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Abstract

Mental health problems not only contain positive psychological problems or negative psychological problems, but also a state of mental mental state and social health. About health promotion is to make people do everything possible to keep their mind and body in optimal condition, and to make people know how to stay healthy, to live a healthy lifestyle and to make healthy choices" (Ottawa Charter). Music college students may need to learn self-control ability, and engage in sports, regular diet and sleep, effective self-control to overcome depression, anxiety and other psychological problems."Due to considerable professional challenges and stress, musicians and music major college students may be at greater risk for mental health problems compared to the general population. Therefore, a large number of researchers have proposed the importance of health-promoting behaviors to solve mental health problems for future musicians and music students in higher education institutions. Therefore, the aim of this exploratory study was to investigate the relationship between mental health status and health promotion behaviors among music major college students in Sichuan Province, China. This study used a cross-sectional survey design, and a total of 387 music college students participated in an online survey designed by researchers, including questions about Interpersonal relationship factors (PRF), personal emotions factors(PEF), health promotion behavior (HPB), and mental health status (MH). The results of this study showed that depression, anxiety, and lack of confidence were relatively high in the current population, Health promotion behaviours are very weak. Furthermore, a Linear regression analysis was used to verify, Gender has a regulatory effect between mental health (MH) and health promotion behavior (HPB) among music students. Interpersonal relationship factors (PRF), personal emotional factors (PEF), and health promotion behavior (HPB) are positively correlated with mental health problems (MH), and health promotion behavior (HPB) has a

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significant mediating effect between interpersonal relationship (PRF) and mental health (MH). Health promotion behavior (HPB) showed a significant complete mediating effect between personal emotional factors (PEF) and mental health (MH). The findings suggest further research on the mental health problems of musical college students and provide a solid foundation for the importance of mental health management in future musicians.

Keywords: Mental health, Health promotion behavior, Music College Students, Interpersonal relationship, Emotion

Introduction

In the educational institutions of China Higher Conservatory of Music, the rhythmic melody and creative artistic passion are combined to create a creative symphony for students and future artists who want to master complex musical technical skills. In such a unique academic field, the cultivation of musical talent is not only a pursuit of art, but also a profound and rich emotional outlet. As we enter the field of higher music education in China, it is crucial to investigate the complex dynamics of mental health influences in this group of highly talented and dedicated people. The perfect integration of traditional music and modern music in Chinese culture is a profound background for understanding the obstacles and hardships encountered by students in the Conservatory of Music (Wei, 2023). This music integration involves intensive training of students majoring in music and art, the demanding performance standards, and the demand for perfect interpretation. Music arts college students spent most of their childhood in music engagement, which usually need arduous efforts, excellence in detail, to pursuit perfection. With parents' high expectations and teachers' strict requirements, perfectionism is instilled in every child, and with the depth of coercive discipline, these children strive to achieve technical excellence to pursue their excellence in music. Thus, the pressure of an outstanding performance, compulsive condition and emotion, compulsive stress symptoms, compulsive and anxiety problems immersed and worth attention of researchers. Additionally, college students majoring in music and art tend to be introverted, lack socializing with their peers and lack peer communication in their childhood. It is unavoidable that sensitive interpersonal relationships have become an important problem in their adult life, especially the phenomenon often proceeds with interpersonal relationship problems (Wu et al., 2023). Thus, the need for mental health awareness to address interpersonal issues in the future forms the main purpose of this study. The impact of these barriers, deeply intertwined in the cultural environment, prompted for further exploring the unique mental health problems encountered by music students in Chinese universities.

Contemporary art college students have positive thinking, spiritual innovation, but they have unstable emotions, strong self-consciousness, relatively weak self-discipline, self-discipline, emotional, pay attention to self, loneliness, rich emotion, and other psychological characteristics(Zhang,2024). In addition, due to the particularity of professional learning, professional training is conducted independently before college entrance examination, and most of the students live independently, which improves the independent consciousness and social practice ability of these art students (Hu, 2022). However, due to the ongoing development of their personalities, students are particularly susceptible to the detrimental influences of a negative social environment. Such influences can significantly hinder the administrative functions within colleges and universities (Fang, 2023). Furthermore, the mental health issues prevalent among art students need serious consideration and necessitate broad-based attention across various sectors of society.

The overall cultural atmosphere of music and art colleges and universities is different from that of other colleges and universities, and The psychological condition of music college students is special(Li, 2023). Therefore, in the new education era, the study of the psychological characteristics of college students in music and art can enrich the theoretical development of this field, and help to further explore the specific mental health education system applicable to music and art universities. The mental health education of music and art college students should not only begin from the psychological state of college students, but also conduct a comprehensive study on the art subjects and students' personality, so as to help them solve problems and solve their fuzzy understanding in environmental adaptation, self-management, emotional regulation and other aspects. Strengthen the physical and mental health of college students, improve the mental health education of college students, so that their all-round development in the moral, intellectual, physical and aesthetic aspects. Cultivate artists with good moral character and psychological quality to better serve the society and the people. The general characteristics of college students in music and art are that sensibility is more important than reason, and personality is stronger than commonness. In this aspect, girls are particularly prominent. Compared with boys, their thinking is more romantic and dreamier, with rich emotional impulse and emotional experience, and lack the exercise and guidance of rational thinking (Wang et al., 2023). So in terms of somatization, anxiety, horror, and diet and sleep, the problems are more common than the boys. Music and art majors have the function of expression and catharsis. The major of music art school mainly focuses on music performance, whether it is instrumental performance or vocal performance, it has the function of sense expression and catharsis. In daily professional study and practice, can feel the rich variety of emotional experience brought by the artistic styles of different music categories, which can not only effectively vent my emotions, but also be influenced by beauty and sublimate my mind (Wu, 2020; Tao, 2023).

Therefore, the overall mental health level of music and art college students is better than the national average level of college students, and the mental health level of college students in music performance is higher than that of music theory, which also proves the effectiveness of music therapy (Bao, 2020).

Health is not only the absence of disease or physical defects, but also a state of complete physical, mental, and social health. Health promotion behaviors including appropriate physical exercise, healthy diet sleep, and good self-control play an important role in the daily life of college students. Healthy diet is a way that ensures human activities, normal growth and development, enhances human health and help prevent diseases (Mallaeva et al., 2023; Liu et al., 2024). Physical exercise is a very effective means to promote college students' mental health. Regular physical exercise cannot fundamentally change the main personality traits and personality temperament traits, and their effects on mood, activities and happiness may be very obvious (Makhmudovich, 2023; Wang & Bu, 2023). Promoting healthy and sustainable behaviors, such as active transportation and sustainable diet, have positive effects on human health and the environment, and college students can also be drivers of change because they can be pioneers through their future professional and social status (Weber et al., 2023). The "holistic health concept" and "positive health concept", advocated and social health, have also attracted a growing number of countries and people, including China (Jia, 2020). This study explored the impact link between health promotion behavior (HBP) and mental health (MH) among college students deeply involved in the unique cultural and academic environment of Chinese music education. To be a musician and a future

music educator requires not only technical talent, but also resilience and balance based on academic needs, performance standards, and personal development to foster resilience and balance. Therefore, this study sought to elucidate that the adoption of a comprehensive health promotion behavioral lifestyle will have a significant impact on fostering the mental health of these gifted people. In the context of the rapid transformation of both traditional Chinese values and contemporary desires, the importance of choosing health-promoting behaviors to promote mental health is imperative.

This study, based on the theory of health sociology, aims to explore the complex factors affecting the mental health of music major college students in China. To explore the relationship between interpersonal factors, personal emotional factors and health promoting behaviors among music college students. In the course of this survey, our goal is to determine not only on the stress and mental health difficulties encountered by Chinese music college students, but also to emphasize the resilience factors affecting their overall health status and adopt health-promoting behaviors as a coping strategy. Through a comprehensive understanding of the emotional domains experienced by these aspiring musicians, we aim to provide important support systems such as strengthening teaching methods, supporting recourse settings, and fostering comprehensive coping strategies to foster the mental health of Chinese music college students. This effort prompts music college students or future Chinese musicians to consistency between pursuing art and maintaining emotional health. To ensure that future Chinese musicians will enjoy happiness and health in their chosen field of music and art.

Literature Review

Mental health among music college students

Based on foreign research, regarding the current status of the mental health research of music college students, foreign scholars have studied the mental health of students in all disciplines, but some researchers have studied specific groups of people, including college music students. The researchers found high rates of depression, anxiety, stress among music students. In addition to academic requirements, there are performance requirements and field work requirements, and music students may be particularly vulnerable to mental health problems (Dembati et al., 2012, 2015; Dou et al.,2023; Weber et al.,2023). In a study from a Turkish and American university, found that music education students had higher levels of depression, anxiety and stress. Symptoms of burnout, including characteristics of emotional exhaustion, depersonalization, and decreased personal achievement, were also found in American music students (Maslach, 1982; Bernhard, 2005,2007,2012; Maniaci et.al., 2023) and may cause some of the same physical and psychological problems as stress.

Music students reported other sources of stress, such as performance anxiety and feelings of isolation during practice (Schneider et al., 2011; Chao, 2023; Abdullayeva, 2023), and academic and extracurricular overload (Dembati et al., 2012; Riley, 2016; Yue, 2022; Zhang, 2023) proposed more time for practice and classes, and less time for social activities, relaxation, entertainment, or other activities that could be used to reduce stress and anxiety. In a survey on mental health problems among American music college students, The results showed that most of the major music participants in this study reported mild to extreme depression, anxiety, and stress; heavy workload and course obligations, and emotional associations with music production and criticism led to self-reported challenges (Koops et.al., 2021). Hu et al., (2024) believe that music training has a profound impact on the cognitive function that connects the brain. believe that music

activates networks in the brain related to anticipation, attention, and neural insight. A new study shows that music training has a positive impact on psychological acuity, especially in the areas of cognitive, verbal and emotional intelligence (Bonneville-Roussy et al., 2023). The evidence from these studies supports our findings of a high level of cognitive vitality among music education students. This compares with a study of depression, anxiety and stress levels and burnout and vitality of music education undergraduate students from a Turkish university and compares the results with those of medical students from the same institution, with the opposite hypothesis: the average depression, anxiety and stress scores of music education students are significantly higher than those of medical students. There were no significant difference in burnout, and students in music education were more active than medical students (Perkins et al., 2020; Sun, 2024).

Based on the studies conducted in China, Tan, 2017; Lu, Yuan, 2018; Zheng, 2019; Bao, 2020; Wang, 2021; Wang, 2023; Zhang, 2024 in their studies intent to solve the mental health problems of the arts college students, Because of the music students independence, extroversion, personality, using more qualitative analysis the of the mental health of music students, not the quantitative empirical research with large sample size. Wen (2021) examined the overall situation and characteristics of mental health of college students in music and art, and combined with the in-depth analysis of reasons, the mental health education model of college students in music and art is proposed. Additioanlly, Li, (2020) found in his study that for different gender, different family background, different grade, different professional music art stress of research, help to understand the music major students' psychological stress feeling, the psychological counseling, learning pressure, interpersonal pressure, economic pressure, family pressure, emotional pressure. music art college girls in learning, interpersonal these two aspects of the pressure more than boys, and music art college boys in economy, family, emotional the three aspects of the pressure more than girl. In the study of (Li, 2011; Wang, 2023), male students majoring in music had more conversation and heterosexual communication problems than female students, and students in rural areas had more problems than students in urban areas. Students majoring in music will experience more subjective happiness. When music students are not the only child and come from students in rural areas, girls will have more life satisfaction than boys.

Personal relationship factors

At present, there are many problems in the interpersonal relationship of colleges and universities in China, Dormitory interpersonal relationship is an important connection formed in the process of learning, communication and communication in school factors, etc. It is an important part of interpersonal communication among college students. According to a survey of 1,355 college students conducted by the Social Survey Center of China Youth Daily, 70.5 percent of the students were worried about dormitory conflicts. 67.6 percent of them wanted to change dormitories. The main causes for the dormitory conflicts were different living habits, lack of communication between roommates and personalities. In recent years, the dormitory problems of college students are constant, with the quarrel and the beating being upgraded to poisoning and murder, which affect the mental health of music college students (Zhang,2011;Wang,Su,2022). therefore, that the interpersonal relationship in college students' dormitory had a predictive effect on mental health.

Chen,2022;Pan,li,2023;Yang,2024 in their studies found that personality and dormitory interpersonal relationship will affect the mental health of college students, and personality factors will affect the mental health of college students by acting on the dormitory interpersonal relationship. The study by Liu (2014) and Huang (2012) shows that interpersonal distress has a

significant predictive effect on their mental health. "the interpersonal harmony and mental health degree of college students 'dormitories, and found that the more harmonious the interpersonal relationship of college students, the healthier the psychological". research found that female college students have different physical and psychological qualities and other factors, which can easily lead to bad interpersonal relationships when living together. Yan(2019) specifically focused on female dormitories and found that 45.5 percent of girls never or rarely communicate with their roommates in an appropriate way. But Zhao (2019) and others found that the interpersonal relationship between college girls was better than that of boys. He Linjiao and others found that interpersonal conflict in boys 'dormitories was higher than that in girls' dormitories. Li, 2008; Song, 2013; Bai, 2017; Eun-Ji Seo, 2018 in their studies suggested the mental health of students should actively guide the psychological growth of young students, guide them to combine personal development with social progress, and guide them to study hard under the inspiration of achieving ideals, constantly improve their professional skills, actively enterprising, and make contributions to the society and the motherland. The education of the ideals and beliefs is not in place, the formalism is serious, the spiritual needs of the students are indifferent, and the mental health of the college students is affected. Analyze the psychological characteristics of students, to further strengthen the psychological education, clear psychological education goals, highlight the focus of psychological education, the construction of psychological education network and do a good job in the employment guidance of college students and education on interpersonal relationship strategies (Xu, 2010; Xie, 2020; Wang, Su, 2022; Wu et al., 2023; Gao, Yan, Chen, & Tao et al., 2024). The professional characteristics affect the mental health of college students. For art college students, it is necessary to clarify the goal of mental health education, highlight the focus of mental health education, help them to strengthen self-psychological regulation, build a network of mental health education.

Therefore, school factors (violent events, environment, interpersonal relationships, peer relationships, academic stress) can have positive and negative effects on the mental health of college students. This study selected the interpersonal dimensions of music college students.

Personal Emotion factors

Based on Jia, 2017; Gong, 2019; &Katherine ,2021; Ali et al., 2024 in their studies proposed that the expression of emotion affects the mental health of college students, indicating that the attention to the psychological dynamics of art students, understand the psychological status of art students, analyze the specific causes of psychological problems of art students, help art students solve psychological problems, and help students grow up better. The distinctive personality affects the mental health of college students, analyzes the characteristics and causes of the psychological problems of contemporary art students, and explores a new way to solve the psychological problems of art students combined with the traditional psychological counseling mode. Wu, 2017; Zhao, 2022; & Zhang, 2023 in their studies to study the overall characteristics of college students' emotional expression ability, including inhibitory emotional expression is more common, excessive emotional expression is destructive, and adaptive emotional expression needs to be improved. There are significant differences in college students 'emotional expression in gender, grade, only child, and parents' education level. In the study on college students, there is no significant difference between students in emotional intelligence, but in terms of perceived emotion, girls have higher scores than boys. Yu et al., (2022); Tao(2023) in their studies found that the emotional intelligence level of female college students was significantly higher than that of

male college students, especially in terms of emotional understanding, and girls performed significantly better (Zhang, 2023;Jia, & Cheng, 2024).

Personal emotional expression, gender and other factors affect the mental health of college students, and negative emotional expression is common among Chinese female college students, but not rare among male students. The management of negative emotional expression should be used as a component of university mental health promotion programs in the region, and negative emotional diet is an underestimated risk behavior among urban college students in China. Given the association of EE with negative emotions and other aspects of wellbeing, screening and management may improve multiple domains of health and well-being.

Bonnie et al.,(2014);Ramírez-Martínez et al.,(2024) In the Canadian study, an understanding of the dynamic interactions between environmental and personal emotion factors that have shaped the experiences of mental health problems among college students. We use narratives of students with mental health problems to gain this understanding, whether the environment affects individual emotions are positive or negative, thus leading to the development of mental health of college students.

Therefore, the emotional expression, emotional transmission, personality, and love of have a significant impact on the mental health of college students. Because of the music students "susceptibility" personality characteristics, the emotional dimension selected in this study urgently needs to study the special personality of music college students in this aspect.

Health promotion behavior

Health promotion behavior style (HPB) includes three dimensions: physical exercise behavior, diet and sleep behavior, and self-control behavior. Wu(2012) and Zhao(2019) in Chinese studies all proposed that learning environment, interpersonal relationship, living environment affect Health promotion behavior style. Contemporary college students can not adapt to the needs of social progress and development, the most lack is the psychological quality, the reason is that the education does not pay attention to the cultivation and shaping of people's psychological quality. Dormitory interpersonal relationships and Personal Emotion factors affect the healthy life and behavior style. We attach importance to the dormitory interpersonal relationship of college students, regard it as an important environmental variable, and adopt The individual effects in the model were tested by the percentile Bootstrap method for deviation correction, and each effect was found to be statistically significant (P < 0.05) to analyze its Mediating effect in the influence of college students' Health promotion behavior style on mental health. For objective reasons, learning environment, interpersonal relationship, living atmosphere, living environment, and for subjective reasons, inferiority complex, self-isolation and so on affect healthy life behaviors. Through the study of college students 'lifestyle and physical and mental health standards, we can find out the problems of college students' physical and mental health, and solve the problems of their physical and mental health, laying a new theoretical foundation for the development of college students' physical and mental health.

Physical exercise behavior

From studies from China, Australia, Philippines and Italy suggested that physical exercise affects Health promotion behavior(Kathleen, 2017; Cai, 2017; Stefano, 2020; Rusally et al., 2021; Liu, Sun, & Han, 2023). In Turkmenistan research, physical exercise is a very effective means to affect

students' psychology. Regular physical exercise does not fundamentally change the main personality traits, but their effects on mood, activities, and well-being may be very obvious. The results of scientific research show that after 3-4 hours of intense physical exercise, the sense of self-confidence increases significantly, and through regular exercise, we can maintain or develop the self-organization level of our body. A sufficiently active person has an improved metabolism, or in any case, experiences minimal age-related change. Other factors of combining physical exercise with a healthy lifestyle are one of the most effective levers in this process. Physical exercise helps in many ways to expand our internal and external worlds. There is a whole world of the movement, like a "world of music," or "a world of poetry," and those who remain outside of this world make their lives impoverished. The great Russian physiologist Pavlov called the human sensation in physical work "muscle pleasure" (Gafurov, 2023). Exercise is a major factor in a healthy lifestyle The status and role of exercise activity and physical exercise in strengthening human health and even saving lives is not only suitable for children and adolescents, boys and girls. Middle-aged and elderly people, also for the fetus in the womb, newborn, breastfeeding age children, are incomparable to form a comprehensive generation (Makhmudovich, 2022;Liu, &Zhang,2024).

Dietary sleep behavior

Studies from Iran, Spain, India and Uzbekistan have suggested that regular living (healthy eating, sleep quality) affects a healthy lifestyle. A healthy diet plays an important role in preparing for daily life, and a healthy diet is considered a diet that ensures human activity, normal growth and development, enhances human health and helps to prevent disease. In a health promotion behavior, a healthy diet is not eating large amounts of food at a time, but must consider the nutritional value of food, assuming that food contains enough minerals, protein, and fat.Each substance has a negative or positive impact on the development of students (Mohammad et al.,2019;Mancha et al.,2021;Anushree et al.,2022;Mallaeva et al.,2023).

In China, college student it is in a state of sub-health, which is not conducive to their coordinated physical and mental development and unhealthy sleep. Ma, Chen, & Hou, 2007; Zhang et al., 2023 in their studies the effect of circadian rhythms on sleep quality is partly mediated by a health-promoting lifestyle. In addition to maintaining a normal circadian rhythm, helping undergraduates develop a healthy lifestyle is also an effective measure to improve sleep quality. Farzan et al., 2020; Liu, Gong, Li, Zhou, & Lin, 2024 in USA studies, concerned about their health and the health of loved ones Attention difficulties Interrupted sleep patterns increased social isolation on academic performance, focus on eating patterns interrupted changes in life environment Financial difficulties increased workload depression thoughts suicidal thoughts. In order to develop the Health promotion behavior of higher education students, it is necessary to conduct special workshops, webinars and training for them each month. By following a healthy lifestyle, we can clearly observe that students' mental, mental and physical activity have developed to a certain extent.

Based on Wu,2012; Cai, 2017; &Yao, 2020; Amatori et al., 2020; Villarino et al., 2023 in their studies ,the predictive model of positive mental health includes three positive predictors of physiological rhythm, social rhythm and physical exercise, while the predictive model of negative mental health includes three positive predictors of physiological rhythm, social rhythm and physical exercise, and the negative predictor of smoking. The impact of lifestyle on mental health of 76.50% is through the coincidence effect of physical health, and physical health plays a

completely intermediary role. College students may be vulnerable when making decisions. In this regard, many of them may tend to adopt unhealthy behavior. Thus, a lifestyle characterized by harmful habits can negatively affect their physical and mental health. In China college recruit students number gradually increase, university of students 'daily life rule is not detailed, most of the students' college life style, loose, low control of self, loose self requirements and lax dormitory discipline, caused the college students life barriers to mental health reasons: subjective reasons (disappointed inferiority, self closed self relaxation), objective reasons (living environment, interpersonal change).

Therefore, Dietary sleep behavior (sleep quality, healthy diet) affect the healthy lifestyle, thus predicting that these factors will directly affect the mental health of college students.

Self-command behavior

Yi, 2013; Tang, Jia, 2020; Abdullayeva, 2023; Kim, 2024 reported that there is no grade difference in self-control of college students, including the same grade girls with high self-control boys: grade fluctuations with good family economy, significantly lower than in other periods; the self-control of the only child continues to improve in college, while the self-control of the non-one-child group is relatively stable. A healthy lifestyle that is good for the development of self-control (or the maintenance and recovery of self-control energy) is supported by some research evidence. First of all, from the perspective of physiological factors, some behaviors of healthy lifestyle people (such as regular diet, work and rest, etc.) are themselves to keep the body in the best state, which is conducive to the maintenance and recovery of self-control. Studies of self-control of energy recovery have found that blood glucose levels can significantly affect the outcome of self-control. Gaimot Positive and negative emotions have a partial mediating role between healthy lifestyle and self-control. At present, there are relatively few surveys on the self-control development of college students, and existing studies have found some differences in demographic variables, such as gender differences and urban and rural students. For example, Chen Heping conducted a questionnaire survey on 541 college students in Chongqing with his own self-control scale, and found that the self-control score of girls was significantly higher than that of boys. He believed that their parents were more strict with girls, which exercised girls' self-control skills. In addition, there are differences between the self-control of urban and rural students. The self-control of urban students is higher than that of rural students from rural areas. It is believed that the difference in self-control between urban and rural college students stems from the rich and colorful urban life. This study assumed a direct relationship between Personal relationship factors (PRF), personal emotional factors (PEF), health promotion behavior (HPB) and music students 'mental health (MH), and assumed that music students' health promotion behavior (HPB) plays a mediating role in interpersonal relationship (PRF), personal emotion (PEF) and mental health (MH).

RESEARCH METHODOLOGY

Variables

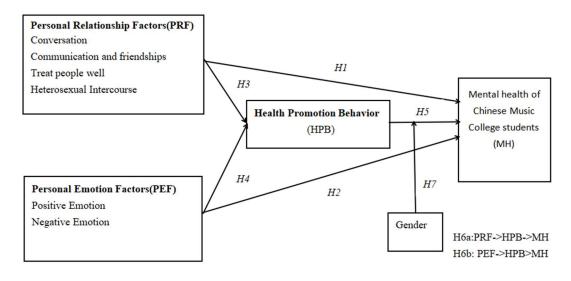
Mental health (MH) among musical college students was a key variable focused in this study. The aim of this study was to investigate the factors influencing the mental health (MH) of music students and the mechanisms of various variables on MH in college students. Since there are many variables affecting the mental health of college students, scholars have classified these factors differently. According to the classification used in this study, these factors mainly fall into two

categories, namely Personal relationship factors and personal emotional factors. One of the prominent factors is the influence of personal emotional factors on the mental health of music college students. Namely, interpersonal relationship factors (PRF) and personal emotional factors (PEF) are the predictors of mental health (MH) in music college students. With the support of the literature, the health promotion behaviors of music college students was also considered as a mediator of the association between the other two independent and dependent variables. Since all these predictors are multidimensional structured, only part of the dimensions of each variable were explored in this study. Furthermore, student demographic factors, namely gender, were also explored as moderators.

The Conceptual Framework

This study investigated the factors affecting the mental health (MH) of Conservatory students in China. Figure 1 illustrates the conceptual framework of this study, which is based on the literature review in this study. This study will investigate the direct effects of interpersonal relationship factors (PRF), personal emotional factors (PEF), and health promotion behavior factors (HPB) on students' MH. College students 'health promotion behavior is a variable that regulates the relationship between interpersonal and personal emotions and music students' mental health (MH). Therefore, we also need to investigate the indirect effects of PRF, PEF, and MH on college students. Under each construct in the framework, the selected dimensions of each variable to be carefully examined are illustrated. Therefore, under interpersonal relationship factors (PRF) conditions, conversation, communication and making friends, treating people, and communicating with the opposite sex are the key dimensions to be analyzed. In PEF, both positive emotions (PE) and negative emotions (NE) are the dimensions to be tested under personal emotional factors (PEF). We will investigate physical exercise behavior, eating and sleep behavior, and self-control behavior as dimensions of HBP among college students. As the model suggests, we will also investigate the demographic variables, namely gender in the regulation of health promotion behavior (HPB) and mental health (MH) among music students. To examine the mediation effect of HPB between PRF, PEF and MH.

Figure 1: Conceptual Framework



Source: Developed by the Author

Finding.

the square root value of the diagonal AVE is greater than the correlation coefficient value of the horizontal or vertical column, it represents discriminative validity (Fornell & Larcker, 1981). The Cronbach's alpha and Composite reliability values of all dimensions are also greater than 0.7, indicating good reliability and internal consistency with the range from 0.932 to 0.975 as presented in Table 1. The AVE value of each dimension is greater than 0.5, indicating good convergent validity with the range 0.613 to 0.823. Table 2 shows that the square root value of the diagonal AVE is greater than other correlation coefficient values in the matrix with the range 0.783 to 0.907. Table 2 shows that all the AVE square root values of all factors are greater than the maximum value of the absolute value of the correlation coefficient between factors, which means good discriminatory validity(Henseler, Ringle & Sarstedt, 2015).

Table 1: Cronbach's Alpha, Composite Reliability and Average Variance Extracted

			, ,	
Variable	Cronbach's	No of	Composite	Average Variance Extracted
	Alpha	items	Reliability	(AVE)
PRF	0.975	28	0.932	0.775
PEF	0.971	20	0.903	0.823
HBP	0.950	17	0.857	0.667
MH	0.932	12	0.826	0.613

Source: Developed by the Author

In terms of the measurement relationship, in each measurement relationship, the absolute value of the standardized load system is greater than 0.6 and it is significant, which means that there is a good measurement relationship. All AVE values are greater than 0.5, and all CR values are higher than 0.7, which means that the analysis data has good aggregation (convergence) validity.

Table 2: Discriminative validity

Variable	FRF	PEF	HBP	MH
PRF	0.880			
PEF	0.552***	0.907		
HBP	0.462***	0.601***	0.817	
MH	0.563***	0.675***	0.658***	0.783

Source: Developed by the Author

The bold numbers in the above table are the AVE square root, and the AVE square root values of all factors are greater than the maximum value of the absolute value of the correlation coefficient between factors, which means good discriminatory validity.

Table 3: Hypotheses test results: Casual Relationship - Path analysis

H(X)	Path			Non-standard path coefficients	Standard path coefficients	S.E	C.R.	P- value	Test result
H1	MH	←	PRF	0.182	0.180	0.055	3.330	***	Supported
H2	MH	←	PEF	0.335	0.368	0.069	4.880	***	Supported
Н3	HBP	←	PRF	0.164	0.161	0.063	2.590	0.010	Supported
H4	HBP	←	PEF	0.570	0.620	0.068	8.430	***	Supported
H5	MH	←	HBP	0.451	0.455	0.075	5.989	***	Supported

Source: Developed by the Author

All the paths of the above tables are established

Hypothesis 1 proposes that there is a direct relationship between interpersonal relationships factors (PRF) and mental health (MH), as shown in Table 3, The "estimator" indicating the normalization coefficient is listed as 0.182. This suggests a PRF has a positive effect on MH. "S.E." (Standard error) of 0.055, whereas the "c.r." (Critical ratio), similar to the t-value, is 3.330. The "P" value for assessing statistical significance was marked ***, indicating a p-value lower than 0.001. This assumption is accepted. Importantly, the P-value is much smaller than the commonly used threshold of 0.005. This suggested that the relationship between the PRF and the MH was statistically significant. In line with expectations, interpersonal relationships factors (PRF) can have a meaningful impact on the mental health (MH) of music college students. This score supports hypothesis 1.

Hypothesis 2 proposes that there is a direct relationship between Personal Emotion Factors(PEF) and mental health (MH), as shown in Table 3,The "estimator" indicating the normalization coefficient is listed as 0.335. This suggests a PEF has a positive effect on MH. "S.E." (Standard error) of 0.069, whereas the "c.r." (Critical ratio), similar to the t-value, is 4.880. The "P" value for assessing statistical significance was marked ***, indicating a p-value lower than 0.001. This assumption is accepted. However, the P-value is just less than the commonly used threshold of 0.005. This suggests that the relationship between Personal Emotion Factors (PEF) and MH is statistically significant. Consistent with expectations, Personal Emotion Factors (PEF) can have a meaningful impact on the mental health (MH) of music college students, but not significant enough. This score supports hypothesis 2.

Hypothesis 3 proposes that there is a direct relationship betweeninterpersonal relationships factors (PRF) and Health Promotion Behavior(HPB), as shown in Table 3,The "estimate" indicating the normalization coefficient is listed as 0.164. This suggests that PRF has a positive effect on HBP. "S.E." (Standard error) of 0.063, while "c.r.". (Critical ratio), similar to the t-value, of 2.590. The "P" value for assessing statistical significance was 0.010. This assumption is Supported. Importantly, the P-value is much lower than the commonly used threshold of 0.05. This suggests that the relationship between PRF and HBP was statistically significant. Contrary to expectations, interpersonal relationships Factors(PRF) had significant effect on the promotion of a Health Promotion Behavior(HPB) among music college students. In conclusion, although the hypothesis indicates good positive effectson a Health Promotion Behavior(HPB)among college students, statistical tests do support this statement. Personal Relationship Factors(PRF) had meaningful effect on Health Promotion Behavior(HPB). This score supports hypothesis 3.

Hypothesis 4 proposes that there is a direct relationship between Personal Emotion Factors(PEF) and Health Promotion Behavior (HPB), as shown in Table 3, The "estimator" indicating the normalization coefficient is listed as 0.570. This suggests that Personal Emotion Factors(PEF) has a positive effect on HL. "S.E." (Standard error) of 0.068, whereas the "c.r.". (Critical ratio), similar to the t-value, is 8.430. The "P" value for assessing statistical significance was marked ***, indicating a p-value lower than 0.001. This assumption is accepted. Importantly, the P-value is much smaller than the commonly used threshold of 0.05. This suggests that the relationship between PEF and HPB is statistically significant. Consistent with expectations, Personal Emotion

Factors(PEF) has a significant impact on promoting a Health Promotion Behavior (HPB)among music college students. This score supports hypothesis 4.

Hypothesis 5 proposes that there is a direct relationship between Health Promotion Behavior (HPB) and mental health (MH), as shown in Table 3, The "estimator" indicating the normalization coefficient is listed as 0.451. This suggests that HPB has a positive effect on the MH. "S.E." (Standard error) of 0.075, while "c.r.". (Critical ratio), similar to the t-value, is 5.989. The "P" value for assessing statistical significance was marked ***, indicating a p-value lower than 0.001. This assumption is accepted. Importantly, the P-value is much smaller than the commonly used threshold of 0.05. This suggests that the relationship between HPB and MH is statistically significant. Consistent with expectations, a Health Promotion Behavior (HPB) can have a significant impact on the mental health (MH) of music college students. This score supports hypothesis 5.

Table 4: Hypotheses test results: Mediating Relationship

Hypotheses	Construct	Path	Construct	Bias-Co	orrected	Test result
				95%CI		
				Lower	Upper	
Н6а	PRF	HBP	MH	0.014	0.156	supported
H6b	PEF	HBP	MH	0.162	0.386	Supported

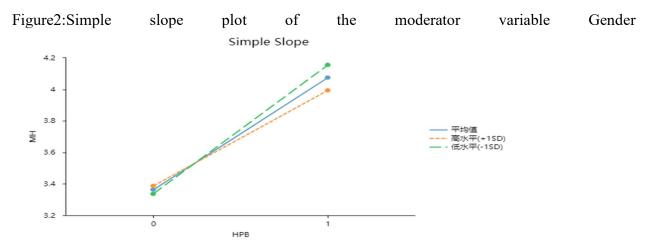
Source: Developed by the Author

As can be seen from the table above:; the 95% confidence interval of PRF \rightarrow HPB \rightarrow MH [0.014,0.156] does not contain 0, indicating that HPB have a significant mediating role in the effect of PR on MH, and the hypothesis H6a is Supported; The 95% confidence interval of PEF \rightarrow HBP \rightarrow MH [0.162,0.386] does not contain 0, indicating that HBP has a significant Full mediation mediator in the effect of PEF on MH, and the hypothesis H6b is Supported.

Table 5: Hypotheses test results: Moderating Relationship

H(X)	Parameter			S.E.	t	p-value	Test result
	Mental Health(MH)	←	Gender	0.066	0.780	0.436	Supported
H7	Mental Health(MH)	←	Health Promotion Behavior (HPB)	0.042	17.128	0.000***	
	Mental Health(MH)	←	HPB*Gender	0.086	-2.560	0.011*	
			R 2	0.443 F (3,383)=101.573,p=0.000			
			F				

From the above table 5, the interaction term of HPB and Gender is significant (t= -2.361, p=0.019 <0.05). It means that when HPB affects MH, the adjustment variable (Gender) is significantly different at different levels, which can be viewed in the following simple slope diagram.



Source: Developed by the Author

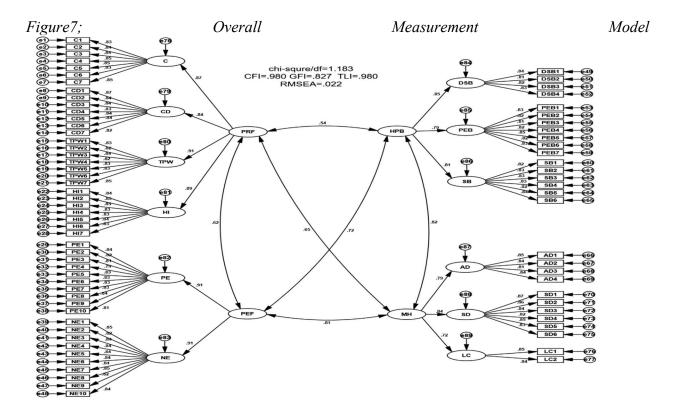
CFA and Structural Equation Modelling (SEM)

Overall Measurement Model performed using Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a statistical method often used in social research to assess the agreement between a structure and researchers' conceptualization of the structure. Thus, the potential purpose of the factor analysis is to assess whether the observed data are consistent with a putative measurement model in a given study. Various established indices are often used to determine the adequacy of the tested model. These criteria include a chi-square degree of freedom (df) ratio above 5, a comparative fit index (CFI) above 0.9, and an approximated root mean square error (RMSEA) below 0.8, which includes various types of model fit assessments.

The following section describes the CFA of the Overall Measurement Model structure; personal relationship factors (PRF), Personal Emotion Factors (PEF), Health Promotion Behavior (HPB), and music college students' mental health (MH).

Figure3: Overall Measurement Model



Source: Developed by the Author

Table 6:Overall model fit to the indicators

Commo nly indicator	χ2	df	p	χ2/d f	GFI	RMSE A	RM R	CFI	NFI	IFI	RFI	TLI
S												
Criteria	-	-	>0.0	<3	>0.	< 0.08	< 0.0	>0.	>0.	>0.	>0.	>0.
			5		8		8	9	9	9	9	9
Value	3349.4	283	0.00	1.18	0.82	0.022	0.03	0.98	0.88	0.98	0.88	0.98
	80	1	0	3	7		4	0	6	0	2	0

As can be seen from the above table, NFI and RFI are 0.886 and 0.882 respectively. Although they are less than 0.9, they are greater than the acceptable value of 0.8. All the other indicators meet good standards and the model fit is good.

Figure 4: Structural Equation Modelling (SEM)

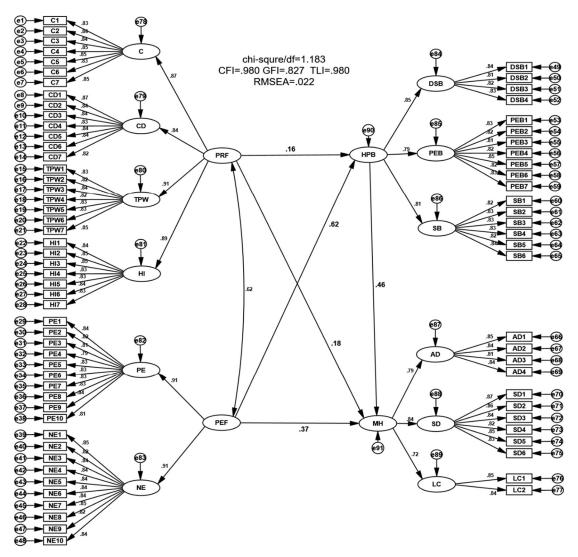


Figure 8; Structural Equation Modelling (SEM)

Source: Developed by the Author

Discussion

The effects of interpersonal reletionship factor(PRF) variables on health promotion behaviors of music college students may be complex and diverse, and although providing a strong support structure for lifestyles that promote healthy behaviors, poor interpersonal relationships may inadvertently promote the development of harmful behaviors, especially in dormitory interpersonal relationships (Zhou,2022).Dormitory interpersonal relationship is the mutual connection based on personal emotion formed in the process of commonlearning, communication, communication and other activities. It is an important part of interpersonal communication among college students. In China youth daily social survey center through the network questionnaire of 1355 college students survey showed 70.5% of the students had upset for dormitory conflict 67.6% of the students had wanted to exchange dormitory, due to different habits, lack of communication

between roommates, personality, dormitory games, throw things, noisy, not health lifestyle, unhealthy eating habits or inconsistent sleep pattern (Dou et. al., 2023; Weber et al., 2023). These problems lead to bickering, beatings, escalation to poisoning and killing. Interpersonal relationship problems in college dormitory affect the mental health of college cattle (Wang, Su, & Tao, 2022). If a student's peers are peers who prioritize health and well-being, they are more likely to participate in sports, exercise, and other behaviors that co-promote health (Mark, 2023). The lack of interpersonal support in promoting a healthy lifestyle may be due to the fact that college students are independent individuals, with individual personal habits, good habits and bad behaviors, which can aggravate interpersonal conflict in the dormitory. In addition, problems such as conversation, communication, treating people and interacting with the opposite sex may also have an impact. The personality characteristics of the only child, such as unwillingness to communicate, selfishness and maverick, limit the interpersonal skills of college students, and lead to the motivation health-promoting behavior weakening of and lifestyle (Chen, 2022; Pan, 2023; Yang, 2024). Due to the professional characteristics of music students, there may be students with different majors in the same dormitory, such as vocal music performance, guzheng, dulcimer, piano, rap music, etc., which will influence each other in the dormitory practice and cause interpersonal conflicts (Li, 2023). Furthermore, family education norms may influence individual decisions about their health-promoting behavioral lifestyle. For example, if a family has a good atmosphere, good interpersonal communication, warm etiquette, healthy eating and exercise habits will affect students' choice of health promotion behaviors, and then actively promote physical and mental health (Gao, Yan, & Tao et al., 2024).

Personal emotional factor(PEF) variables may have a significant impact on college students' ability to maintain a holistic approach to health promotion behavior. Positive emotions can support the development of health promoting behaviors, while negative negative emotional states may hinder the development of health promoting behaviors. The expression of negative emotions is prevalent among Chinese female college students and not rare among male students. The management of negative EE should be used as a component of the university mental health promotion program, and screening and management of EE associated with negative emotions and other aspects of health may improve mental health (Katherine, 2021; Fu, Pan, & Lai, 2024). Anger emotion is closely related to individual mental health. Some domestic and foreign studies have shown that there is a significant correlation between anger and their mental health level. A range of emotion, anxiety, and substance abuse disorders are independently associated with anger mood. These include depression, bipolar disorder, social phobia, generalized anxiety disorder, obsessivecompulsive disorder, post-traumatic stress disorder, and alcohol and substance use disorders. Anger may have extremely uncomfortable effects on behavior and may have serious consequences for individuals and society. Anger has a wide impact on people's mental and physical health, and anger also has a significant correlation with human cardiovascular health (Liu, Zhao, 2017; Deng, 2022; Zhang, 2023; Jia, Cheng, 2024). The emotional expression ability of music college students has the general characteristics, such as common inhibitory emotional expression, destructive excessive emotional expression, and adaptive emotional expression needs to be improved. There are significant gender differences in emotional expression among college students, which is influenced by individuals, family, school and society. On the relationship between emotional intelligence and mental health, studies have found that emotion has a significant impact on the mental health of college students (Yan, 2017; Ali et al., 2024). Emotional states can regulate health promotion behaviors, and then promote mental health levels.

Although there may be no clear direct causal relationship between interpersonal relationships factors and health promotion behavior style-mediated mental health, the importance of interpersonal problems in promoting the mental health of Chinese college students should not be underestimated. Future research should discuss an integrated strategy that considers the direct impact of beneficial interpersonal relationships, and the indirect impact of the choice of health promotion behaviours, may together create a favorable atmosphere for mental health. Moreover, the mediating role of health promotion behaviors in the interactions between individual emotional variables and mental health may be an effective way to improve the mental health of Chinese college students (Abdullayeva,2023). Healthy lifestyle can be divided into two categories: explicit and implicit behaviors. Exent health behavior is a directly observable healthy lifestyle that can effectively predict mental health and stress levels, and then indirectly predict positive emotions. Such as diet, sleep, physical exercise, regular physical examination, etc; internal implicit health behaviors are health promotion perceived through indirect means, such as emotion, intelligence, interpersonal relationship,social adaptability,etc(Tao,2023;Ramirez-Martinez et al.,2024).

Therefore, comprehensive health promotion behavior priority strategies, including regular exercise, balanced diet, adequate sleep, good interpersonal skills and emotional management, play an important role in promoting the positive mental health of Chinese college students (Bangalan et al.,2024). By integrating these ideas into campus life, teaching programs, and community program activities, universities can foster an atmosphere that improves the overall welfare of students, encourages their resilience, and promotes good mental health outcomes (Fu, & Gen, 2023; Jin, 2024).

Conclusion

In conclusion, promoting the mental health of Chinese music college students requires a complex interaction of multiple factors, and the significance of health promotion behaviors in this context are varied. Although a clear and direct link between interpersonal relationships factor problems, personal emotional factor problems and mental health is very evident through health promotion behavior lifestyle, there are some important factors to be considered. Mental health may be influenced by positive interpersonal interactions and positive emotions, and any of these factors may have independent effects. Furthermore, while health promotion behaviors may not directly intervene in the link between interpersonal relationships and mental health, it plays a fundamental role in promoting overall health and can serve as a means of managing stress. In addition, health promotion behaviors significantly intervene in the relationship between personal emotions and mental health. Finally, gender has a moderating role between health promotion behaviors and mental health. The overall social and cultural background has a strong influence, because the nature of collectivism and strong family, society, school bond helps to make college students get practical aid, and from their family, school and community in providing compensation assistance, create a pleasant atmosphere and consulting services resources play a key role.

Comprehensive strategies to improve the mental health of Chinese music college students should recognize and utilize the potential impact of family and social assistance, cultural principles, and health promotion behavior styles. The joint efforts of families, educational institutions, and communities will provide a good atmosphere, acknowledging the many and relevant variables that affect mental health. This in turn promotes a comprehensive and culturally conscious approach to supporting mental health.

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