factor consists of 22, 30, 32, 33, 34, 36, 37, 40, 41 and 42 questions, named mental attitude(MA). The 3rd factor includes questions 21, 28, 29, 35, 38, 45, 46, 49, 56, 57 and 59, named Yu-xin-li(YXL, 驭心力: the ability of mastering ones mind). The 4th factor includes questions 4, 12 and 15, named Emotional Motivation(EM). The 5th factor includes questions 8, 53 and 55, named volitional power(VP). Finally, a formal scale with five factors and 35 items was formed.

Table1 Items and load of CSMHGS

| Factor1 | | Factor2 | | Factor3 | | Factor4 | | Factor5 | |
|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
| Items | Load | Items | Load | Items | Load | Items | Load | Items | Load |
| 58 | 0.797 | 33 | 0.752 | 28 | 0.765 | 12 | 0.668 | 53 | 0.626 |
| 52 | 0.772 | 37 | 0.685 | 56 | 0.731 | 15 | 0.620 | 55 | 0.612 |
| 51 | 0.714 | 40 | 0.675 | 45 | 0.728 | 4 | 0.603 | 8 | 0.565 |
| 60 | 0.694 | 41 | 0.674 | 35 | 0.703 | | | | |
| 10 | 0.683 | 30 | 0.665 | 57 | 0.639 | | | | |
| 18 | 0.683 | 22 | 0.657 | 38 | 0.629 | | | | |
| 14 | 0.676 | 34 | 0.631 | 29 | 0.625 | | | | |
| 11 | 0.652 | 36 | 0.606 | 49 | 0.606 | | | | |
| 24 | 0.626 | 32 | 0.574 | 21 | 0.593 | | | | |
| 50 | 0.599 | 42 | 0.573 | 59 | 0.554 | | | | |
| 47 | 0.580 | | | 46 | 0.526 | | | | |

3.3 Exploratory factor analysis

Confirmatory factor analysis is conducted on the data obtained from sample 2 to examine the fitting degree of the 5-factor model. The confirmatory factors provide a series of indicators for the fitting degree of the model. This study mainly uses the following indicators as the test criteria: (1) χ^2/df . The value of χ^2/df generally accepted fitting standard of model is less than 3, the best value is between 1~3. However, because the chi-square value is easily affected by the estimated parameters and the number of samples, the chi-square degree of freedom ratio is also inevitably affected by the size of samples, it is necessary to refer the fitness index for comprehensive judgment. (2) The adaptation indexes GFI, NFI, IFI, TLI and CFI are all between 0.90~1. The closer to 1, the better the model path map fits the actual data; (3) In general, the smaller the RMR and RMSEA, the better. The smaller the RMR, the better the adaptability of the model. In general, acceptable RMSEA is in the range of 0.08~0.10, the better is in the range of 0.05~0.08, the best is less than 0.05. RMR is strictly required to be less

than 0.05. The results of confirmatory factor analysis are shown in Table 2, the value of χ^2/df is less than 5, CFI, IFI, NFI, TLI are all greater than 0.90, RMSEA value is 0.041, RMR value is 0.042, both less than the standard value of 0.05, which indicates that the model of CSMHGS is fitted well and can be accepted as the final model.

Table 2 Fitting index of scale model

| χ^2 | df | χ^2/df | GFI | NFI | IFI | CFI | TLI | RMSEA | RMR |
|----------|-----|-------------|-------|-------|-------|-------|-------|-------|-------|
| 1006.147 | 550 | 1.829 | 0.882 | 0.925 | 0.965 | 0.965 | 0.962 | 0.041 | 0.042 |

3.4 Validity

Factor analysis: Several common factors are selected from one test, and the sum of the variance contribution rates of these common factors can be used as the test validity index (Yu, 2010). The result of exploratory factor analysis shows that the 5-factor model is the best, and the cumulative variance contribution rate is 56.145%, that is, the test content of this scale is relatively concentrated. Moreover, the fitting index obtained from confirmatory factor analysis can also be used as an indicator of structural validity. The result shows that the scale has good structural validity.

Correlation analysis: The correlation between the dimensions of the scale and between each dimension and the total score are able to be taken as an indicator of the structural validity of the scale. The results of correlation analysis show that the correlation between the factors of CSMSHS was between 0.318~0.812, with a moderate degree of correlation; The correlation between each of the five factors and the total score of the scale is between 0.677~0.874, with a high degree of correlation, as shown in Table 3. The correlation coefficient of each dimension has reached a significant level, which indicates that the scale has a good structural validity.

Table 3 The correlation of CSMHGS and its dimensions(r)

| | MA | EM | YXL | VP | WT | Total |
|-------|--------|--------|--------|--------|--------|-------|
| MA | 1 | | | | | |
| EM | 0.74** | 1 | | | | |
| YXL | 0.81** | 0.66** | 1 | | | |
| VP | 0.43** | 0.52** | 0.32** | 1 | | |
| WT | 0.48** | 0.55** | 0.33** | 0.77** | 1 | |
| Total | 0.84** | 0.78** | 0.68** | 0.74** | 0.87** | 1 |

*p<0.05, **p<0.01

3.5 Reliability

The coefficient of Cronbach α of total CSMHGS is 0.854, which meets the requirements of psychometrics (DAI Xiao-yang, 2009). The coefficients of Cronbach α of five factors—WT, MA, YXL, EM and VP are 0.839, 0.809, 0.784, 0.816 and 0.856 respectively.

4 Discussion

4.1 The analysis and discussion of the scale's dimension

MHG is related to adversity quotient (AQ). In fact, the basic meaning of AQ is to transform adversity mentally. By the study of AQ, some Chinese scholars defined it as the mental quality of transforming adversity, difficulties or setbacks, etc. into advantages, capital, wisdom or conditions to success. This concept first highlights or emphasizes that the AQ core characteristics is “transformation” or “change”, which is consistent with the core of Stoltz’s AQ – “transformation” or “change”(Bing-quan, 2018). Unfortunately, Stoltz and other scholars at home and abroad have not focused on mental transformation and change. Thus the AQ scale developed is mainly the suppression or elimination of negative mind, which does not fully reflect the characteristics of transforming negative mind into positive mind, as the result that the structural validity of AQ scale developed based on this would be affected. Because of this, the concept of MHG is put forward based on the research of AQ and the positive thought of mental transformation in Chinese culture, with mental transformation as the core. On this basis, after referring to the relevant literature at home and abroad, and according to the actual situation of the college students, MHG is studied further. After collecting data, literature review, prediction, formal test and other steps, a formal scale consisting of five representative dimensions and 35 item combinations is finally determined.

The five dimensions included in the self-compiled CSMHGS are WT, MA), YXL, EM and VP. WT is that people gain the increasing of wisdom in adversity, that is, as encounter failure, frustration, difficulties and hardships, plight etc., they analyze the causes of the events encountered, summarize experiences and lessons, and transform their own experience of failure and frustration into opportunities for the increasing of wisdom and self-improvement.

MA reflects people’s attitude of coping with adversity, plight, difficulties and hardships, that is, the degree of people’s transforming negative into positive mental attitudes. It would directly affect the degree or state of solving difficulties, exploring self-potential and self-motivation whether the negative can or not be transformed into the positive.

YXL is the ability to control or master people’s own mind(Z. X.-d. LI Bing-quan, 2021). That is, the extent of people’s controlling or mastering their own mind to eliminate interference or negative influence of internal and external factors and transform negative into positive mental tendencies, which reflects the level of their eliminating negative effect, interference or harm from various internal and external disadvantages.

EM is the emotional experience and motivational transformation that people behave when encountering adversity, plight, failure, etc. that is, the extent of people’s transforming the negative emotional power caused by the dilemma, beating, insurmountable difficulties or frustration, etc. into positive emotional power. Among them, positive emotional power (such as coping with difficulties and hardships with greater enthusiasm) can inspire people’s motivation to solve difficulties and deal with adversity in a positive and enterprising way, which reflects people’s control, transformation and guidance level of control, transformation and guidance of negative emotional strength brought by adversity, plight, failure, frustration, difficulties and hardships.

VP refers to the volitional quality showed by people as their encountering adversity, that is, the degree of people’s transforming disadvantages into advantages for success by regulation and control of willpower. For example, “poverty giving rise to the desire for changing it(穷则思变)”, and “chaos or turmoil causing aspired for stability(乱则思定)”, which is to say that poverty becomes an incentive for people to change their poverty, and chaos or turmoil become an incentive for people to calm down troubled times and pacify the world. For another

example, Confucianism, such as Mencius thought of “born in distress and die in peace(生于忧患死于安乐)”, takes difficulties and hardships as the opportunity to hone people’s ability to take on great social responsibilities, and crisis or danger as the only way to cultivate people’s positive mental quality. The same is true of Wang Yangming’s thought of “honing in things”.

4.2 Discussion and analysis of reliability and validity

The result shows that the internal consistency reliability of the scale is 0.854, reaching the ideal level. Cronbach α coefficient of each factor is relatively good, and the internal consistency coefficient of each of the five dimensions and the total scale is between 0.784~0.856, which preliminarily indicates that the CSMHGS is scientific and reasonable, and conforms to the standards of psychometrics.

The correlation between each dimension of the scale and the total scale is 0.677~0.874, all reach significant level. By using factor analysis method to explore the validity of the scale, it was found that the extracted five factors can interpret 56.145% of the total variance, with a high interpretation rate, and the factor load of each item reaches more than 0.5. The results of using confirmatory factor analysis to fit the structure of the scale with multiple indicators show that the five-factor scale has a good fit. The correlation analysis shows that there are moderate correlation between the scale and each of the five factors of the scale, and each factor each other, which further shows that the scale has good structural validity.

To sum up, it can be said that CSMHGS has good reliability and validity, which shows the scale compiled this time can be used as a measuring tool for relevant research.

5 Conclusion

According this research, the following conclusions can be drawn:

First, MHG is an indispensable competence for contemporary people, especially college students, to play a useful role in society.

Second, self-designed CSMHGS is an effective measurement tool with high reliability and validity.

Third, Chinese culture contains very positive mental transformation thoughts, which still have very important practical value.

Fourth, mental transformation is the Gongfu or competence of transforming the negative into the positive, which core and mental mechanism is mental transformation.

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