



RESEARCH ARTICLE

Study on the Influence of PE Elective Motivation on the Mental Health of Chinese College Students

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ARTICLE INFO	ABSTRACT
Received: May 21, 2024	Based on the theory of self-determination motivation and input theory, this study discusses the influence of the motivation and curriculum input on mental health of Chinese college students. Therefore, this study took 903 Chinese college students in the questionnaire survey to facilitate sampling and analyzed the questionnaire data were collected. The results show that the motivation of Chinese college students in physical education are different by gender; the physical education curriculum will not be significantly different by different grades; the elective motivation has a significant positive effect on the cognitive, emotional and behavioral input, and the students' mental health level. The results show that students' mental health can be effectively promoted by improving their motivation and curriculum input in physical education. In order to explore the influence of motivation factors and input factors on the mental health of college students from the level of higher education management, and to provide certain theories and educational management strategies for university administrators and teachers.
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INTRODUCTION

Based on the theory of self-determination motivation and input theory, the study aims to investigate the relationship between elective motivation, curriculum input and mental health among Chinese college students. In this paper, this chapter first discusses the further derived research purpose, motivation and research problems, and further provides some practical suggestions for improving the motivation of physical education course selection, curriculum input and mental health of Chinese college students. Related studies have found that when individuals can participate in physical activities or social entertainment, it will help them to timely regulate their psychology and emotions, be able to correctly accept and evaluate themselves and others, and will have a better mental health level (Nong et al., 2022). As an important object of higher education, it is crucial to promote college students with a good mental health level to adapt to the future work and life. For college students, the performance of participating in physical education will also affect the behavioral results, and the internal motivation of choosing physical education courses promotes their positive cognition, emotional experience and behavioral participation in the learning process of physical education courses. (Sotos-Martinez et al., 2022). To explore the mental health problems of Chinese college students' participation in physical education courses. According to the self-determination theory (SDT) established by Deci and Ryan (1985), it is often used to explore the motivated behavior of individuals in the environment, including three psychological needs: autonomy, association and ability (Ryan & Deci, 2020). This study discusses the influence of elective motivation in physical education on the mental health of college students. According to the input theory proposed by Fredricks et al., the input should be a multidimensional structure, including cognition, emotion, and

behavior (Fredricks et al., 2004). This study discusses the effects of three types of physical education curriculum input on the mental health of college students. In the context of the curriculum of physical education in higher education in China, this study, based on the SDT theory, discusses the influence of physical education motivation on mental health, and at the same time, explores the three ways of curriculum investment in the mediation of physical education motivation and mental health (Francisco et al., 2020; Nong et al., 2022). In order to improve the motivation of course selection and participation of physical education courses in college students from the level of higher education management, schools, physical education teachers (Li Fangqin, 2022), so as to promote the level of mental health, and provide certain theoretical and empirical suggestions for the improvement of higher education quality and the promotion of students' motivation of physical education course selection.

The independent variables involved in the present study are physical education course selection motivation, the intermediary variable is curriculum cognitive input, emotional input and behavioral input, while the dependent variable is mental health. In addition, the collected data are analyzed through SPSS and structural equation model, so as to provide certain theoretical and practical management strategies for educational administrators, physical education teachers, schools, etc.

2. SECTION LITERATURE REVIEW

This chapter mainly discusses the Chinese college students, physical education motivation, curriculum input and mental health problems and related research, combined with the SDT theory and input theory, respectively, cognitive motivation, emotional input, curriculum behavior, and mental health variables, concept, related research and measurement way, further tease out the mutual and relationship between the five variables.

2.1 Self-determined motivation theory

Self-Determination Theory (SDT), proposed by Deci and Ryan (1985), believes that human behavior is driven by both internal and external motivation, where intrinsic motivation can better promote the individual's positive behavior, and extrinsic motivation may affect the individual's behavioral outcomes (Ryan & Deci, 2000). In particular, SDT theory emphasizes that satisfying people's autonomy, competence and relational needs is the key to support internal motivation, and suppressing these three needs can weaken internal motivation (Ryan & Deci, 2002). Therefore, many researchers apply SDT theory in education, management, health behavior and other fields, and gradually become one of the main theoretical frameworks to study the motivation of human behavior. Self-determination theory suggests that meeting three psychological needs is the key to supporting internal motivation: autonomy, competence, and relationship needs (Deci & Ryan, 2000). Autonomy is the need for an individual to act on their own interests and values, the need for their own performance and achievement, and the need to connect with others (Ryan & Deci, 2002). When these three needs are met, the individual's internal motivation increases, resulting in higher levels of interest, confidence, and well-being (Ryan et al., 2008). In contrast, when the environment suppresses these demands, the internal opportunity are weakened (Stone et al., 2009). Therefore, the self-determination theory advocates the creation of environments that support these three needs. Many researchers use SDT theory in the field of education, management, or health behavior. The researchers say that when employees' needs are met, they can be more motivated to increase job satisfaction (Gagne & Deci, 2005). In addition, the Jang et al.(2010) pointed out that meeting the three psychological needs of students can not only improve their learning motivation, but also stimulate greater interest to invest in learning. In related studies in the field of health behavior, the researchers indicated that individual needs should be met, engaged in sports with greater motivation and beliefs, and related to a healthy lifestyle (Ng et al., 2012). In addition, the researchers found that the stronger the motivation, the more adherence to physical activity, and the healthier the spirit and body

(Liao et al., 2023). So the researchers also pointed out that the behavior of college students' physical exercise comes from motivation demand, when college students are engaged in physical exercise needs, accordingly will meet the idea of this need, when the need is consistent with the sports environment and its inducing factors, will become the motivation to participate in sports (Liao et al., 2023). Therefore, the basis of studying motion motivation is the expansion and application of self-determination theory, and has become one of the important theoretical frameworks of motivation research (Ryan & Deci, 2020).

2.2 Input theory

According to the Fredricks et al.(2004) In the proposed input theory, the investment should be a multi-dimensional structure, including cognition, emotion, and behavior (Fredricks et al., 2004). As an important factor in the motivation process, the three parts of behavior, cognition and emotion are connected with individual environment and activities, dynamically embedded in individual systems and results, and provide rich resources for individual growth and development (Wang & Fredricks, 2014). Therefore, the researchers' input theory based on Fredricks is applied to the empirical research in pedagogy, sociology and other aspects, and it provides an effective theoretical framework. For example, Skinner and Pitzer (2012) used Fredricks's three-dimensional input model and found that students' emotional and behavioral input decreased with the growth of grade, while cognitive input was relatively stable, while girls' emotional and behavioral input was higher than that of boys, but there was no difference in cognitive input between the two sexes. In addition, Wang and Holcombe (2010) conducted a survey of students' sense of academic investment and academic achievement, and found that all three kinds of academic investment were significantly and positively correlated with academic achievement. In addition, the researchers explored the interaction with other psychological variables based on the three dimensions of input, such as Guo et al., (2023) found that cognitive engagement is critical for the learning environment, engagement, and learning outcomes.

In addition, the Fredricks et al.(2004) The input theory as the theoretical basis of health can strengthen the research discourse. Among them, sports behavior investment is the performance and frequency of active participation in leisure activities (Odom, 2016), and more sports behavior investment will be conducive to relieve individual work stress and tension (Petric et al., 2022), such as participating in sports activities, singing K s, walking, etc. In addition, emotional investment is a kind of people's feeling of participating in leisure activities, which refers to the degree of people's likes and dislikes of leisure activities and leisure experience, but also the direct feeling of interest and expectation in leisure activities and their experience (Wu et al., 2021), including the emotional tendencies that people exhibit in physical activity. Cognitive investment is a kind of self-strategic regulated learning (Wang & Fredricks, 2014), which also refers to people's knowledge understanding of sports activities and leisure experience.

Exploring the three types of physical activity engagement is essential for individuals to maintain mental health. Therefore, the cognitive input, emotional input and behavioral input in physical education courses can be regarded as input factors, which is the degree of individual investment in participating activities, while mental health can be regarded as the participation behavior and results. That is to say, in the current teaching environment of higher education curriculum, the higher the cognitive, emotional and behavioral input of college students in the physical education learning environment, the more likely it is to stimulate the motivation of participation, which may affect the mental health of college students. Therefore, this study combines SDT theory and input theory to explore the relationship between the motivation and the three ways of course input and mental health.

2.3 Motivation of PE course selection

2.3.1 Definition of motivation for physical education course selection

Different researchers have some differences in the definition and expression of the course selection motivation, but they all believe that the course selection learning motivation is the internal strength and psychological tendency that drives students to carry out learning activities (Minahan & Siedlecki, 2018). With the deepening of research and the improvement of theory, researchers found that the motivation of course selection is not entirely from the individual. In fact, many factors in the external environment will also cause students' motivation to choose courses, including external material rewards, praise or punishment from others, etc., which are usually known as external motivation. In real learning activities, students' learning motivation is generally caused by multiple factors, including internal motivation and external motivation (Shen, 2015). In conclusion, in this study, elective learning motivation refers to the internal and external combination of forces that motivate and maintain students to conduct learning activities and advance towards specific learning goals. Therefore, this study defines the motivation of physical education course selection as the internal driving force for college students to choose physical education elective courses, including interest, fun, external factors driven and other factors (Liao et al., 2023). These motivations influence and guide the direction and strength of college students to choose physical education courses.

2.2.3 Research on the motivation of physical education course selection

In recent years, the motivation of students to choose physical education class and its influencing factors have gradually attracted wide attention from researchers. Some scholars discuss the motivation factors influencing students' choosing PE class from different perspectives of students' interest, social relations, behavioral outcomes and cultural background factors. Physical activity motivation refers to a state of demand shown by an individual to participate in physical activity (Wang et al., 2022), and is influenced by personal interests, peer relationships, parent and teacher support, gender differences, cultural background, and successful physical education learning experience (Salvy et al., 2009; Wilczyńska et al., 2021).

3.2.3 Measurement of motivation for physical education course selection

With the further study of the law of physical education teaching, the measurement of the motivation of physical education course selection has been increasingly valued. In the early research on the motivation of physical education course selection, quantitative method, using self-compiled questionnaire or standardized scale to measure the motivation of college students and explore its influencing factors. Richard et al. (1997) compiled the physical activity motivation scale, thought that the physical activity motivation is a motivation state of participating in physical activity, a total of 10 questions, to measure the degree of sports activity motivation of college students. The scale is measured using a 5-level Likert scale, from 1= very inconsistent to 5= very consistent, and the KMO value of the tested scale is .844, the Bartlett sphericity test reached significance (Chi-Square=589.5, df = 64, p < 0.001), indicating suitability for factor analysis. In particular, three common factors with eigenvalues greater than 1 are obtained after the maximum variance method rotation in the measurement, and the factor structure is clear. The factor load of the corresponding factor was greater than 0.5, and the cumulative explanatory variance of the factor was 65.01%. All the above measurements showed that the physical activity motivation scale has good structural validity. Using the Richard et al. (1997) of the physical activity motivation scale as a measure of physical education course selection motivation tool.

2.3 Investment in physical education courses

2.3.1 Definition of physical education curriculum investment

Investment (Engage ment) is an important research topic in the field of positive psychology, which mainly observes the participation methods and involvement forms of individuals in cognition, experience and emotion in social activities, and refers to the positive and happy integration state of individuals when they try their best to do things (Dong Baolin, 2017). In addition, Schaufeli (2002) believes that investment is based on two dimensions of happiness, which are high level of happiness (P leasure) and stimulation (A ctivation), that is, the positive, happy and lasting emotion and cognition of individuals in social practice. Therefore, researchers generally believe that investment is based on the self-identity of social role, individual behavior and individual ability, showing the positive physical and mental state of individuals, and the positive experience of self-realization and pursuit of happiness (Wei et al., 2022). As a healthy lifestyle, physical activity investment refers to the behavioral, emotional and cognitive input states shown by individuals when they participate in physical activities (Wu et al., 2021). In this study, curriculum input was defined as assessing the behavioral, emotional and cognitive input states of individual participation in physical education curriculum learning (Wu et al., 2021).

2.3.2 Related research on physical education curriculum investment

Students' investment in physical education curriculum is a complex multidimensional construct, which is not only influenced by many personal and environmental factors (Chen et al., 2016), and the high level of investment not only affects the direct learning effect, but also relates to the overall development of students (Gao et al., 2019). Therefore, the investment of physical education curriculum is related to students' personal factors and environmental factors. Achievement motivation, self-efficacy, teacher-student relationship may directly or indirectly affect students' physical education curriculum investment status (Cox et al., 2018).

2.3.3 Measurement of physical education curriculum input

There are five main methods for course learning input, namely experience sampling, teacher evaluation, observation, interview and questionnaire (Almulla & Al-Rahmi, 2023). Among them, the questionnaire survey method is highly practical and operable, so it becomes the most commonly used method Boparai et al.(2018). Compared with the above measurement tools for the course input: from the perspective of measurement groups, the research group of the learning investment scale of college students is college students, which is consistent with the college students of this study; from the measurement tools, the scale has the internal reliability consistency of 0.853, which indicates that the learning investment scale has good reliability; in addition, the learning investment scale of college students is measured from three forms of cognition, emotion and behavior, which is consistent with the course input degree of three forms of this study. Therefore, the reliability validity, applicable group and wide application of the comprehensive scale were chosen to use Lam et al.(2014) Curriculum input scale serves as a research tool to measure physical education curriculum input.

2.4 Mental health

2.4.1 Definition of mental health

The definition of mental health has always been a research hotspot. Early studies focused more on mental health as the elimination of mental illness, such as depression, anxiety, and behavioral disorders (Suldo & Huebner, 2006). Follow-up studies have found that a positive mental health is critical for an individual's study, life, and work (Greenspoon & Saklofske, 2001). At present, it is widely accepted that mental health includes both positive and negative dimensions (Deci & Ryan, 2008), in which positive mental health represents positive emotional experience, while the negative

dimension may lead to health or mental illness (Weich et al., 2011). Other studies have defined mental health as the degree of subjective well-being or distress experienced by individuals (Veit & Ware, 1983), and others argue that it represents persistent positive emotional states, such as happy peace and (Wei et al., 2022). Other researchers have also pointed out that mental health refers to a state in which a person can realize psychological functions such as self-cognition, regulating emotions, and establishing positive interpersonal relationships (World Health Organization, 2004). Not only is it free of mental illness, but it also includes positive aspects such as subjective well-being, positive emotions, good interpersonal communication and social adaptability (Huppert, 2009).

Based on the definition of mental health in Lu and Lin (2003), this study defined mental health as continuous, positive optimism and satisfaction with work life.

2.4.2 Research related to mental health

According to the Bolatov et al.(2021) and Wiecezorek et al.(2021), family, school and environmental factors play an important role in students' mental health. Studies have shown that students with good social support, family members, and peer support generally show better academic performance, and that perceived social support has a positive impact on students' mental health (Wei et al., 2022). Therefore, the mechanisms of negative factors (e. g., time stress and emotional exhaustion) and positive factors (e. g., perceived social support and student participation) on students' mental health are crucial (Wei et al., 2022). In addition, the knowledge and responsibilities that students undertake and the specific types of courses that involve them often face challenges and need to adapt to unprecedented changes in their academic life (Cicha et al., 2021). These effects may lead to psychopathological symptoms and behaviors, such as anxiety, depression, burnout, fatigue, psychotic episodes, and even suicide (Lyons et al., 2021; De Oliveira Araújo et al., 2020). Therefore, it is of extremely important significance to explore the development of students' mental health and related factors for maintaining and promoting students' mental health (Duffy et al., 2019). This suggests that studying the development and related factors of students' mental health is essential for maintaining and promoting students' mental health.

2.4.3 Measures of mental health

Lu and Lin (2003) developed a mental health scale, mainly used to measure the mental health status of students. The questionnaire uses a one-dimensional structure with ten items, such as "I am happy in learning" and "I am satisfied with my study life". At 5 points, higher scores indicate higher mental health. The value of the Cronbach's Alpha value of the scale is 0.93, which shows good reliability. Based on the reliability validity, applicable group and wide application of the scale, the mental health scale of Lu and Lin (2003) was selected as a tool to measure the mental health of college students.

2.5 Relationship between motivation, course input and mental health in physical education

2.5.1 The relationship between the motivation of physical education selection and three forms of course input

Physical activity, as an important way for people to live a healthy life, includes aerobic and non-aerobic exercise such as walking and running (Tavakol et al., 2021). The motivation of physical activity participation refers to a state of psychological demand shown by people in physical activity (Wang et al., 2022). Related studies have also found that higher physical activity needs will generate higher motivation to participate, associated with higher physical activity engagement (Kalajas-Tilga et al., 2020; Kim et al., 2021). According to the Mackenzie et al.(2018), the opportunity of physical activity affects the investment degree of physical activity participants. For college students with insufficient physical activity, their physical education activities are limited by many restrictions, and a higher motivation to participate in physical education will be conducive to the generation of higher

motivation for participation, which will constantly affect the degree of investment to participate in physical activities (Lopez-Valenciano et al., 2021). Research has shown that the motivation of college students to choose physical education courses has an important impact on their cognition, emotion and behavior in physical education curriculum (Chen & Liu, 2009). The researchers found that internal motivation opportunities to improve students' interest and positive emotional experiences (Taylor et al., 2010; Sotos-Martínez et al., 2022). In behavior, intrinsic motivation predicts higher attendance (Standage et al., 2005; Shen, 2010; Chen et al., 2021), and course participation (Taylor et al., 2010;); Exinsic motivation and behavioral participation (Alvarez et al., 2009). Therefore, the intrinsic motivation (interest, fun, etc.) of college students in choosing physical education courses will promote their positive cognition, emotional experience and behavioral participation in the learning process of physical education courses (Sotos-Martinez et al., 2022); external motivation (getting good grades, avoiding punishment, etc.) has little impact on students' cognitive, emotional and behavioral participation (Taylor et al., 2010). Therefore, for college students, different opportunities for course selection affect the choice of different physical education courses, while a higher motivation for physical education course selection will be conducive to the generation of higher motivation for participation, which will constantly affect the degree of investment in physical education courses (Choi et al., 2021; Kim et al., 2021).

2.5.2. The relationship between three forms of curriculum input and mental health of Chinese college students

College students' investment in physical education courses can arouse the attention of physical activity participation, and also promote their attention and emotional investment such as concentration and positive emotion. More importantly, the behavior frequency of more participation in physical education courses can help reduce depression, anxiety and other symptoms, and promote mental health (Cox et al., 2018). Therefore, the investment status of the physical education curriculum of college students is closely related to the better mental health effect (Scotto di Luzio et al., 2020).

2.5.3 The intermediary role of course investment between the motivation of physical education course selection and the mental health of college students

Input is an important mediator variable that connects individual behavior and outcomes (Gu et al., 2023).

For example, the Chong et al.(2018) showed that students' curriculum input plays a mediating role in stimulating the relationship between students' participation motivation and behavioral outcomes. Specifically, students' motivation for physical education course selection and students' participation motivation can indirectly affect students' mental health by influencing their cognitive, emotional and behavioral input in the physical education curriculum.

In addition, the study found that investment completely mediates the relationship between research variables, that is, strengthening investment can improve students' perseverance and thus have better positive emotions (Jiang Wen et al., 2018; Simon-Chico et al., 2023). Other studies have also explored the mediating role of physical engagement in individual mental health outcomes (Shen et al., 2022; Carmona-Halty et al., 2021; Wang & Zhang 2020). In addition, research has shown that perceived teacher feedback indirectly affects students' psychological status by influencing physical education participation (Leo et al., 2022). In conclusion, the three forms of curriculum input of cognition, emotion and behavior play a key mediator between student behavior and learning outcomes, and is an important predictor variable connecting students' physical education motivation and mental health.

CHAPTER 3: RESEARCH METHODS AND DESIGN

Based on the literature discussion, SDT theory and investment theory, this study aims to explore the influence of physical education course selection motivation on the mental health of college students, and the intermediary role of the three curriculum inputs. Therefore, this study using quantitative research method, first based on the literature to establish the research model framework, the second section in the research framework and related literature based on the research hypothesis, section 3 based on the study object, further research flow chart, section 4 is combined with the original scale development research tools, section 6 for the quantitative research data collection and analysis, and finally for the research ethics and process of this study.

3.1 Research framework

In order to explore the college students 'sports elective motivation for mental health and the role of curriculum input, this study based on the SDT theory and input theory, put forward six research hypothesis, explore sports elective motivation, three inputs and the relationship between college students' mental health, construct the following research model framework (see figure 3.1).

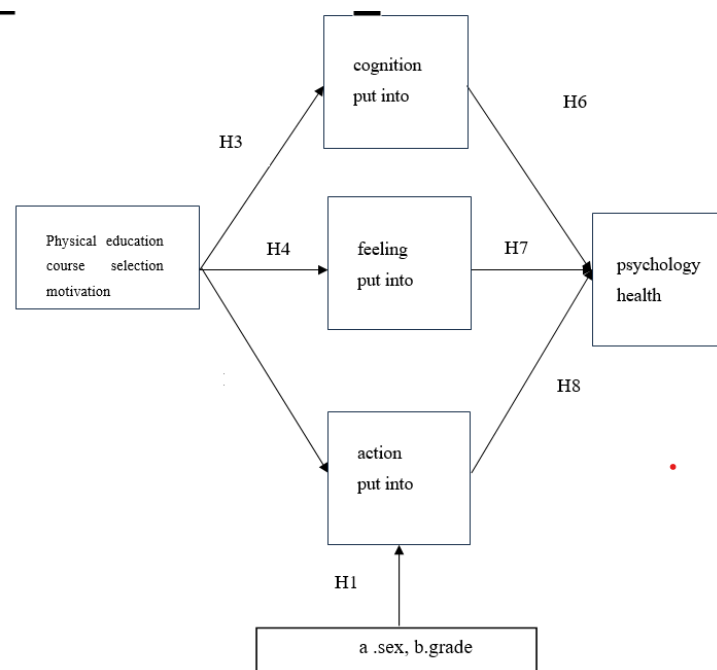


Figure 1: Research framework diagram

Source: collation of this study

3.2 Study hypothesis

This study combines SDT theory and input theory, discusses the relationship between the motivation, curriculum input and mental health of Chinese college students in physical education, and proposes the research hypotheses as follows:

H1: Significant differences in gender in course selection motivation, curriculum input and mental health in physical education.

H 2: Significant differences in the motivation, curriculum input and mental health in physical education.

H 3: The motivation of Chinese college students has a significant positive impact on the cognitive input.

H 4: The motivation of Chinese college students has a significant positive impact on their emotional input.

H 5: The selection motivation of Chinese college students has a significant positive influence on the curriculum behavior input.

H 6: Chinese college students has a significant positive impact on mental health.

H 7: The emotional input of Chinese college students has a significant positive impact on mental health.

H 8: The behavioral input of Chinese college students has a significant positive impact on mental health.

H9: cognitive investment in physical education plays a mediating role between motivation and mental health.

H10: Emotional investment in physical education plays a mediating role between elective motivation in physical education and mental health.

H11: Behavior investment in physical education plays a mediating role between the motivation of physical education course selection and mental health.

3.3 Study subjects

In order to investigate the college students' sports motivation, curriculum for the impact of mental health, this study mainly adopts the questionnaire way, at the same time to the research object more comprehensive, selection of south China, east China, central China, north China, southwest, northwest and northeast 15 college students as survey object, involved in 15,211,985 colleges and universities, public undergraduate course, higher vocational colleges, private undergraduate school type, each school average 60 college students, is expected to 1148 college students as the research object. The original questionnaire item was 40 questions, and 400 valid samples can be collected. Considering that some invalid questionnaires would be generated, the number of samples was increased to more than 900 (Wu Minglun, 2003), and the convenient sampling method was used to collect the online questionnaire data. This study plans to select 15 college students from college universities in China, with a total of 1148 college students as the research object, including 198 and 950 college students from 15 universities in China.

3.4 STUDY METHODS

Survey, test of individual psychological research, using quantitative research method of the questionnaire survey of Chinese college students, the results of statistical analysis, to explore the physical education course motivation, cognitive input, emotional input, curriculum behavior and mental health situation, difference and relationship.

3.5 Research Tools

3.5.1 Motivation for physical education course selection

Combined with the needs of this study, the revised Richard et al.(1997) Physical Activity demand motivation scale, a total of 15 questions, was used to measure the motivation degree of college students in physical education courses. The physical education elective motivation scale is measured using Likert 5 points, from the lowest score of 1 point to 5 points with the highest score. The higher the score, the stronger the tendency of the respondents in this dimension. After measurement, the α

coefficient of physical education motivation was 0.74, 0.77 and 0.78 respectively, and the test-retest reliability was 0.66~0.73, indicating good internal consistency.

3.5.2 Course Investment Scale

In this study, the Lam et al. (2014) Revised Learning Input Scale Student Engagement Questionnaire (SE), including behavioral input (1,2,3,4,5), emotional input (6,7,8,9), and cognitive input (10,11,12,13,14,15), with a total of 15 items. Using Likert 5 points, from complete disagreement to complete agreement, the higher the score indicates a higher level of learning input. The total α coefficient of the scale was 0.960, and the α coefficients of each dimension were 0.96, 0.91 and 0.93, indicating high internal consistency of the scale.

3.5.3 Mental health scale

In this study, Lu and Lin (2003) was used to prepare mental health scales to measure students' mental health status. The questionnaire has a single-dimensional structure and contains ten items. For example, I feel happy in my physical education study, and I am satisfied with my learning life. With 5 points of scoring, 1 represents full noncompliance, 5 represents full compliance, higher score represents higher mental health, α value of 0.93, the reliability of this scale is good.

CHAPTER 4: DATA ANALYSIS RESULTS

4.1 Analysis of the study samples

For college sports course motivation for the promotion of college students' mental health, this study invited 950 college students as research object, from different institutions of higher education, covers different grade and professional background, a total of 950 questionnaires, a total of 34 questions research scale, in excluding 47 fill answer time less than 2 minutes, existence, incomplete fill answer invalid questionnaire, a total of 903 valid questionnaire, the background of this study including gender, grade category. In the valid sample (N=903), gender, 573 boys, 63.5%, 330 girls, 36.5%; 333 freshmen, 36.9%, 412 sophomores, 45.6%, 94 junior, 10.4%, 64 seniors, 7.09%; in terms of majors, 549 liberal arts students, 60.8%, 354 science and engineering students, 39.2% of the total.

4.2 Credit and validity analysis

In this study, the PE elective motivation, PE curriculum input, and the Cronbach's Alpha value of the mental health scale through reliability analysis were present, respectively. Above 700 has high reliability and has internal consistency reliability. It means that the statistical test criteria are met and the value of the Cronbach's Alpha is .914, the sports input scale Cronbach's Alpha value is .941, the Cronbach's Alpha value of .933, indicating a good reliability. In this study, the FL was .813, the FL of physical education curriculum investment is .821, the FL of mental health is .809. The AVE values of physical education course selection motivation, physical education curriculum input and mental health scale were .32 respectively. .548 ; .550. .5

4.3 Model fit analysis

The absolute fit measures for this study are shown in Table 4.10, according to Hair et al. (2010) suggested that the value of χ^2 / df is less than 5; while the chi-square ratio of freedom (χ^2 / df) was 4.887; Abedi et al. (2015) It is suggested that the suitability index GFI value should be greater than .800, and the GFI of this study was .893; The RMSEA shall be less than .100 (Kline, 2015), the RMSEA of this study was .066; The AGFI value shall be greater than .800 (Abedi et al., 2015), while the AGFI of the data results of this study is .867, and all met the statistical criteria.

The relative suitability (Incremental Fit Measures) is measured by normalized suitability (Normed Fit Index, NFI), Non-Normed Fit Index, NNFI), value-added suitability (Incremental Fit Index, IFI), comparative suitability (Comparative Fit Index, CFI), etc. Therefore, the relative fitness indicators of

this study are shown in Table 4.11, Abedi et al.(2015) It is recommended that the NFI, NNFI, CFI, IFI, and RFI values should be greater than.800, and the NFI in this study =.986, NNFI =.902, CFI =.914, IFI =.914, RFI =.880, and all met the statistical criteria.

The simplified adaptation can be measured by simple standard adaptation (Parsimonious Normed Fit Index Normed Fit Index, PNFI) and simple benign adaptation (Non-Normed Fit Index, NNFI). Therefore, the reduced fit indicators of this study are shown in Table 4.12, Hair et al.(2010) It is recommended that PNFI and PGFI values should be greater than.500, and the PNFI in this study =.786, PGFI =.717, all met the criteria recommended by the statistician and had a good model fit.

4.4 Difference analysis

Independent sample t-test was used to analyze the differences in the motivation of physical education, physical education course input and mental health of college students of different gender. As shown in Table 4.13, the motivation of physical education in college students has significant differences ($t=2.408$, $p=.016$), with male students significantly higher than female students; there was a significant difference in the PE curriculum investment ($t=2.515$, $p=.012$) and significantly higher in boys than girls; no significant difference in mental health ($t=1.043$, $p=.297$). To sum up, there are significant differences in the motivation of physical education courses according to gender, and their mental health and level will not be significantly different according to gender.

The difference of the motivation of physical education, and the difference of mental health were analyzed. Different differences in different grades ($F=5.346$, $p<.10$), the motivation of freshman students was higher than that of other grades. This result may reflect the freshman students in learning university courses, especially in physical activities courses, demand for sports course motivation will be more urgent, at the same time, the freshman students in the sports course to participate in sports courses, especially for physical activity opportunities higher, will be more willing to participate in physical education courses and physical activities. There is no significant difference in Chinese college students' physical education curriculum investment, and the motivation of physical education courses and mental health level will be significantly different due to different grades.

4.5 Study model pathway analysis and hypothesis validation

In the structural equation model, the path coefficient size refers more to the effect of the independent variable on the dependent variable, and the influence size of the variable can be interpreted as the total effect of the direct and indirect effects.(Where the direct effect acts directly on the dependent variable, while the indirect effect affects the dependent variable through one or more other variables. This distinction is essential for understanding the complex causal relationships).

In this study, we investigated the correlation between the motivation of physical education course selection, physical education curriculum input and mental health, and tested whether the research hypothesis proposed by the research model was true by deleting questions and correcting the model. The model verification results show that the motivation of physical education course selection has a positive impact on the cognitive input of physical education course ($\beta =.717^{***}$), assuming that H3 is established; the PE course selection motivation has a positive effect on the emotional input in the physical education courses ($\beta =.703^{***}$), assuming that H4 is established; the PE elective motivation has a positive influence on the physical education course behavior input ($\beta =.717^{***}$), assuming H5; cognitive input in physical education has a positive impact on mental health ($\beta =.546$), assuming H6 is true; emotional input in physical education has a positive impact on mental health ($\beta =.289^{***}$), assuming H7; behavioral input in physical education has a positive impact on mental health ($\beta =.166^{***}$), assuming that H8 holds.

4.6 Indirect effect analysis

In this study, the Bootstrap of SEM was analyzed by AMOS to calculate the trust interval of the indirect effects. And known from the results of bootstrapping..42.170.044 In terms of indirect effects, cognitive investment in physical education was indirectly and positively associated with mental health ($\beta = .546^{***}$), the confidence interval is [4,.686], emotional investment in physical education and mental health ($\beta = .289^{***}$), the confidence interval is [,.420], an indirect and positive correlation between PE behavioral engagement and mental health ($\beta = .166^{***}$), the confidence interval is [,.029], the 95% trust interval does not contain 0. Specific analysis are given in Table 4.16.; The indirect effect value of the motivation is significant, and the 95% trust interval of the mediation path did not include 0, which verifies the intermediary effect of the motivation and the influence of curriculum input on mental health, that is to say, the three ways of Chinese college students in the mental health.

4.7 Hypothesis validation results

According to the statistical analysis of the study data, the following study conclusions can be summarized according to the study hypothesis,

Research hypothesis	Bear fruit
H1 There are significant differences in motivation, curriculum input and mental health	found
H2 Different grades have significant differences in the motivation, curriculum input and mental health of physical education	found
H 3: For Chinese college students, the motivation of PE course selection has a positive impact on the cognitive input	found
H 4: The selection motivation of Chinese college students has a positive impact on the emotional input	found
H 5: The selection motivation of Chinese college students has a positive impact on the behavioral input	found
H 6: Chinese college students have a positive impact on mental health	found
H 7: Emotional input of Chinese college students has a positive impact on their mental health	found
H 8: Behavioral input of Chinese college students has a positive impact on their mental health	found
H9: cognitive investment in physical education plays a mediating role between motivation and mental health.	found
H10: Emotional investment in physical education plays a mediating role between elective motivation in physical education and mental health.	found

Source: collation of this study.

CHAPTER 6: CONCLUSIONS AND SUGGESTIONS

6.1 Study Conclusion

We aimed to investigate the relationship between curriculum input and motivation and mental health, and to analyze the mediating role of curriculum input in the relationship between PE elective motivation and mental health. To achieve the research objectives, this study used a convenience sampling method and selected 903 students from five universities in China. The research tools

included the PE elective Motivation Scale, course input scale, and mental health scale, which were used to questionnaire the sample. After data collection, the statistical analysis of the data was performed using SPSS and AMOS software to verify the study hypothesis and form the study conclusion.

The quantitative research results reveal several key findings: First, the motivation of Chinese college students in physical education and the physical education curriculum investment level are significantly different according to gender, and their mental health level will not be significantly different according to gender. Second, there will be no significant difference among Chinese college students according to different grades, and their motivation of physical education course selection and mental health level will be significantly different due to different grades. Thirdly, the motivation improves the cognition, emotional and behavioral input of the students, the cognition, emotion and behavioral input improves the mental health level, it plays a significant mediating role between the motivation and mental health. This indicates that students' mental health level can be effectively promoted by improving their motivation and curriculum input.

6.2 Study recommendations

6.2.1. Improve students' motivation to choose courses through diversified physical education courses and activities

Through conclusion analysis, we suggest that to promote college students' sports course motivation, can enrich physical education courses and activities, colleges and universities should increase the diversity of physical education courses, not only keep the traditional projects such as basketball, football, volleyball, should also introduce the street dance, rock climbing, archery, mixed combat and other popular and emerging projects, to meet the needs of students with different interests, enhance the appeal and interesting. Publicity and education should also be strengthened, including organizing themed health days, sports festivals, campus sports meetings and other activities, to show students the multiple benefits of sports activities, including improving physical fitness, social skills and mental health. Use digital media platforms (such as campus websites, social media, student APP) to release educational content, successful cases and student witnesses, to improve students' awareness and interest in the value of physical education courses. Finally, the inner motivation is stimulated. By showing the positive cases of personal growth and social communication brought by physical activities, students are encouraged to see the achievements of their peers through physical activities, so as to stimulate students' internal motivation and encourage them to choose and participate in physical education courses more actively.

6.2.2 Enhance the cognitive input, emotional and behavioral input of physical education courses

In terms of cognitive input in physical education curriculum. In order to enhance the cognitive investment in physical education courses, colleges and universities can adopt various strategies to promote students' deep understanding of the importance of physical activity. First of all, educators can add more content about sports theory to the curriculum design, such as sports physiology, sports psychology and sports nutrition, so that students can realize the physical and psychological benefits of physical activity from a scientific perspective (Grasten et al., 2017)。

In terms of emotional input, it is crucial to create a positive and inclusive sports learning environment to promote students' emotional input when participating in sports activities. By regularly organizing team-building activities, sports festivals and friendly matches both in and out of school, students can not only experience the fun of teamwork, but also establish emotional connection and team spirit in the competition and cooperation.

In terms of the behavioral input. To enhance behavioral input in physical education courses, universities should ensure that adequate and diverse sports facilities, such as gyms, swimming pools, track and field, etc., should be open to all students to encourage students to participate in various sports activities. At the same time, the school can create sports clubs and organizations to provide more opportunities to participate, let the students in interest and skills matching environment practice and improve college can not only improve the students' physical education courses, also can promote the comprehensive development of students through sports activities, including physical health, psychological balance and social skills, to lay a solid foundation for students' lifelong development.

6.2.3 Pay attention to the positive impact of physical activities on students' mental health

Colleges and universities should fully realize the important role of physical activity in improving students' mental health, and take various measures to promote this goal. Physical activity can not only help students to maintain physical health, but also be an effective way to manage daily stress, relieve psychological anxiety and improve self-esteem. Therefore, schools should regularly organize various sports activities, such as team sports competitions, fitness courses and outdoor adventures, which can help students to free themselves from the heavy academic pressure and enjoy the happiness and relaxation of sports.

This study deeply reveals the relationship between the motivation, curriculum input and mental health. Enhancing the motivation of PE course will be beneficial to improve the motivation and mental health level of Chinese college students. In addition, strengthening college students' active participation in sports activities and enriching campus sports resources are also conducive to students' physical and mental health. Therefore, for Chinese college students, the motivation of physical education course selection and the promotion of physical education curriculum investment are the key factors affecting mental health. At the same time, students' self-management in sports activities is equally important, because it can continuously stimulate students to actively participate in and optimize their psychological state. Therefore, schools should pay attention to providing a rich variety of physical education courses and high-quality sports resources and facilities, so as to enhance the participation of college students in physical education courses, and then positively affect the mental health level of students. The results of this study provide theoretical support and beneficial educational strategies for developing effective physical education policies and improving college students' participation in physical activity.

6.3 Suggestions for future research

Because this study mainly uses quantitative research methods, and due to the limitations of the study samples and methods, the in-depth analysis ability of the research subjects is limited. In the context of the new era, how to effectively provide driving force to promote students' physical activity input and mental health has become an important issue affecting the sustainability of education and students' health (Ma et al., 2023; Wei et al., 2022) 。 In order to gain a deeper understanding of the dynamic relationship between PE elective motivation, curriculum engagement and mental health, future studies could consider adopting a longitudinal study design to observe and analyze changes in these variables over a certain period of time.

In addition, considering the potential utility of physical education course selection motivation and curriculum input in improving students' mental health, future studies should also explore the impact of more types of physical education curriculum resources on students' physical education input and mental health. This includes factors such as sports equipment, sports environment and peer resources, which are important resources that may affect students' learning motivation and continuous participation in learning activities (Lesener et al., 2020; Ma et al., 2023) 。

Considering the diverse regional cultural background in China, future studies could explore how the acceptance of physical education and the personalized needs of physical activities influence students' motivation for PE course selection and mental health. For example, studies could examine differences in the motivation and mental health of physical education between college students in urban and rural areas, eastern coastal and western inland areas, or areas with different levels of economic development. Through these methods, future studies can not only reveal how cultural differences affect students' mental health through physical education course input, but also help educational decision makers to better understand and respond to the specific needs of diverse student groups, so as to design physical education courses that are more adapted to different student groups.

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