

## Hardiness personality, mental health, and coping style among Chinese college students

Peng, Qinghe ✉

Graduate School, Lyceum of the Philippines University - Batangas, Philippines  
Anhui University of Traditional Chinese Medicine, China

Lopez, Elna R.

Lyceum of the Philippines University - Batangas, Philippines



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### **Abstract**

The research on the relationship between hardiness personality and mental health has always been one of the important topics in the field of mental health. The problem of college students' mental health has aroused widespread attention. In recent years, hardiness personality has been studied more in western psychology circles, but less in China. This study conducted a survey on 1280 college students from public and private universities by consulting relevant materials and questionnaires, and explored the relationship between college students' hardiness personality, coping style and mental health. From the results, some respondents possessed resilience, control, commitment, and challenge-hardiness personality traits, coupled with mild psychological symptoms and distress suggesting a focus on fostering and strengthening these hardiness traits through preventive interventions. Resilience-building programs can also be beneficial for the overall well-being of the student population. Gender, grade, leadership experience, family background, and socioeconomic status significantly influenced college students' hardiness, coping styles, and mental health. Findings also revealed that mental health was significantly negatively correlated with coping style, mental health was significantly negatively correlated with coping style, and mental health was significantly correlated with coping style. Likewise, hardiness personality and coping style were correlated with mental health to varying degrees. Results also fully proved that coping styles were positively correlated with mental health. Coping style played a mediating role in the relationship between hardiness and mental health. From these, the proposed psychological program named as "Thrive: Building Resilience and Positive Coping" intended for college students aimed at introducing and practicing positive coping skills for managing stress, anxiety, and mild mental health challenges may be checked and validated by experts before its implementation.

**Keywords:** college students, tough personality, coping style, mental health

## **Hardiness personality, mental health, and coping style among Chinese college students**

### **1. Introduction**

As the nation develops quickly and as the times change, mental health issues become more and more important to consider carefully. As a unique group, college students are shaping their beliefs and perspective on life during this critical time. As competition heats up, college students are under more stress and deal with a range of psychological issues. Every year, more students are being dropped from schools and institutions around the nation for different kinds of reasons, including mental and physical illnesses. The increasing prevalence of psychological issues has progressively drawn attention and concern from families, schools, and society at large, and college students' mental health issues are becoming a major topic of discussion. Currently, one of the top priorities for colleges and universities is figuring out how to help college students' psychological well-being and mental health (2021).

As the World Health Organization's (WHO) figures from the 31st World Mental Health Day in 2022, around 10% of the global population suffers from mental health issues, and this percentage rises significantly during significant life events. In terms of China National Mental Health Development Report between 2019 and 2020, 24.6% of teenagers suffer from depression. Depression affects around one in seven or eight youngsters. College students face a wide range of psychological issues, including concerning mental health issues. The Chinese government has put out the development aim of "combining physical fitness with physical exercise, strengthening the combination of mental health and counseling services, and guiding college students to sports venues" in the Medium- and Long-Term Youth Development Plan (2016–2025). Thus, researching mental health of college students has enormous practical implications. Hence, the mental health problems of college students have attracted widespread attention, and Chinese scholars mostly look for the reasons from the aspects of life events, personality, social support, self-esteem and coping styles. For instance, Chen (2018) investigated the connections between a range of variables, including life events, social support, and coping mechanisms, and the mental health condition of college students, and the results showed that negative life events and negative coping styles were significantly positively correlated with the total score of SCL-90, and the total score of social support and various factors were significantly negatively correlated with the total score of SCL-90. The study of Li et al. (2016) studied the relationship between college students' mental health and personality traits. It discovered that all factors of the symptom self-rating scale showed a significant positive correlation with the emotional dimension of the college students' personalities, while the introverted and concealment dimensions showed a significant negative correlation. The four elements of somatization, hostility, fear, and paranoia have a positive correlation with the mental dimension. Academic students' introversion, emotional instability, and mental traits have a negative impact on their mental health.

A large number of research literature showed that a sound personality was conducive to the comprehensive development of human body and mind, and incomplete personality had a great impact on people's self-awareness and behavioral regulation (without forming a correct world view, values, outlook on life, etc.), resulting in the emergence of personality disorders. Personality disorder is a kind of abnormal personality; it interferes with its interpersonal relationship, and even causes harm to the society, or brings pain to the person. Research on the relationship between personality and mental health has always been one of the important topics in the field of personality and mental health. Many domestic studies in this field mostly adopt the western personality scale, and the conclusions are also very different, but most scholars believe that some personality traits have a protective effect on mental health. In recent years, the western psychological circle has studied more about hardiness personality, and the research on hardiness personality is a very active field in the study of personality and health psychology abroad. Since Kobasa (1979) published the first literature on hardiness personality. The study of hardiness personality has become a hot topic in health psychology. At present, although most researchers

agree that hardiness personality has a protective effect on individual mental health, the research conclusions on the mechanism of hardiness personality's impact on health are still inconsistent.

There are relatively few researches on hardiness personality in our country. Only 68 relevant researches can be found by referring to "tenacity" as the keyword and title in China Journal Network, Weipu Chinese science and technology journal database and China National Knowledge Network. At the same time, there are many factors affecting the mental health of college students, and the different weights of other factors should be further explored. In the Chinese cultural background of five thousand years, there was never a lack of praise for the quality of tenacity, the basic spirit of the Chinese national culture - "perseverance", "indomitable", "victory is not arrogant, defeat is not discouraged" and so on express the connotation of this quality of hardiness. "Zhouyi · Xiang Biography" Qiangua begins with the cloud: "Heaven is moving, the gentleman to self-improvement." Vigorous and promising, self-improvement has always been an important component of the Chinese national spirit, the traditional culture emphasizes "courage and perseverance", Confucianism advocates "hardiness and perseverance", emphasizing the indomitable spirit of struggle. Confucius put forward the idea of strong and promising, emphasizing that people's firmness, hardiness and promising are inseparable, both must have the quality of hardiness, but also have a sense of responsibility. Chinese Mencius regarded all setbacks and difficulties as the tempering of their own will. Confucian culture believes that "every man has the responsibility for the rise and fall of the world." Wen Tianxiang and countless other revolutionary martyrs have shown a strong sense of responsibility, dare to bear, face challenges, unswervingly, and bravely, reflecting a high spirit of struggle and perseverance. Since Kobasa published the first article on hardiness personality in 1979, the study on hardiness personality has become an important topic in the field of personality and psychology abroad. However, scientific research on hardiness, especially as a personality trait, is rare in China. At the same time, since many items with reverse expression are used to measure hardiness in foreign hardiness scales, this method has been criticized a lot and is not very consistent with Chinese habits (Wang, 2019). At the same time, due to cultural differences, if the Western hardiness personality scale is directly used to measure the similar parts of Chinese and Westerners, as well as the mixture of the unique parts of Westerners, it may either increase or exaggerate the characteristics that Chinese people do not have, or ignore the unique characteristics of Chinese people. Therefore, this study hoped to adopt the cultural hardiness personality questionnaire in line with China on the basis of domestic and foreign scholars' research on hardiness personality.

Conversely, this paper also intended to study and facilitate discourse on the connection between mental health and hardiness of personality. Enhancing the resilience and mental well-being of college students requires a thorough understanding of their hardiness personality. Without a doubt, research in this area may play a critical guiding role in the physical and mental health of college students, and it may be a route that has to be pursued immediately in the field of college students' mental health research. Coping styles reflect the coping strategies taken by individuals in the face of difficulties. The more positive coping styles college students adopt, the more confident they will be to overcome difficulties, maintain an optimistic attitude and maintain mental health. Therefore, the theme of this study was the impact of social support and coping styles on mental health. Coping style plays a mediating role in the influence of social support on mental health. Nevertheless, in a study of young college students, coping style was not shown to be a mediating variable in the relationship between social support and mental health. As a result, in order to examine how coping style affected how social support affected the mental health of senior citizens living in rural areas, this study also used coping style as a mediating variable. Based on studies conducted by both domestic and foreign researchers, this paper attempted to investigate the toughness personality of college students in public and private colleges, respectively. This was done by using a hardiness personality scale that was consistent with Chinese reality, which enabled academics to advance the area of domestic personality theory and got a deeper understanding of the traits of these students' hardiness personalities. It Investigated the relationship between these characteristics and mental health, provided some theoretical foundations for improving college students' mental health, and got a better understanding of how coping style and hardiness personality affected mental health. This might provide theoretical guidance for improving the mental health standards of college students as well as further theoretical research on personality

and mental health.

On the one hand, it is beneficial to apply the research findings to college students, conduct hardiness training, develop students' strong willpower and enduring tolerance, enhance the belief in solving problems, and form hardiness personality qualities by examining the impact of hardiness personality on mental health of college students. Conversely, it is beneficial for raising college students' quality of life, helping them learn how to manage different forms of social and psychological stress, raising their level of mental health, effectively providing an empirical foundation for raising college students' psychological quality, and having a significant practical impact on psychological intervention. Encouraging college students to practice good mental health, support their healthy development, and enhance their physical and mental well-being is extremely important from a practical standpoint. Thus, research on the connection between the hardiness personality type of college students and their mental health will surely have a beneficial guiding role in boosting their mental and physical well-being.

**Objectives of the Study** - This study examined the variations and connections among college students' hardiness personalities, mental health, and coping mechanisms as a foundation for creating a psychological health program. Specifically, it identified the respondents' hardiness personality, mental health, and coping style; tested the differences between the variables when grouped based on their demographic profile; measured any potential relationships between the four study variables; and proposed a psychological health program designed to highlight the need for and viability of enhancing mental health education for adult students.

## 2. Methods

**Research Design** - Because it offers information to explain the presence of phenomena connected to mental health and life events among Chinese college students, a descriptive-quantitative method was adopted in this study. The approach works well for outlining the respondents' demographic profile, examining how the factors in the grouping differ from one another, and analyzing pertinent variables. In order to establish non-causal correlations between them, the descriptive study, which is also an observational research, primarily uses case studies, cross-sectional studies, and prospective studies. Quantitative studies collect data from participants using standardized instruments to describe their psychological and personal traits, such as the association between their mental health and the hardiness of their personality and the coping mechanisms they use to investigate whether there is a causal relationship between the two. According to research descriptive quantitative tries to observe, characterize, and record elements of a scenario that occurs naturally. It may also occasionally be used as a springboard for the formation of theories and hypotheses. The researchers were able to get information on the respondents' coping mechanisms, mental health, and hardiness personality through the study approach they had selected. It also gives researchers a summary of the factors that are worth quantitative examination.

**Participants of the Study** - For their investigation, the researchers selected college students. Select a public university using the random sampling technique. Anhui Medical University's Clinical School of Medicine is a private institution that can be chosen by each school. Anhui University of Traditional Chinese Medicine For the online study, 1,500 college students from a variety of majors, grades, genders, and disciplines were chosen, and 3,000 individuals took part in the survey. Use Wenxing, a well-liked online survey platform in China, to send out surveys. Simultaneously, the class counselors sent the class's QQ group the questionnaire's QR code and established a deadline for responding to it. After excluding the students who did not complete the required fields, 640 valid surveys from both public and private colleges and universities—a total of 1280 surveys—were chosen at random for data statistics.

### **Measures**

**College students' Hardiness Personality Assessment Scale (HPASCS-CHN).** The Hardiness Personality Assessment Scale for Chinese College Students (HPASCS-CHN) was developed by Kong, Zhao, and You in 2011 to measure hardiness, a personality trait characterized by commitment, control, and challenge. The scale

consists of 25 items, and its Cronbach's alpha has been reported to range from 0.80 to 0.90, demonstrating good internal consistency. A recent study conducted in China in 2023 using the HPASCS-CHN examined the relationship between hardiness and academic burnout among college students. The results showed that students with higher hardiness scores reported lower levels of academic burnout, suggesting that hardiness can serve as a protective factor against the negative effects of academic stress. Furthermore, the study found that hardiness was positively associated with coping strategies, academic self-efficacy, and social support, further supporting the idea that hardiness plays a crucial role in promoting students' well-being and academic success.

**SCL-90, or Symptom Checklist 90.** A popular scale for assessing mental health is the SCL-90. It was authored by Derogatis and was first translated into Chinese by Wang Zhengyu of the Shanghai Mental Health Center. It was first made available in China during the 1980s and is known for its good validity and dependability. It has Chinese standards and is currently widely utilized both domestically and internationally. The scale had ninety questions total, ten of which were used to indicate the psychological symptoms of ten different elements. The components included ten of somatization, obsessive symptoms, interpersonal sensitivity, sadness, anxiety, anger, terror, paranoia, and psychosis. A recent study published in *BMC Public Health* (2020) investigated undergraduate students' norms for the Chinese version of the Symptom Checklist-90-Revised (SCL-90-R). The study involved a large sample of 4,675 undergraduate students from 12 universities across China. The study found that the overall mean score on the SCL-90-R was higher in the current sample compared to previous studies, suggesting a potential increase in psychological distress among Chinese undergraduate students. The Cronbach's alpha for the overall SCL-90 (Global Severity Index) is generally reported to be high, ranging from 0.96 to 0.98. This indicates excellent internal consistency, meaning that the items on the scale are reliably measuring the same construct of psychological distress.

**Coping Style Simplified Questionnaire (SCSQ, CHN).** The Coping Style Simplified Questionnaire (SCSQ) was developed by Jieyu Chen and colleagues in 1998 to assess coping strategies in Chinese populations. It is a 20-item self-report measure that assesses two primary coping styles: active coping and passive coping. Active coping involves problem-focused strategies, while passive coping encompasses emotion-focused and avoidance-oriented strategies. The SCSQ has demonstrated good internal consistency, with Cronbach's alpha values ranging from 0.79 to 0.88. A recent study published in *Frontiers in Psychiatry* (2022) investigated the relationship between coping styles and psychological distress among Chinese college students during the COVID-19 pandemic. The study found that active coping was associated with lower levels of anxiety and depression, while passive coping was linked to higher levels of psychological distress. These findings highlight the importance of promoting active coping strategies in interventions aimed at enhancing mental health among college students during times of crisis.

**Data Gathering Procedure** - Initially, during the project preparation phase, the researchers designed the framework for the demographic survey and interview, adopted a psychological psychometric scale with a relatively high reliability, and investigated the theoretical underpinnings and current research progress of the research topic based on a large number of literatures. They also collected theoretical data related to the research topic, like SCL-90, HPASCS, and SCSQ. After a decision is reached, gather specialists to present the study's importance and the viability of the research instruments, edit and enhance them, and carry out the project's particular implementation. Second, suitable survey items were chosen for the questionnaire test stage, with one public institution and one private university each, and an equal distribution of scientific and arts students. The "College Student Hardiness Personality Questionnaire" was distributed to the students, and a sizable sample of students took tests on the "Symptom Self-assessment Scale" and the "Coping Style Scale." Third, confirmatory factor analysis was done during the data processing phase to confirm the internal structural dimension of the personality of college students, investigate the connection between hardiness personality and demographic factors, and examine the connection between mental health, coping style, and hardiness personality. Fourth, during the paper-writing phase, this paper will organize and evaluate the data's statistical findings while writing the dissertation with the supervisor's help. In conjunction with the findings of the study, a high-caliber piece was also developed and published in reputable periodicals at the same time.

**Data Analysis** - Excel and SPSS26.0 were used for statistical analysis of all the data used in the study procedure. The association between hardiness personality, mental health and coping style was examined using multivariate logistic regression analysis, with  $P < 0.05$  being deemed statistically significant.

**Ethical Considerations** - Prior to conducting the study, the research design underwent thorough ethical review and approval by the Lyceum of the Philippines University-Batangas Campus Ethics Committee. The study strictly adhered to ethical principles, ensuring participant rights were protected and upholding values of voluntariness, confidentiality, and well-being. Participants were informed about the study's purpose and significance, provided with informed consent forms, and assured of their anonymity and data privacy. They were free to withdraw at any point and offered psychological support if needed. The researchers prioritized the safety and security of all participants throughout the data collection process.

### 3. Results and discussion

**Table 1**

*Respondent's Hardiness Personality (n= 1280)*

Subscales	Mean	Std.	Rank
Resilience	2.60	0.55	3.5
Control	2.60	0.56	2
Commitment	2.60	0.58	1
Challenge	2.60	0.55	3.5

*Legend: No overall scores required, subscales to be ranked as per manual*

Table 1 provides data on the hardiness personality traits of 1280 respondents, including the mean, standard deviation and ranking of different subscales: resilience, control, commitment and challenge. The average score for each personality characteristic is represented by the mean, and the degree of variability or dispersion around the mean is represented by the standard deviation. In terms of the mean and standard deviation, resilience, control, commitment, and challenge had minimum values of 1 and maximum values of 4. Resilience, control, commitment, and challenge had mean values of 2.5967, 2.6029, 2.6009, and 2.6016, respectively. The mean on each of the four subscales—resilience, control, commitment, and challenge—was almost identical, at 2.6. This suggests that respondents' average scores on the traits of challenge, resilience, control, and commitment were comparable across a range of personality attributes, including school environment, age, gender, subject, grade, student leadership, and being the only child in a single-parent household. Resilience was 0.55200, control was 0.56109, commitment was 0.57345, and challenge was 0.55164 in terms of standard deviation. Every subscale had a comparatively low standard deviation, with the four subscales' standard deviation dimensions ranging from 0.55 to 0.58. The findings demonstrated that there was little variation in the respondents' attention to each subscale across 10 distinct personality characteristic dimensions.

All of the subscales had a score of 2.5, and the rankings of each subscale were given. The available data suggests that respondents regarded all four personality qualities as equally significant or prominent. Resilience, control, commitment, and challenge were elements of the hardiness personality structure that indicated an individual's capacity to manage adversities and preserve mental hardiness, independent of gender, kind of school, etc. A sense of control over one's surroundings, dedication to activities, and readiness to confront obstacles were among the hardiness qualities that respondents had, on average, balanced amounts of, according to similar techniques and rankings across all subscales. These characteristics were frequently linked to increased resilience, improved stress management, and improved mental health in general.

The results of the study showed that the mean was 2.6, indicating that respondents generally displayed positive hardiness personality traits, which helped to cope with various stresses and challenges. Understanding individual hardiness traits can help design interventions and strategies aimed at enhancing hardiness and promoting adaptive coping mechanisms. Further exploration of specific aspects of hardiness and its impact on mental health and well-being could provide valuable insights into tailored interventions and support services.

When seen as a whole, Table 1 offers information on the respondent's hardiness personality qualities by displaying degrees of balance on several dimensions. These results contributed to our understanding of people's mental hardiness and coping abilities, which were critical for maintaining one's health in the face of stress and hardship. In our life, challenge, control, resiliency, and commitment all score similarly in terms of average significance. These four complimentary and essential elements are what we need. We can only fulfill our potential and recognize our value in life by integrating these elements. We cannot just concentrate on one aspect of life while ignoring the others. We can only fully realize our personal development objectives and reach our life goals by striking a balance between these four.

**Table 2***Respondent's Mental Health (n= 1280)*

Subscales	Mean	Std.dev.	Rank	Interpretation
Somatization	1.43	0.54	10	No Symptom
Obsessive Symptoms	1.91	0.70	1	Mild
Interpersonal Sensitivity	1.67	0.66	2	Mild
Depression	1.62	0.63	3	Mild
Anxiety	1.56	0.59	4.5	Mild
Hostility	1.50	0.57	6.5	Mild
Terror	1.48	0.57	8.5	No Symptom
Paranoid	1.48	0.55	8.5	No Symptom
Psychosis	1.50	0.54	6.5	Mild
Other	1.56	0.58	4.5	Mild

*Legend: 1.00 – 1.49 (no symptom), 1.50 – 2.49 (Mild), 2.50 – 3.49 (Moderate), 3.50 – 4.49 (Severe), 4.50 – 5.00 (very severe)*

Table 2 is the mental health table of the respondents, including the mean, standard deviation and ranking of different symptoms, which provides an overview of the mental health status of the respondents. Obsessive-compulsive symptoms, interpersonal sensitivity, and depression ranked in the top three among respondents' SCL-90 scores. Obsessive-compulsive symptoms had the highest average score, indicating that they were the most prevalent or severe symptoms among respondents. Average scores for somatization, interpersonal sensitivity, depression, and anxiety were also relatively high, suggesting that these symptoms were significantly present among respondents and to a lesser degree compared to obsessive-compulsive symptoms. Average scores for hostility, fear, paranoid symptoms, and psychosis were slightly lower, but still fell into the "mild" symptom category. Standard deviation between symptoms indicates differences in the way individuals experience these symptoms, with some symptoms scoring more consistently among respondents than others.

One of the most widely used mental health testing instruments in the world is the Symptom Self-Rating Scale (SCL-90), which consists of 90 items that measure a person's somatization, obsessive symptoms, interpersonal sensitivity, depression, anxiety, hostility, fear, anxiety, paranoia, psychosis, and other health-related factors like eating and sleeping patterns. Every item is given a score between 1 and 5, and the overall score is the sum of the scores for all 90 things. Each dimension's score is equal to the product of its subscales' scores and its item count. A dimension is considered positive if it receives more than two points. The total number of things with a score higher than one is referred to as the "number of positive items." A SCL-90 positive is defined as a total score of more than 160, a positive number of items of more than 43, or a score greater than 2 in any dimension. A positive result indicates that the subject may have a mental health problem in one area. The scale is widely used by researchers around the world, because it can accurately reflect the mental health status. SCL-90 has a Cronbach  $\alpha$  coefficient of 0.987. The Bartlett sphericity test significance was less than 0.001, and the KMO value was 0.970. A WHO report estimates that over 30% of college students from eight different nations have experienced mental anguish. This has had a significant negative impact on their studies and daily lives, leading to role impairment and subpar academic performance. According to a poll conducted in the United States, around 10% of college students had thought about suicide and more than a third had experienced despair in the previous year. Over the past 20 years, there appears to have been an increase in the number of students with mental health issues. College students frequently struggle with psychological issues such as anxiety, compulsions, depression,

and interpersonal sensitivity.

This study found that the detection rate of psychological problems among students in private colleges and universities was significantly higher than that in public schools. The average score of public schools for obsessive-compulsive symptoms was 18.63, significantly lower than the average score of 19.64 for private colleges and universities. The average score of "interpersonal sensitivity" in public schools was 14.68, which was significantly lower than the average score of 15.40 in private universities. The average score of "depression" in public schools was 20.49, significantly lower than the average score of "depression" in private colleges and universities was 21.66. The average score of "terror" in public schools was 10.13, significantly lower than the average score of "terror" in private colleges and universities was 10.62. The overall mean mental health score of public schools was 139.09, which was significantly lower than that of private colleges and universities, 145.04. Analysis of the reasons: the two different natures of the school management and curriculum content is different, the quality of teachers and the focus of teaching there were some differences, which will have a certain impact on the psychological state of students. At present, although China's private colleges and universities have developed vigorously and made great progress in all aspects, the objective gap and long-term prejudice have made the society lack full recognition of private colleges and universities. Many students in private colleges and universities also hold the same understanding, and they have a strong sense of frustration when they enroll, feel inferior and cannot face their identity as students in private colleges and universities. Moreover, the tuition fees of private college students are higher than those of public school students, and they bear the economic pressure in their hearts. At the same time, some private colleges and universities attach great importance to the learning of students' knowledge and skills, and the mental health education is relatively weak, objectively resulting in the blind area of students' psychological growth education. Xu (2014) believe that the overall level of mental health of private university students is general, and there are significant differences in obsessive symptoms and interpersonal sensitivity, which is consistent with the survey results.

On the interpersonal sensitivity dimension, students under the age of 18 scored an average of 18.94, students aged 18-21 scored an average of 15.02, and students over the age of 21 scored an average of 14.88. On the depression dimension, students under the age of 18 scored an average of 26.65, students 18-21 years old scored an average of 20.98, and students over 21 years old scored an average of 21.05. On the terror dimension, students under the age of 18 scored an average of 13.53, students 18-21 years old scored an average of 10.32, and students over 21 years old scored an average of 10.40. This may be due to the fact that 18-21 year old students have accumulated some experience and confidence in their academic and personal lives, which enables them to face challenges and pressures with greater determination and hardiness, in line with previous studies: college students aged 19-24 years have better general and physical health.

Previous studies have found that gender, income and other socioeconomic factors are related to college students' mental health. Male respondents had an average score of 18.75 for obsessive-compulsive symptoms, significantly lower than the average score of 19.43 for female respondents. Men scored an average of 20.78 for "depression" and women scored an average of 21.29 for "depression." The average "anxiety" score for men was 15.24, and the average "anxiety" score for women was 15.85. Men scored an average of 10.18 for "terror" and women scored an average of 10.53 for "terror." The overall mean mental health score was 140.81 for men and 143.01 for women. Based on this data, it can be observed that female respondents scored higher on average than male respondents in more than half of the dimensions. Consistent with previous research results, because women are more sensitive and delicate than men in personality traits, women are more likely to be psychologically hurt and feel pressure when facing pressure. At the same time, they are more likely to suffer from higher anxiety and other psychological problems when they are under greater psychological pressure. Boys often show stronger tolerance and adjustment ability in the face of pressure, which can reduce the performance of negative emotions such as anxiety and depression to a certain extent. As far as disciplines go, the liberal arts have slightly higher average scores for "somatization" (hostility, terror, and paranoia) than the sciences do, while the sciences have slightly lower average scores for the remaining liberal arts dimensions. College and university students majoring in liberal arts report greater rates of obsessive symptoms, interpersonal sensitivity, sadness, anxiety, and



psychosis than do scientific majors. Teachers must pay attention to the mental health of their liberal arts majors.

Looking at the grade level of respondents, the mean scores for depression, anxiety, phobia, paranoia, psychosis, and overall mean all showed a downward trend from freshman to sophomore to junior year, suggesting that higher grade levels may have a positive impact on students' mental health. Specifically, on the somatization dimension, the freshman averaged 16.95 points, the sophomore averaged 17.10 points, the junior averaged 17.35 points, and the senior averaged 17.13 points. In the dimension of obsessive-compulsive symptoms, the average score of freshman was 19.80, sophomore was 19.53, junior was 18.41, and senior was 18.80. The dimensions of obsessive-compulsive symptoms varied significantly among different grades, which may be related to the following factors: Since entering the 21st century, the mental health education of Chinese college students has been greatly developed. China has the largest number of university students in the world. With the rapid development of China's social economy and the growth of grades, college students are facing more competition and pressure in study and employment, which may lead to an increase in psychological problems. The first year of college admission is an important transitional stage for students and a critical period for the development of students' mental health. During this period, they must begin to learn to face multiple difficulties and challenges on their own, such as increased responsibility, adjustment problems, financial needs, academic pressures, and changes in social support networks. The data showed that first-year college students had higher rates of obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, paranoia, psychosis, and SCL-90 scores than other grades. Further postmortem examination showed that the senior students had the lowest average score of depression, anxiety, terror, paranoia and psychosis, followed by the junior students, and the freshmen and sophomore students had slightly higher total score and average score. This may be due to the fact that juniors and seniors had accumulated some experience and confidence in their academic and personal lives, enabling them to face challenges and pressures with greater determination and hardiness, a more positive attitude towards the future, and a greater ability to cope with various challenges. Therefore, it can be considered that the mental health status of junior and senior students was generally good, indicating that senior students have a certain adaptability to college life, master more skills in interpersonal communication, deal with various problems more skillfully, and solve their own emotions, more perfect channels, more smooth means, and more obvious effects.

In terms of sadness, anxiety and dread, overall score, interpersonal sensitivity, and obsessive-compulsive symptoms, student cadres had higher mean values. Compared to non-student cadres, student cadres had a greater influence on mental health. It could be that once they are designated as student leaders, they have additional responsibilities and relationships to manage. In particular, they must learn how to manage relationships with counselors, teachers, and classmates, as well as finish tasks assigned by leaders. All of these things can put a lot of strain on student leaders and increase their risk of psychological issues.

The average score of only children for "obsessive symptoms" was 18.26 points, and the average score of non-only children was 19.41 points, with significant differences. The only children had lower mean of somatization, obsessive symptoms, interpersonal sensitivity, depression, anxiety, hostility, fear anxiety, paranoia, psychosis and total score. Previous studies have shown that there are significant differences in the degree of subjective well-being and depression between only and non-only college students. Specifically, college students who are only children have higher scores of subjective well-being and lower levels of depression.

The scores of mental health symptom self-rating scale of students from different family backgrounds were analyzed, and the scores of interpersonal sensitivity and terror of rural students were different from those of urban students. Different environments in which students grow up have an impact on the cultivation and shaping of their personalities. Compared with urban college students, rural college students show a stronger introversion and sensitivity. They are not peaceful enough in the process of interpersonal communication and are prone to inferiority complex. In China, rural and urban are two kinds of social ecological environment with great differences. Children who grow up in urban environment have more opportunities to contact the society, and are often well-informed, daring to accept and explore new things; In rural areas, especially in remote and poor areas,

the living environment is relatively simple, and the interpersonal communication is less and fixed. Children who grow up in this environment have simple experiences, and often lack enough confidence and skills when adapting to the new environment and facing new things. Generally speaking, the economic status of rural students' families is worse than that of urban students, while private colleges and universities charge higher fees due to independent education, which is a heavy economic burden for rural families, and many families even need to borrow money to pay for study. As the employment pressure of private colleges and universities is generally greater, graduates of private colleges and universities are not optimistic about the employment prospects. Therefore, along with economic pressure, life pressure and study pressure, rural students' psychological pressure comes from various sources and is not easy to cope with.

The average score for "obsessive-compulsive symptoms" was 19.64 for poor family students and 18.63 for non-poor family students. Poor family students scored an average of 15.39 for "interpersonal sensitivity" and non-poor family students scored an average of 14.69 for "interpersonal sensitivity". Poor family students had an average "depression" score of 21.59, while non-poor family students had an average "depression" score of 20.55. The data in the table show that the total average score, obsessive symptoms, interpersonal sensitivity and depression factors of poor family students are significantly higher than those of non-poor family students. In terms of specific performance, poor family students have more compulsion symptoms and stronger compulsion tendency, often show the tendency to adhere to stereotypes and pursue perfection in life, cannot face failure and frustration calmly, are prone to appear unable to get rid of some meaningless behaviors, thoughts and impulses, and may show some behavioral symptoms of cognitive disorders; The sense of discomfort and inferiority in interpersonal communication was obvious, especially when compared with others; Life interest was reduced, motivation was lacking, vitality was lost. Existing studies have shown that inferiority, self-isolation, psychological pressure and other problems are more common among poor students, and the proportion of poor students with psychological problems is higher than that of non-poor students. The subjective causes of this phenomenon may be related to the poor students' cognition of difficulties and pressures and the negative evaluation of poverty by the society. Quite a number of poor students cannot accept the reality of poverty in their families, habitually avoid coping with adversities in life, fail to evaluate their own abilities objectively, tend to exaggerate objective difficulties and avoid taking responsibility as much as possible. It becomes a vicious cycle.

To sum up, college students' mental health had differences in school nature, age, gender, grade, economic status and other factors. Among these differences, the nature of school and poverty were the most obvious, and the differences of grade, gender and only child were not very obvious, which may indicate that the learning motivation was affected by personal goals, interests, tenacity, teaching quality and family environment.

**Table 3**

*Respondent's Coping Style (n= 1280)*

Type of Coping	Mean	Std.	Rank	Int.
Positive Coping	2.12	0.60	-	
Negative Coping	1.50	0.70	-	
<i>Overall Coping Tendency</i>	<i>0.62</i>	<i>0.73</i>	<i>More accustomed to negative coping mode</i>	

*Legend: Overall is greater than 0 – participant adopt positive coping, less than 0 – more accustomed to negative coping mode*

Table 3 shows the coping style employed by the respondents. Table 3 shows the scores of 1280 college students in two coping styles, including minimum, maximum, average and standard deviation. The minimum value of negative coping style was 0, the maximum value was 4.00, the average value was 1.50, and the standard deviation was 0.70. There was a relatively strong positive coping trend, but the degree of dispersion was also high. The negative coping style of college students was in the lower middle level. The minimum value of positive coping style was 0.05, the maximum value was 4.00, the average value was 2.12, and the standard deviation was 0.60, indicating that the positive coping style of college students was above the medium level. The positive aspects of college students' coping styles were obviously higher than the negative aspects.

In terms of the nature of the school, the average positive coping score of public school students was 2.17, slightly higher than the average positive coping score of private school students was 2.07. Meanwhile, the average negative coping score of public school students was 1.51 points, slightly higher than the average negative coping score of private school students was 1.49 points. Although the differences in coping styles between public and private schools were not significant, the differences in coping styles were still higher in public schools for the following possible reasons: First, due to the diversity of the student body, public schools generally have more students from different socioeconomic backgrounds, cultural backgrounds and family environments. This diversity can lead to students facing different challenges and pressures, which can affect how they cope. Private schools may be relatively more consistent, so there may be less variation between students. The second is the difference in resources and support. Private schools often have more resources and support, such as professional counselors, counseling services, and academic guidance. These resources and supports help students cope effectively with challenges and stress, thereby reducing differences in coping styles. In contrast, public schools can have imbalances in resources and support, leading to increased differences in how students cope. The third is the influence of cultural and educational environment. The educational environment and culture of different types of schools are different. Public schools generally face more educational pressure and competition, while private schools may pay more attention to the cultivation of comprehensive quality, thus affecting students' coping styles.

In terms of age, the average score of college students aged 21 and over was 2.16, higher than that of college students aged 18-21 (2.10) and college students aged 18 and under (2.06). Similarly, college students who responded negatively had an average score of 1.69 over the age of 21, higher than those aged 18-21 (1.47) and those aged under 18 (1.43). This may indicate that college students over the age of 21 experienced more growth and development, had more life experience and opportunities to cope with stress.

In terms of gender, the average positive coping score of female college students was 2.05, slightly lower than the average positive coping score of male college students was 2.17. Meanwhile, the average negative coping score of female college students was 1.57 points, slightly higher than the average negative coping score of male college students was 1.44 points. Although the differences in coping styles between the sexes were not significant, the differences in coping styles were still higher in female college students, which may be related to the pressure, expectations and burdens of women's social and family roles. Women may face more challenges and pressures and need to adopt more coping strategies to cope with these challenges.

In terms of subjects, both liberal arts students and science students scored an average of 2.12 points for positive coping. The average negative coping score of liberal arts students was 1.43 points, slightly lower than the average negative coping score of science students of 1.51 points. This may be because college students majoring in science usually need to carry out tasks such as logical thinking, mathematical calculation and experimental research, pay more attention to analyzing problems, solving challenges and pursuing accuracy, and may be more inclined to adopt positive coping methods such as seeking help, making plans and pursuing progress when coping with pressure. In contrast, liberal arts students may pay more attention to the ability of thinking, expression and interpersonal communication, pay more attention to emotional expression and interpersonal relations, and adopt interaction and communication with others to cope with challenges and pressures.

In terms of grades, the average positive coping style score of seniors was 2.16, slightly higher than that of juniors (2.06), sophomores (2.11), and freshmen (2.15). In terms of negative coping, the average score of college seniors was 1.58, slightly higher than that of sophomores (1.48) and juniors (1.58) but lower than that of freshmen (1.37). Overall, juniors had the lowest levels of coping, while freshmen and seniors who had just started college or were graduating showed comparable levels, suggesting that the junior year of college represented a turning point in students' motivation to learn. At the third grade level, students usually face greater academic pressure and challenges and need to deal with more academic tasks and final exams, resulting in lower performance in coping styles and difficulty coping effectively. First-year and fourth-year students, who have just

started college or are graduating, may show relatively stable and comparable levels of coping skills. First-year students, who have just entered university, may still be fresh and curious about the new environment and requirements, and actively seek ways to adapt and solve problems. While seniors were graduating, accustomed to the pace of university study and life, have a clearer understanding of academic requirements, and have more experience and ability to handle challenges.

In terms of whether they were student leaders, the average score of student leaders' positive response was 2.18, which was slightly higher than the average score of non-student leaders' positive response was 2.07. At the same time, the average score of student leaders' negative coping was 1.51 points, slightly higher than that of non-student leaders' negative coping was 1.48 points. Although the difference in coping styles between student leaders and non-student leaders was not significant, the difference in coping styles of student leaders was still higher. Student leaders usually need to cooperate and communicate with different groups, deal with various expectations and needs from students, teachers, parents and school management, and have strong interpersonal communication and problem-solving skills. As a result, student cadres may show higher differences in coping styles

In terms of whether they are only children, the average positive coping score of non-only children was 2.13, which was slightly higher than the average positive coping score of only children was 2.10. At the same time, the average negative coping score of only children was 1.57, slightly higher than the average negative coping score of non-only children was 1.48. Differences in coping styles were still higher among non-only children, who often grow up in an environment where there are siblings in the family and need to share resources, deal with conflict and competition. Such experiences may help develop their ability to solve problems and cope with difficulties, so they may show high differences in coping styles.

In terms of growth environment, the average positive coping score of urban registered students was 16.00 points, slightly higher than the average positive coping score of rural registered students was 15.67 points. Meanwhile, the average urban negative coping score was 1.55 points, slightly higher than the average rural negative coping score of 1.46 points. Rural families generally attach importance to the values of hard work, tenacity and perseverance, which may make rural students more inclined to actively cope with difficulties and challenges. While urban areas may be more competitive and achievement-oriented, this may lead some urban students to be more prone to negative coping attitudes when faced with difficulties.

Correlation analysis in Table 4 shows that mental health was significantly negatively correlated with coping styles ( $r < 0$ ,  $p < 0.05$ ), indicating that the mental health level of college students had an impact on coping styles. Positive coping styles were negatively correlated with mental health ( $r < 0$ ,  $p < 0.05$ ). Negative coping styles were significantly positively correlated with mental health ( $r > 0$ ,  $p < 0.05$ ). Negative coping tendencies include avoidance, self-blame and fantasy, etc. Individuals with such tendencies usually choose to close themselves in the face of negative life events and make false attribution through self-blame and escape, thus producing negative emotions and bad cognition and reducing the level of individual mental health. Individuals with positive coping emotions, usually in the face of negative life events, can take the initiative to find ways to solve problems, seek opinions and support, to achieve the purpose of solving problems, so as to maintain a good level of mental health. Therefore, different coping tendencies of college students have significantly different effects on their mental health level. This is consistent with the study of Chinese scholar (Mo et. al.,2023), who explored the relationship between the mental health of 998 college students and the biased constitution of traditional Chinese medicine and coping styles, and the study showed that the level of psychological symptoms of college students was significantly positively correlated with the negative coping styles, while significantly negatively correlated with the positive coping styles. This is consistent with the results of this paper.

**Table 4***Correlation Matrix of the Variable of the Study (N=1280)*

	resilience		Control		Commitment		Challenge		Overall	Coping
	r <sub>xy</sub>	p-value	r <sub>xy</sub>	p-value	r <sub>xy</sub>	p-value	r <sub>xy</sub>	p-value	Tendency	p-value
Somatization	.000	.678	-.026	.345	-.069*	.013	-.109**	.000	-.221**	.000
ObsessiveSymp.	-.125	.000	-.145	.000	-.182**	.000	-.184**	.000	-.200**	.000
InterpersonalSen.	-.128	.000	-.155	.000	-.188**	.000	-.210**	.000	-.260**	.000
Depression	-.117**	.000	-.150	.000	-.173**	.000	-.196**	.000	-.269**	.000
Anxiety	-.076**	.007	-.087	.002	-.125**	.000	-.151**	.000	-.229**	.000
Hostility	-.097**	.001	-.097	.001	-.161**	.000	-.182**	.000	-.287**	.000
Terror	-.132**	.000	-.135	.000	-.176**	.000	-.196**	.000	-.233**	.000
Paranoid	-.058*	.037	-.068	.014	-.109**	.000	-.138**	.000	-.262**	.000
Psychosis	-.074**	.008	-.090	.001	-.117**	.000	-.139**	.000	-.272**	.000
Other	-.051	.067	-.056	.046	-.098**	.000	-.132**	.000	-.224**	.000
Positive Coping	.408**	.000	.423**	.000	.412**	.000	.436**	.000	.454**	.000
Negative Coping	.080**	.004	.103**	.000	.053	.056	.045	.106	-.648**	.000
Overall Coping Tendency	.259**	.000	.249**	.000	.288**	.000	.316**	.000	1	

*Legend: Difference is significant at 0.05 alpha level, Those highlighted in green is considered significant*

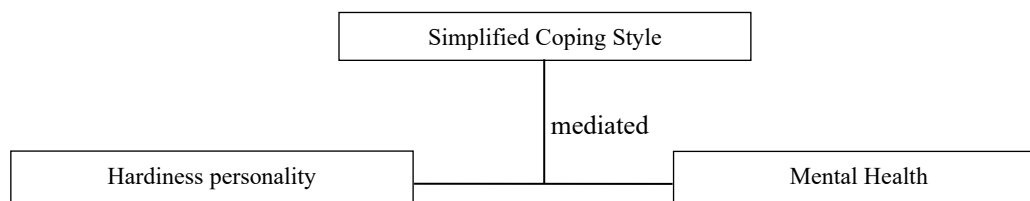
In addition, hardiness personality was significantly negatively correlated with mental health ( $r < 0$ ,  $p < 0.05$ ), has a certain predictive effect on the mental health of college students, and the impact on the mental health of college students is more important. There was a significant negative correlation between hardiness and mental health ( $r < 0$ ,  $p < 0.05$ ), which means that individuals with lower levels of mental health generally show lower levels of hardiness. There was a significant negative correlation between control dimension and mental health ( $r < 0$ ,  $p < 0.05$ ), individuals with lower levels of control tended to show poorer levels of mental health. There was a significant negative correlation between commitment dimension and mental health ( $r < 0$ ,  $p < 0.05$ ), lower commitment levels were associated with poorer levels of mental health. There was a significant negative correlation between challenge dimension and mental health ( $r < 0$ ,  $p < 0.05$ ), lower challenge levels were associated with poorer levels of mental health. Hardiness personality refers to the psychological characteristics that individuals can maintain stability, firmness and persistence in the face of adversity, pressure and setbacks. People with hardiness personalities are generally more adaptable and hardiness to stress, and are better able to cope with various challenges in life. This hardiness makes it easier for the individual to adopt a positive mindset to deal with the problem rather than wallowing in negative emotions. The higher the tenacity of college students is, the higher the level of mental health is. High tenacity in the face of pressure and setbacks, take the initiative to find ways to solve problems, have positive beliefs, not afraid of difficulties and setbacks, not easily defeated by difficulties, can quickly recover and grow in adversity. Therefore, the higher the level of hardiness is, the higher the level of mental health is.

In addition, there was a significant positive correlation between hardiness personality and coping style ( $r > 0$ ,  $p < 0.05$ ), indicating that there was a positive correlation between personality traits and coping styles when individuals face difficulties and challenges. There was a significant positive correlation between the four dimensions of hardiness personality and positive coping ( $r > 0$ ,  $p < 0.05$ ), indicating that individuals had stronger tenacity personality and were more likely to adopt positive coping strategies to overcome difficulties and meet challenges. The hardiness dimension and the control dimension had significant positive correlation to the negative coping style ( $r > 0$ ,  $p < 0.05$ ), the commitment dimension and challenge dimension were weakly correlated with negative coping styles ( $r > 0$ ,  $p < 0.05$ ). Through comparison, it was found that the coping style characteristics of college students with different tenacity levels were very different. Students who are hardiness adopt more positive coping styles and less negative coping styles. However, college students with low hardiness adopted more negative coping styles, which is consistent with previous research. Researcher (Folkman et al., 2020) found in their studies that positive emotions help relieve stress, including positive coping strategies, such as positive reappraisal, problem-centered coping, and injecting positive meaning into common events,

which are related to the occurrence and maintenance of positive emotions.

In summary, the research on hardiness, coping style and mental health of college students shows that there was a positive cycle between mental health, hardiness personality and coping style. Mentally healthy individuals are more likely to develop and maintain hardiness personalities because they are more able to adapt to changes and challenges in life. College students with a high degree of tenacity are more able to face setbacks and difficulties in life with a good attitude, and their willpower is stronger. They can not only persistently pursue their dreams and life values, but also take the initiative to solve problems and adjust their mentality in time according to changes in the surrounding environment, so as to maintain a healthy mental state. If the degree of tenacity is low, college students are more likely to have anxiety, depression, fear and other negative emotions in the face of various difficulties and obstacles in life, which seriously affect personal health and normal life. When faced with bad emotions, college students with a hardiness personality type might respond more proactively rather than reacting or running away. Nonetheless, insufficiently positive or negative coping strategies are frequently adopted by college students with low tenacity, such as giving up and running away from problems, which is bad for their mental health.

Figure 1. Mediation Diagram for COPING STYLE



Hardiness personality is the independent variable, mental health is the dependent variable, and coping styles are the mediating variable, representing the mediation influence of coping styles. Figure 1 shows the mediating function of coping styles in hardiness personality and mental health. Additionally, findings unequivocally demonstrate the favorable correlation between coping methods and mental health. A mediating factor in the association between mental health and hardiness is coping style. Nonetheless, there is a reciprocal interaction among the three. Sometimes mental health conditions, including prolonged chronic stress, can have an impact on a person's positive coping strategies and hardiness characteristics. This can diminish a person's resilience. Therefore, understanding the interaction between the three requires taking into account an individual's overall situational and environmental factors. Taken together, hardiness personality, coping styles, and mental health constitute an interwoven network that collectively affects individual performance and well-being in life. It is helpful for college students to cultivate tenacity and adopt positive coping style to improve their mental health level and form a positive mental cycle. Therefore, individuals and society should pay attention to cultivating hardiness and improving the ability to cope with stress in order to promote the overall development of mental health.

Hardiness personality and coping style: hardiness personality refers to the stability, perseverance and positive attitude shown by individuals in the face of adversity and challenges. Coping style is the psychological and behavioral strategy that individuals adopt when facing pressure and difficulties. Research shows that people with hardiness personalities are more likely to use positive, effective coping styles, such as problem solving, seeking support, and positive thinking, to cope with challenges and stress. Hardiness personalities tend to exhibit traits such as optimism, confidence, self-discipline, hardiness, and perseverance. These traits enable them to face challenges and stress more positively and tend to adopt positive coping styles. For example, they may be more inclined to find solutions to problems, seek opportunities to grow and learn from them, and actively seek support and help from others.

Hardiness personality and mental health: There is a positive correlation between hardiness personality and

mental health. People with hardiness personalities are generally better able to cope with setbacks and adversities in life, and have stronger coping abilities and stress tolerance. They are more likely to adopt a positive attitude in the face of difficulties, thus maintaining mental health during the coping process. Conversely, people who lack a hardiness personality may be more prone to stress, anxiety and depression, which can negatively impact their mental health. There is a mutually reinforcing relationship between hardiness personality and mental health. People with hardiness personalities tend to be better able to adapt and cope with life's setbacks and stresses, and thus better able to maintain mental health. They may be more adaptable and hardiness to stress, more able to face changes and difficulties in life, and less prone to falling into negative emotions and mental health problems.

Coping styles and mental health: Coping styles are divided into two dimensions: positive coping and negative coping. Individuals often deal with stressful events and manage their corresponding emotional states through coping styles. In the present study, the mental health status of medical students was significantly regulated by coping styles, especially negative coping styles, which significantly increased the risk of mental health problems. The life stress of college students is related to the increase of negative coping style. Negative coping styles are often risk factors for mental health problems, such as suicidal ideation and depression. Therefore, a vicious cycle can occur between negative coping styles and adverse life stressful events, ultimately leading to deterioration of mental health. Positive coping style is a protective factor for mental health, which is consistent with previous findings. There is a strong relationship between coping styles and mental health. Generally speaking, adopting positive and effective coping styles can effectively reduce stress and psychological burden and maintain mental health. For example, coping styles such as positive problem-solving strategies and actively seeking social support are thought to help reduce stress and emotional distress. Conversely, adopting negative, ineffective coping styles, such as avoidance and self-denial, may exacerbate mental health problems. Coping styles play an important role in mental health. Therefore, cultivating positive coping styles is essential for promoting mental health.

**Table 5**

*Regression Analysis of the Variables of the Study (N=1280)*

Predictor	Dependent Variable	Std.error	Beta	Sig.	Interpretation
resilience	Coping tendency	.073	.012	.835	Not a Predictor
Control	Coping tendency	.065	-.019	.706	Not a Predictor
commitment	Coping tendency	.063	.097	.058	Not a Predictor
Challenge	Coping tendency	.070	.203	.000	Predictor
Somatization	Coping tendency	.065	-.060	.220	Not a Predictor
ObsessiveSymp.	Coping tendency	.053	.128	.013	Predictor
InterpersonalSen.	Coping tendency	.069	-.059	.348	Not a Predictor
Depression	Coping tendency	.078	-.107	.115	Not a Predictor
Anxiety	Coping tendency	.085	.149	.032	Predictor
Hostility	Coping tendency	.061	-.139	.004	Predictor
Terror	Coping tendency	.057	.029	.519	Not a Predictor
Paranoid	Coping tendency	.069	-.061	.243	Not a Predictor
Psychosis	Coping tendency	.084	-.149	.017	Predictor
Other	Coping tendency	.061	.016	.739	Not a Predictor

*Legend: R square is .174 indicating that 17.4 percent of changes on the dependent variable can be predicted by selected variables*

Table 5 presents the results of a regression analysis of various predictor variables on the dependent variable "Coping tendency." The table includes predictors such as resilience, Control, Commitment, Challenge, somatization, obsessive symptoms, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoid ideation, psychosis, and other symptoms. Here's an analysis and interpretation of the table: The table provides the standard error, beta coefficient, and significance level (Sig.) for each predictor variable. Significance levels indicate whether the predictor variable has a statistically significant impact on the coping tendency.

Predictors with p-values less than the chosen alpha level (typically 0.05) are considered statistically significant. Among the predictor variables, Challenge, Obsessive Symptoms, Anxiety, Hostility, and Psychosis

are statistically significant predictors of coping tendency. Variables such as hardiness, Control, Input, somatization, interpersonal sensitivity, depression, terror, paranoid ideation, and other symptoms do not significantly predict coping tendency based on the provided data. Beta coefficients indicate the direction and strength of the relationship between the predictor and the coping tendency. A positive beta coefficient suggests a positive relationship, while a negative coefficient suggests a negative relationship. In this analysis, Challenge, Obsessive Symptoms, Anxiety, Hostility, and Psychosis have positive beta coefficients, indicating a positive relationship with coping tendency. The R square value of 0.174 suggests that approximately 17.4% of the variability in coping tendency can be explained by the selected predictor variables. This value represents the proportion of variance in the dependent variable that is predictable from the independent variables included in the model.

Scholars such as Yong (2019) have pointed out in their research that certain studies in China indicate that positive coping strategies and negative coping strategies have a predictive effect on psychological symptoms. Positive coping strategies are significantly negatively correlated with the total score and dimensions of SCL-90, while negative coping strategies are significantly positively correlated with the total score and dimensions of SCL-90. In his own research, Williams (1992) analyzed the relationship between three components of hardiness and coping strategies. The results revealed that in response to stress, hardiness positively predicted problem-solving coping strategies and negatively predicted avoidance coping strategies. Additionally, the challenge component of hardiness was found to predict coping variables. Feng et. al.,(2019) argue that positive coping strategies are significantly negatively correlated with the total score and various factors of SCL-90, and are significantly negatively correlated with total scores, somatization, depression, anxiety, hostility, terror, and psychosis. On the other hand, negative coping strategies are significantly positively correlated with the total score and various factors of SCL-90. This suggests that positive coping strategies may help reduce the occurrence and severity of psychological symptoms, while negative coping strategies may increase the risk of psychological symptoms.

In Peng et. al.,(2008) study, it was found that positive coping strategies can effectively alleviate stress intensity, reduce the incidence of psychological problems in college students, help individuals cope with stressful events, and thus promote mental health. In contrast, negative coping strategies produce the opposite effect. The study conducted by Huang et. al.,(2006) showed that positive coping strategies were negatively correlated with the total score of SCL-90, as well as factors such as obsession, interpersonal sensitivity, depression, anxiety, paranoia, and psychosis ( $P < 0.05$ ). On the other hand, negative coping strategies were positively correlated with the total score and various factors of SCL-90 ( $P < 0.05$ ). Seeking help as a coping strategy is significantly correlated with interpersonal relationships, depression, and paranoia. Rationalization, self-blame, fantasy, and avoidance coping strategies are all significantly or extremely significantly positively correlated with various factors of self-rating symptom scales.

The significant predictors identified in the regression analysis can help understand which factors contribute most strongly to coping tendency. Addressing factors such as challenge, obsessive symptoms, anxiety, hostility, and psychosis may be crucial in interventions aimed at enhancing coping abilities and hardiness among individuals. Understanding the predictors of coping tendency can inform the development of targeted interventions and support services tailored to individuals' specific needs.

In summary, Table 5 provides valuable insights into the predictors of coping tendency among respondents. The significant predictors identified can guide interventions aimed at promoting effective coping strategies and enhancing mental health outcomes within the studied population.



**Table 6***Proposed Intervention Program to enhance mental health of college students.*

Key Concern Area	Program Objectives	Strategies/ Activities	Persons Involved	Success Indicators
Hardiness Personality Resilience and Challenge	Improve the mental hardiness of college students.	Hold mental health talks.	Teachers and counselors in the Mental Health Education Center for college students.	College students' recognition of mental health knowledge is improved.
	Cultivate college students' positive attitude.	Carry out psychological development training.	Professional psychological counselors and counselors.	The mental hardiness of college students has been improved. College students show a positive attitude in various activities.
Negative coping style	Improve their social adaptability.	Organize debate contest, speech contest and other activities.	All college students, especially those with weak psychological quality.	The comprehensive quality of college students has been improved.
	help college students master effective psychological adjustment skills and enhance their ability to face pressure, frustration and difficulties.	Create a mental growth group.	Conduct lectures on mental health knowledge.	
Mild level of Mental Health		Carry out psychological development training	All college students, focusing on new students, graduates and high-risk groups.	The mental health knowledge level of college students is improved. Be able to use the methods and skills learned to self-regulate. The service quality and effect of psychological counseling rooms have been significantly improved. Students pay more attention to mental health issues
	Improve college students' awareness and attention to mental health.	Mental health seminar.	Professional psychologist. University mental health teachers.	College students' awareness and attention to mental health have been improved.
	Cultivate hardiness personality and enhance psychological quality.	Psychological development training.	College students.	Deal with stress and solve problems. The psychological quality of college students has been improved. Quality of life is improved.
	Improve your ability to cope with stress.	Stress coping skills training.		
		Interpersonal communication training.		
		Psychological counseling services.		

Table 6 shows that the mental health of college students can be effectively reduced and the occurrence of adverse events can be reduced by cultivating hardiness personality and improving coping styles. The following will be discussed from three aspects: resilience, control, commitment and challenge.

For the cultivation of hardiness personality of college students, schools, families and society need to work together. In the stage of higher education in our country, college students face a lot of pressure, such as study, employment, interpersonal relationships and so on. In order to cope with these pressures, it is particularly important to develop a hardiness personality and improve mental health.

First of all, schools can give full play to the role of education and guidance, and create an environment conducive to cultivating students' hardiness personality and mental health. Schools can carry out a variety of extra-curricular activities, such as sports competitions, artistic performances, volunteer services, etc., so that college students can exercise willpower, teamwork ability and anti-pressure ability in the process of participation. In addition, schools can also set up mental health courses to teach psychological adjustment methods and skills to help students establish a correct outlook on life, values and world. Secondly, family is an important place to shape individual character and psychology. Parents should pay attention to their children's growth process, respect their children's independence, and encourage them to face difficulties and challenges. The harmony, care and support of the family atmosphere are very important for the cultivation of children's tough personality and mental health. Parents should also pay attention to their children's mental health, find and solve problems in a

timely manner, and help their children build a confident and positive attitude. Thirdly, the guidance of public opinion and values is also of great significance to the cultivation of college students' hardiness personality and mental health. All sectors of society should pay attention to the mental health of college students, and actively advocate self-care and positive life attitude. The media can promote inspirational figures and deeds, transmit positive energy, and stimulate the fighting spirit and perseverance of college students. At the same time, enterprises, social organizations and caring people can care for and support the mental health cause of college students, and provide funds and resources for related work.

In addition, college students themselves should establish correct self-cognition, consciously cultivate tough personality and improve mental health. They can actively participate in physical exercise to enhance their physical fitness and improve their ability to resist pressure. In study, work and life, college students should learn to self-adjust, reasonable planning of time, distribution of energy. When you encounter difficulties and setbacks, keep an optimistic attitude and believe in your ability to overcome them. At the same time, college students should also pay attention to interpersonal communication, learn to communicate and cooperate with others, expand their interpersonal circle, and improve their social adaptability.

For improving the positive coping style of college students, in today's society, college students are facing pressure from all aspects, such as study, employment, interpersonal relationship and so on. In order to improve the ability of college students to cope with stress and promote mental health, we need to develop a series of targeted goals, strategies and specific activities. On the main goal, first, improve the psychological resilience of college students, so that they can maintain a positive attitude in the face of pressure and difficulties. Second, cultivate college students' self-regulation ability to help them better manage their emotions and behaviors. Third, strengthen the social support system of college students and provide them with more psychological assistance. Fourth, improve the psychological quality of college students so that they can remain calm and confident in the face of challenges. Fifth, develop college students' time management and problem solving skills to help them cope with pressure effectively.

In terms of specific strategies, the following method could be used. First, carry out mental health education: through lectures, courses, activities and other forms, popularize mental health knowledge, improve the psychological quality of college students. Second, strengthen psychological counseling and counseling: provide professional psychological counseling services for college students to help them solve psychological troubles. Third, create a supportive environment: Create a caring and loving atmosphere for college students, so that they feel supported by their families, schools and society. Fourth, carry out a variety of activities: organize activities conducive to the physical and mental health of college students, such as outdoor development, team cooperation games, etc., in order to improve their coping ability. Fifth, strengthen teacher training: train teachers to have the basic knowledge and skills of mental health education, so as to pay attention to students' mental health in daily education and teaching. Sixth, the establishment of student files: students' mental health status is regularly assessed, timely detection and intervention of psychological problems.

On specific activities, first, hold mental health lectures: invite experts to explain mental health knowledge to college students and improve their psychological literacy. Second, carry out psychological counseling: provide professional psychological counseling services to help college students solve psychological problems. Third, organize team building activities: through team cooperation games, etc., cultivate college students' communication skills and ability to cope with pressure. Fourth, hold mental health knowledge competition: stimulate college students' interest in mental health and improve their level of psychological knowledge. Fifth, develop psychological salons: provide a platform for college students to share their psychological growth experiences, learn from each other and encourage each other. Sixth, the implementation of "one to one" help plan: encourage college students to care for each other, help each other, and form a good atmosphere of mutual assistance. On the success sign, the mental health level of college students can be improved by improving the positive coping style. First, the psychological quality of college students has been improved, and the ability to cope with pressure has been enhanced. Second, the mental health level of college students is improved, and the

incidence of psychological problems is reduced. Third, college students can actively face challenges and have strong psychological adaptability. Fourth, the mental health education of college students has achieved remarkable results and been recognized by the society. Fifth, schools, families and society pay more attention to college students' mental health problems.

From the above, promoting the mental health of college students in terms of improving their coping styles is a systematic and wide-ranging task. Only by comprehensive use of a variety of methods and means the comprehensive improvement of college students' mental health can be realized.. On this basis, college students will better cope with the pressure in daily life and study, realize their own value, and make contributions to the development of our country. Aiming at the mental health problems of college students in this study, such as depression, mania, hostility, interpersonal sensitivity, psychosis, insomnia, etc., the study combined with the intervention strategy of cultivating resilient personality and improving coping style. On the main objective of the intervention, the study improves the mental hardiness of college students, so that they can better cope with pressure and frustration; Cultivate college students' attitude and behavior habit to deal with problems actively; Improve college students' interpersonal relationship and enhance their social adaptability; Reduce the psychological burden of college students and prevent the occurrence of psychological problems.

The first particular technique is conducting lectures on mental health education. Professional psychologists or other psychological experts are invited to provide regular lectures on mental health to educate psychological adjustment skills and enhance college students' psychological well-being. Second, put group psychotherapy into practice: Plan psychological counseling exercises to help college students build mutual trust and support, discuss and interact with one another in the group, and become more adept at handling pressure. Thirdly, develop a hardiness mentality. College students may strengthen their psychological hardiness and train their willpower by participating in social practice, outdoor exploration, and other activities. Enhance coping strategies: In order to help college students solve difficulties more effectively, teach them how to apply active coping and logical problem-solving techniques. Fifth, enhance interpersonal relationships by conducting training in interpersonal relations, enhancing college students' communication abilities, encouraging interpersonal communication, and lowering interpersonal sensitivity.

On specific activities, one is through psychological lectures: experts are invited to hold a mental health lecture every month, covering psychological adjustment, interpersonal relations, psychological resilience and other aspects. Second, outdoor expansion: regularly organize outdoor expansion activities, such as mountaineering, hiking, team games, etc., to exercise college students' teamwork ability and anti-pressure ability. Third, social practice: Encourage college students to participate in social practice activities, such as volunteer teaching, volunteer service, etc., to cultivate their social responsibility and tenacity. Fourth, psychological salon: Organize psychological salon activities, so that college students can share their psychological growth experience, learn from each other and encourage each other. Fifth, interpersonal relationship training: carry out interpersonal relationship training courses to improve college students' communication skills and reduce interpersonal sensitivity.

In terms of participants, they are mainly college students, psychological experts and psychological counselors, and teachers and staff who are interested in participating in mental health promotion work. In terms of success markers, the focus is reflected in the following aspects: First, the psychological hardiness of college students has been improved, and they can better cope with pressure and frustration. Second, the attitude and behavior habits of college students to actively deal with problems are gradually formed. Third, the interpersonal relationship of college students is improved, and the interpersonal sensitivity is reduced. Fourth, the overall level of mental health of college students is improved, and the incidence of psychological problems is reduced.

Through the implementation of the above strategies and activities, it is expected to promote the mental health of college students, improve their ability to cope with problems, and create a good psychological environment for their own world, it is an important way to promote mental health to train college students'

hardiness personality and improve their coping style. By carrying out psychological quality education, strengthening psychological counseling, focusing on group activities, cultivating resilient personality, improving coping style, paying attention to individual differences, creating a supportive environment, and strengthening the guidance of family education, among others. The researcher, being in the field of psychology can effectively intervene in depression, mania, hostility, interpersonal sensitivity, psychosis and other symptoms of college students to promote their mental health development. At the same time, we need to continue to pay attention to the mental health of college students and adjust intervention strategies at any time to meet their changing needs.

#### 4. Conclusions and recommendations

Some respondents possess possessed resilience, control, commitment, and challenge-hardiness personality traits, coupled with mild psychological symptoms and distress suggesting a focus on fostering and strengthening these hardiness traits through preventive interventions and resilience-building programs can be beneficial for the overall well-being of the student population. Mental health was significantly negatively correlated with coping style, mental health was significantly negatively correlated with coping style, and mental health was significantly correlated with coping style. Hardiness personality and coping style were correlated with mental health to varying degrees. Taking mental hardiness as independent variable, mental health as dependent variable, and coping style as mediating variable can reflect the mediating role of coping style. Results also fully proved that coping styles were positively correlated with mental health. Coping style played a mediating role in the relationship between hardiness and mental health. A proposed psychological program named as “Thrive: Building Resilience and Positive Coping” intended for college students aimed at introducing and practicing positive coping skills for managing stress, anxiety, and mild mental health challenges was designed.

Respondents may devise ways to improve their mental endurance when encountering difficulties, learn to adjust their mentality, enhance their mental endurance, prioritize regular sleep, balanced meals, and physical activity, and maintain supportive relationships with friends, family, or classmates. Parents may collaborate with their children and professionals to identify situations or stressors that worsen their symptoms or trigger negative coping and guide them towards healthier coping mechanisms such as exercise, journaling, creative expression, social interaction, or relaxation techniques. School administrators may foster a Supportive School Climate by promoting mental health awareness like educating staff, students, and families about common mental health challenges and positive coping mechanisms as well as in creating a safe and open environment where students feel comfortable seeking support without fear of judgment or consequences. Future researchers may Investigate the relationship between hardiness and related personality traits like resilience, optimism, and grit, and may go beyond traditional coping categories (e.g., problem-focused, emotion-focused) to explore specific behaviors and strategies used by individuals with different hardiness levels. Results of the study may be incorporated in teaching professional courses in psychology like Advanced Theories of Personality, Advanced Counseling and psychotherapy and Advanced Abnormal Psychology respectively. The proposed program before its implementation has to be checked and validated by experts for further improvement.

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