




The Relationship Between Anxiety, Depression, and Well-Being Literacy in College Students: Based on a Dual-Factor Model of Mental Health

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Abstract. OBJECTIVE: To explore the relationship between depression, anxiety and happiness literacy among college students based on the dual-factor model of mental health. METHODS: 1030 college students were surveyed on negative psychological indicators of anxiety and depression and positive psychological indicators of happiness literacy, and Amos software was used to compare the two mental health models. RESULTS: The dual-factor model of college students' mental health had the best fitting index ($\chi^2/df = 2.864$, GFI=0.946, AGFI=0.913, CFI=0.921, TLI=0.896, RMSEA=0.043), and was able to provide the best explanation of the internal structure of mental health. CONCLUSION: A dual-factor model of mental health for depression, anxiety and well-being literacy among college students is more desirable.

Keywords: College students, Mental health, Dual-factor model, Anxiety, Depression, Wellbeing literacy

1 Introduction

College students are in a critical period of life development, facing social, learning and life pressures, and are prone to mood swings such as anxiety[1], depression[2], and tension[3]. As an important part of the social group, the level of mental health of university students is directly related to the realization of the goal of "a modern socialist country in the new era".

By combing through the development of mental health models, it was found that the traditional model of mental health used negative psychological symptom indicators, also known as the psychopathology model (PTH), to categorize mental health states as low PTH (psychologically healthy), and high PTH (psychologically unhealthy). Based on this model, many school psychology efforts have focused on mental illness, a model that has resulted in ineffective school psychology efforts that primarily provide psychological services to a small percentage of high-risk students[4]. With the rise of

positive psychology[5], researchers have gradually focused on positive mental health indicators, incorporating positive indicators such as Subjective Well-Being (SWB), forming the Dual-Factor Model of Mental Health (DFM)[6], and validating the validity of the Dual-Factor Model of Mental Health through empirical research. The DFM theory suggests that even if an individual is cured of a mental illness, it is not enough to ensure or maintain his or her mental health, and that positive indicators need to be added to the mental health assessment system to identify individuals or populations at high risk of mental health problems or deteriorating mental health problems. Chinese scholars Zhang Dajun and Wang Xinqiang first described the dual-factor model of mental health, emphasizing that the ultimate goal of psychotherapy and counseling is to achieve a state of complete mental health, thus making diagnosis and treatment more comprehensive and accurate[7]. Since then, there have been more researchers who have all adopted an empirical approach in children[8] and adolescents[9] and high schools[10] as well as adults[11] have found support for the dual-factor model of mental health. The DFM has been developed in the West over more than a decade and has had a large academic impact, with a special chapter on it in the Handbook of Positive Psychology. However, research on DFM is just emerging in China, and further validation of the validity of the model among Chinese college students is needed.

In the context of the post-epidemic era, as well as the national strategy of developing the country through science and education and strengthening the country through talents, it has become a new trend in the field of college students' mental health research in the post-epidemic era to organically combine the theory of dual-factors of mental health with college students' mental health research, and to increase the basic, holistic, and systematic research on the variables related to the dual-factors model of college students' mental health. The present study further explores the validity of the dual-factor model of college students' mental health, with a view to providing a more scientific research basis for improving the mental health of college students.

2 Methods

2.1 Participants

The results of the statistics using convenience sampling show that the number of male students is 353, or 34.3%, and the number of female students is 677, or 65.7%. The number of pupils in the first grade was 430, or 41.8 per cent; the number of pupils in the second grade was 323, or 31.4 per cent; and the number of pupils in the third grade was 276, or 26.8 per cent. The number of only children was 237, or 23%; the number of children with six months' experience of being left behind before the age of 10 was 493, or 47.9%; and the number of single parents or divorced families was 185, or 18.0%. The mean age of the sample was 19.14 ± 1.12 years, 95% IC (19.07, 19.21).

2.2 Measurements

2.2.1 Wellbeing Literacy 6-Item Scale (Well-Lit 6)

The Chinese version of the wellbeing literacy 6-item scale (Well-Lit 6) is based on its definition and adopts the definition of the term "literacy" as defined by the Australian Curriculum, Assessment and Reporting Authority (ACARA). Reporting Authority (ACARA) definition of the term 'literacy'. The scale was rated on a 7-point Likert scale ranging from "Strongly Disagree 1" to "Strongly Agree 7", with high internal consistency coefficients in the sample (students: $\alpha=0.84$, staff: $\alpha=0.91$, parents: $\alpha=0.91$)[12]. In the current survey, the Cronbach's α coefficient was 0.98.

2.2.2 Patient Health Questionnaire for Depression and Anxiety (PHQ-4)

The PHQ-4 is a brief screening scale to assess anxiety and depression, consisting of 4 questions on a scale of 0 to 3. The total score on the PHQ4 is determined by adding a score of 0-2 to each of the 4 questions to rate normal, 3-5 as mild, 6-8 as moderate, and 9-12 as severe. A total score of ≥ 3 on the first two questions suggests anxiety, and a total score of ≥ 3 on the last two questions suggests depression[13].

2.3 Statistical Analysis

The survey data were processed and analyzed using SPSS 24.0 and Amos 24.0. All variables in this study were obtained from self-reports of university students, and Amos 24.0 was used to conduct a validated factor analysis of the two models of mental health to determine that the smaller the values of χ^2/df , RMSEA, and SRMR, and the closer the GFI, AGFI, CFI, NFI, and TLI are to 1, the better the model fit.

2.4 Ethical Declaration

All procedures performed in the current study involving human participants were in accordance with the ethical standards of the School of Medical Psychology of Army Medical University. Participation in this questionnaire was voluntary. Before completing the questionnaire, it was ensured that the electronic informed consent form was available to all participants.

3 Results

The applicability of the dual-factor model of mental health in the evaluation of college students' mental health was tested through structural equation modeling (SEM). The indicators of mental health measurement are positive mental indicators and negative mental indicators. Based on the theoretical foundation of the dual-factor model of mental health, combined with the viewpoints of Keyes, Zhang Dajun and other scholars, and with reference to the constructing ideas of Xiong Junmei and other scholars, we constructed 2 kinds of equation models to be tested. Model I is a one-factor model of mental health, with mental health as the only bipolar latent variable, positive

psychological indicators of the explicit variable on the latent variable of mental health with positive factor loadings (including the 6-item scale of happiness literacy), and negative psychological indicators of the question items on the latent variable of mental health with negative factor loadings (including anxiety and depression). The positive indicators were represented by the 6-item questions of the Happiness Literacy Scale, and the psychopathological symptoms were represented by the 4 questions of the Anxiety Depression Screening Scale (PHQ-4). Model II was a dual-factor model of mental health, containing two latent variables, positive and negative psychology and together reflecting the larger bipolar latent variable of mental health. SPSS24.0 and Amos24.0 were used to validate the two models. According to the recommendations of relevant scholars at home and abroad, the commonly used fit indices were comprehensively selected to evaluate the fit of the models (Table 1). The results showed that all the fitting indices of the dual-factor model of mental health with happiness literacy, anxiety, and depression as indicators were within a reasonable range, and the model fit was better than the single-factor model of mental health. The specific model paths are shown in Figures, where Figure 1 shows the one-factor model of mental health (Model I) and Figure 2 shows the dual-factor model of mental health (Model II).

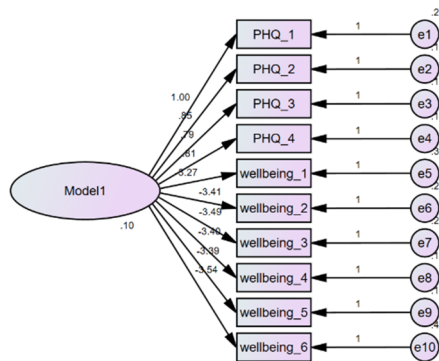


Fig. 1. | The one-factor model of mental health (Model I)

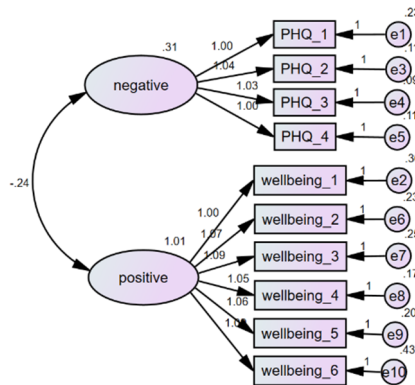


Fig. 2. | The dual-factor model of mental health (Model II)

Table 1. Model I and Model II fitting index calculation results

	χ^2/df	GFI	AGFI	NFI	CFI	TLI	RMSEA
Model I	7.327	0.858	0.776	0.698	0.725	0.646	0.078
Model II	2.864	0.946	0.913	0.885	0.921	0.896	0.043

4 Discussion and Conclusions

Validation of different models of mental health found that the dual-factor model of mental health fitted satisfactorily. The results support the theory of the dual-factor model of mental health: psychological symptoms and positive psychology are two important indicators describing mental health, one without the other.

The results of the validated factor analysis of college student mental health survey data provide new evidence to confirm Keyes' dual-factor model of mental health. It also suggests that the combination of anxiety, depression, and well-being literacy is applicable to the dual-factor model of mental health. This means that we can assess the mental health of college students with a relatively simple instrument. Since the PHQ is a valid screening tool for depression and anxiety disorders, after the assessment, it can also screen the high-risk groups for these two disorders, which provides great convenience for the prevention and early detection of the disorders. The cross-cultural consistency of the findings proves that the dual-factor model of mental health is equally applicable in China's college student population, and the theory can be used as the basis for further corresponding research in the future to improve the current situation of insufficient systematic and targeted mental health interventions, as well as the lack of corresponding theoretical guidance.

In addition, the assessment results can help guide the rehabilitation of the disease population. In terms of intervention and treatment, the reduction of symptoms may only be the first step of treatment, and the enhancement of positive forces, such as well-being, will fundamentally improve the effectiveness of intervention and treatment. The dual-factor model theory of mental health suggests that when interventions achieve a state of complete mental health, they prevent relapse of mental illness. While current research has demonstrated that certain interventions can enhance an individual's positive psychology, further research is needed to determine how durable they are and whether they are consistently effective.

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