Analysis and Countermeasures of related factors of mental health and physical exercise of College Students

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Abstract

This paper examines the relationship between college students' mental health and physical exercise, analyzes the beneficial effect of physical exercise on mental health, enhances school physical education and health education, and provides a theoretical foundation for further enhancing college students' mental health. The SCL-90 was used to evaluate "the last week's" mental health condition. There are 90 possibilities on the scale, comprising 10 factors (depression, hostility, psychosis, somatization, anxiety, obsessive-compulsive symptoms, paranoia, terror, interpersonal sensitivity and others). 93% of students in certain colleges have a positive psychological experience of participating in physical activity. According to the t-test, the mental health level of college students who regularly participate in physical activity is much better than that of college students who occasionally and never participate in physical activity (P <0.01). The impact of physical activity on the mental health of college students of different genders varies. Exercise significantly improves college students' mental health; factors such as duration of physical activity, frequency of exercise, and variety of sports significantly impact mental health development.

Keywords: College students; Mental health; Physical exercise

Introduction

As the economy and society continue to develop rapidly, the future demands on college students will increase. It will become increasingly crucial for them to have a healthy body and personality. Mental health is a vital component of college students' health, which is a must. Similarly, physical activity considerably improves college students' moods, demonstrating the relationship between the two. There is already a great deal of study on college students' physical activity and mental health, but little is known about how physical exercise influences college students' mental health. The author intends to solve these gaps by assessing the current state of college students' physical activity, combining information comparisons and systematic analysis, and investigating the impact of physical exercise on college students' mental health. Participation in physical activity helps pupils progressively establish a relatively high mood, which substantially enhances emotional well-being and afterwards aids in the gradual development of healthy psychological habits (Woodford & Kulick, 2015). Specifically, during sports activities, kids can assist one another in releasing negative emotions and continually cultivating the confidence and courage that sports provide. In addition, students have a significant and beneficial function in reducing learning fatigue, continuously promoting the rest of their central nervous system. In general, sports can assist kids in gradually improving their negative disposition. Group and individual activities play a crucial and beneficial function in building pupils' goodwill and noble spirit. For instance, during physical training, students must actively engage in activities that match physical stress. If pupils lack awareness and perseverance, they will not be able to achieve desirable physical exercise outcomes. Students who receive physical training will also be subjected to various exams. Therefore, sports activities also serve a crucial role in fostering the students' entrepreneurial spirit and tenacity (Ahmad & Chowdury, 2020). Physical and mental health are essential aspects of students' mental health. In short, it is a relatively cohesive and harmonious personality in terms of conduct and psychology. Students can only progressively develop an optimistic and enterprising attitude in life if they have relatively solid psychology and personality and recognize that they have good control over their psychology and behavior. But these objectives are also fulfilled on the basis of students' mental health, which directly or indirectly impacts their conduct. For instance, children who believe they are courageous and self-assured will also exhibit very visible athletic prowess. Relevant physical education teaching work can produce a good teaching environment and atmosphere for students and play a significant role in developing their sound personalities (Park et al., 2015). Adams et al. (2020) Through experimental research on the effects of Taijiquan on the health of college students and examination of its mechanism, it has been

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demonstrated that Taijiquan improves physical health, regulates psychological impediments, and alleviates mental disorders. Li (2021) Through the three-month physical dancing exercise of 100 Fudan University students, the mental health level before and after exercise is measured and compared. The results indicate that physical dance exercise substantially impacts the mental health improvement of college students (Amatori et al., 2020).

The experimental group consisted of male and female college students who participated in basketball and aerobics at moderate and low intensities for ten weeks. The control group did not engage in physical activity during the study period. It has been demonstrated that elective classes in medium and low-intensity basketball help male college students enhance their physical self-esteem, mental state, and mental health. Older children's physical and emotional self-esteem is more stable than younger children's. Concentrated group. College students lead small, low-intensity physical fitness exercises. Post-physical, one's sense of self-worth tends to rise. Low-intensity aerobic exercise improves the mental and emotional wellness of women. college students. Kim and Song (2021) According to studies, effective physical exercise can release surplus energy from the human body, reduce the incidence of sadness and anxiety, alleviate nervous psychological tension, and enhance interpersonal communication skills and the heart.

With the rapid expansion of civilization and the acceleration of the pace of life, as well as the growth of applied psychology and the alteration of people's attitudes about sports, the relationship between sports and mental health has been a topic of intense academic interest. College students' physical exercise and mental health have received much attention from scholars at home and abroad. A review of the literature and empirical study have been presented on the association between physical activity and mental health. The research on the effect of physical activity on the mental health of college students serves as a resource for promoting the physical health of college students and advancing the reform of college physical education. The SCL-90 was used to evaluate "the last week's" mental health condition. There are 90 possibilities on the scale, comprising 10 factors (depression, hostility, psychosis, somatization, anxiety, obsessive-compulsive symptoms, paranoia, terror, interpersonal sensitivity and others). Physical activity provides a pleasant psychological experience for 93% of students at particular colleges. According to the t-test, the mental health of college students who regularly engage in physical activity is significantly superior to that of college students who rarely or never engage in physical activity (P 0.01). Physical activity has varying effects on the mental health of college students of different genders. Exercise effectively improves college students' mental health. The duration of physical activity, the frequency of exercise, and the variety of sports play a vital influence on the development of mental health, according to Belloc and Breslow (1972). Try to combine data and information comparisons (Tables 1 and 2) with structured analysis and physical science research, based on the current state of college students' physical activity engagement, based on current research (Figure 1, Figure 2). Physical activity for the mental health of university students, On the one hand, the level of harm increases the drawbacks of this field. Comparing the mental health of college students at a specific institution to that of college students in general, all recommended technological and economic analysis solutions to encourage physical activity among college students (Ströhle, 2019).

Research objects and methods

Research object

This study used random and stratified sampling to pick 1,000 college students from diverse grades, genders, and majors to serve as the research subjects. Each participant received 1,000 copies of the scl-90 and the physical exercise questionnaire. The fundamental state of physical activity and mental health among college students in Shandong province was researched and investigated. Because the random sampling approach helps collect data from a vast population on a random basis, the criteria for selecting the sample elements for data collection are random. The majority of studies in the same field of study have employed a random sample strategy. Similarly, the purpose of stratified sampling is to collect data efficiently by splitting a big population into smaller populations.

Research methods

(1) SCL-90 was used to evaluate the mental health status of "the last week."

There are 90 possibilities on the scale, comprising 10 factors (depression, hostility, psychosis, somatization, anxiety, obsessive-compulsive symptoms, paranoia, terror, interpersonal sensitivity and others). According to the severity of the symptoms, there are five classes ranging from 0 to 4: Psychological issues were evaluated based on a factor score ≥2 (i.e. moderate severity). The scale's reliability was determined by calculating the retest correlation coefficient for forty boys separated by two weeks. The results indicated no statistically significant difference between the mean scores of nine dimensions

assessed twice (P > 0.05) and that the instrument was reliable.

(2) Questionnaire survey method
1000 college students in a college were investigated, tested, and statistically analyzed for two months from May to June 2020 using a self-designed questionnaire on the basic situation of College Students' participation in physical exercise and the most recent mental health symptom self-rating scale (SCL-90) widely used at home and abroad. 500 questionnaires were provided to male and female students separately, and 500 questionnaires were recovered and effective by male students, yielding a 100 percent response rate; of the 500 questionnaires collected by girls, 496 were effective, yielding a 99.2 percent response rate.

(3) Physical exercise
Assessing college students' physical health involves subjective norms, personal behavioral control, personal behavioral ambitions, behavioral habits, emotional experiences, personal behavioral thinking skills, and individual personality. Behavior and general-purpose attitudes are assessed with the Exercise Attitude Questionnaire. The correlation coefficient r for the re-examination of the eight sub-variables ranges between 0.677 to 0.895, suggesting that the difference in the mean values of the eight sub-measures of the second precision measurement is not statistically significant (P> 0.05). The retest for weight is extremely reliable. (4) Mathematical statistics.
SPSS 21.0 and the statistical software related to this study were used for statistical analysis. The mental health score was expressed as X±s, which was compared by t-test, with P < 0.05 as the difference, which was statistically significant.

Results and Discussion

The survey indicates that the proportions of male and female college students engaging in physical activity in a college demonstrate a diverse trend. Boys are much more likely to participate in basketball, football, badminton, and table tennis, whereas girls are more likely to participate in aerobics, dancing, table tennis, and jogging. Boys like to participate in adversarial, challenging, and exciting activities, whereas girls prefer relaxing, flexible, aesthetically pleasing, and rhythmic sports. College students' participation in physical activity projects is correlated with their personal interests and preferences (Park et al., 2015).

Frequency and psychological experience of college students participating in physical exercise

When college students engage in an hour of physical activity, boys typically participate occasionally and never participate. 30.0%, 54.0%, 16.0%; Girls were more likely to engage, sometimes 18.4%, 73.50%, and 8.10%, respectively. This indicates that approximately twenty-five percent of all students are enrolled in college. In some instances, 63.6% of the kids attended the event, while 12.1% did not. Boys outweigh females in a crowd that participates frequently and never; sometimes, girls outnumber boys. This indicates that most college students know sports culture training but have not yet formed good endurance habits (Sun et al., 2020).
Changes in people's mindsets and emotions might reveal their perceptions of objective reality and accompanying behaviors. A current study has established that mental shifts can negatively impact the many physiology-related functions of the human body. A weakened emotional state will negatively affect human health. People's physical, emotional, and mental health might benefit from having a positive outlook and gaining experience. According to the report, 93 percent of college students at a certain institution feel happy participating in sports culture activities. There are more than 90 percent women and men in this group. Better change and advancement (Belloc & Breslow, 1972; Coventry et al., 2021).

Research results of College Students' mental health

The scores of nine factors (somatization, anxiety, obsessive-compulsive disorder, interpersonal relationship, depression, hostility, terror, paranoia, and neuropathy) for college students of different genders range from 1.37 to 1.92 in Figure 1, indicating that the mental health status of the tested college students is generally good. There are disparities between the mental health state of men and women. The difference was statistically significant (P 0.01), showing that boys' mental health was superior.

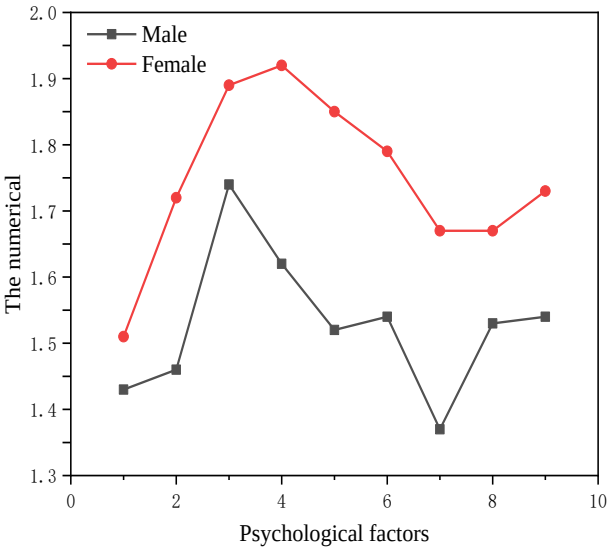

Figure.1 Comparison of the mental health status of college students of different genders

Research results of College Students' attitude toward physical exercise

Due to the substantial disparity in the number of items in each subscale of the exercise attitude scale, this study employs the average score of items in each subscale for evaluation and analysis to assure accuracy. The statistical results indicate that, except for the three subscales of behavior habit, behavior intention, and emotional experience, the scores of all subscales of physical exercise attitude among college students of different genders are comparable, indicating that college students have a clear understanding of the role of physical exercise in promoting mental health. The scores for behavior habit, behavior intention, and emotional experience were significantly different between men and women ($P < 0.05$), with boys scoring higher on behavior habit and emotional experience. In contrast, girls scored higher on behavior intention. It demonstrates that boys have developed better physical exercise habits than girls and have a benign and positive emotional experience with physical exercise. Girls have greater psychological readiness for physical exercise and the motivation and willingness to engage in physical activity. (Figure 2)

To explore whether the differences in the mental health of college students of different genders are related to their physical exercise, this study will further analyze and discuss.

Correlation analysis between mental health and physical exercise attitude

The correlation coefficients between the eight dimensions of physical exercise (behavior attitude, goal attitude, behavior cognition, behavior habit, behavior intention, emotional experience, behavior control, and supervisor standard) and the nine dimensions of mental health are statistically significant ($P < 0.05$), as presented in Table 1. Behavior habits, emotional experience, goal attitude, behavior intention, behavior cognition, and behavior control comprise more than four dimensions.

It indicates that the difference in mental health between male and female college students is related to their physical activity levels. It is hypothesized that college students with higher scores on various subscales of physical exercise attitude have lower scores on various aspects of mental health, i.e., fewer psychological symptoms (Su, 2016).

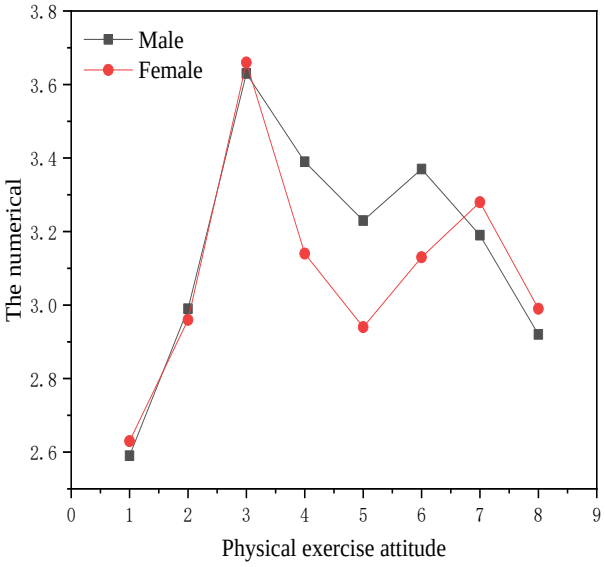

Figure.2 Comparison of physical exercise attitudes of students of different genders

Table 1

Correlation Analysis between subjects' mental health and physical exercise attitude

	Somatization	Anxious	Obsessive-compulsive symptoms	Interpersonal relationship	Depressed	Hostile	Terror	Paranoid	Neuropathic
Behavior attitude	0.062	0.043	-0.074	-0.039	0.043	-0.003	0.097	0.403	-0.048
Goal attitude	-0.125	-0.085	-0.159	-0.153	-0.095	-0.111	-0.051	-0.152	-0.204
Behavioral cognition	-0.187	-0.199	-0.016	-0.066	-0.167	-0.189	-0.305	-0.222	-0.184
Behavior habit	-0.086	-0.122	-0.002	-0.099	-0.154	-0.175	-0.226	-0.152	-0.129
Behavioral intention	-0.157	-0.207	-0.066	-0.211	-0.229	-0.270	-0.269	-0.275	-0.248
Emotional experience	-0.152	-0.184	-0.075	-0.047	-0.183	-0.195	-0.311	-0.193	-0.152
behavior control	-0.176	-0.261	-0.174	-0.179	-0.260	-201	-0.284	-0.278	-0.296
Subjective criteria	0.064	0.002	-0.069	-0.037	-0.052	-0.076	0.009	-0.033	-0.077

Multiple linear regression analysis of mental health

Using the total score of nine dimensions of mental health as dependent variables and eight dimensions of physical exercise as independent variables, a multiple linear regression analysis was conducted to determine the most influential physical exercise factors on mental health and the magnitude of their effect. According to Table 2's statistical findings, behavior control, behavior intention, behavior habit, and emotional experience significantly impact mental health, with a deeper or broader effect. Although behavior control has the biggest impact on the

mental health of college students, there is no significant difference between the scores of male and female college students on the behavior control component (P > 0.05). The research does not comprehensively investigate the association between disparities in mental health and behavioral control.

The conclusion of the relationship between attitude and behavior indicates that behavior attitude, behavior control, and behavior habits have direct effects on behavior, and that behavior intention also influences behavior. Even though college-aged women have better scores of behavior intention, greater psychological preparation for physical activity, and a greater readiness to engage, their good intentions rarely translate into action and are rarely put into reality. Girls' low score on the behavior habit scale demonstrates their vulnerability in this area. During physical activity, most people have either happy or negative emotional experiences. Female college students had a diminished perception of "Sports Specialization." The feminine qualities of delicate emotion and huge emotional fluctuation will result in a greater number of negative emotional experiences during physical exercise, which is also a significant reason why girls talk more about physical exercise but engage in it less. Moreover, this is more consistent with the behavioral motivation theory (Gilles & Yepez-Haro, 2018).

Table 2

Multiple regression analysis of total mental health scores of image subjects

	Partial regression coefficient	Standard error	Standard regression coefficient	T value	Significance
Constant	11.112	2.961		3.753	0.000
Behavior attitude	1.261	0.785	0.152	1.607	0.110
Goal attitude	-0.475	0.971	-0.047	0.494	0.662
Behavioral cognition	0.189	0.823	0.026	0.229	0.719
Behavior habit	2.061	0.964	0.299	2.084	0.039
Behavioral intention	-2.313	0.754	-0.413	3.066	0.003
Emotional experience	-2.175	0.978	-0.325	2.078	0.073
Behavior control	-3.078	0.974	-0.394	3.522	0.001
Subjective criteria	0.860	0.576	0.135	1.498	0.138

The mental health of male college students was generally good, with low and statistically significant scores on five criteria. Boys and girls differ only in their behavioral aim, emotional experience, and behavioral patterns regarding their attitude toward physical activity. There is a high association between six categories of physical activity and several mental health parameters. Conclusion: The gap in mental health between male and female college students is attributable to the disparity in physical activity. Female college students had a greater intention to engage in physical activity but did not develop positive behavioural habits. Therefore, we should boost publicity and education, alter our attitudes, develop a healthy and scientific sports lifestyle, and encourage mental health improvement. Female college students had a poorer emotional experience, limiting their motivation to engage in physical activity. Therefore, we should continually expand physical education in schools, focus on developing kids' "skills," increase good emotional experience, and enjoy the heart-strengthening effect of sports in physical activity. Who defines health as a physical, mental, and social adaptation?

Physical and mental health are significant components of human health, as seen by the location of health standards. Physical activity is the best remedy for improving human health. Not only may it boost physical and mental health, but it can also play a crucial part in promoting social adaptability. According to a psychological study, physical exercise regulates emotion, regulates people's emotions, eliminates poor mood, promotes psychological equilibrium, and prevents and treats sickness (da Cruz et al., 2022). Emotion is one of the key components of mental wellness. It is a form of drive or energy. Regular physical and moderate exercise can enhance physical fitness, human health, interpersonal interaction, and emotional and psychological well-being.

Frequent involvement in sports training can not only build resistance but also foster sentiment and generate happy emotions, which is beneficial to developing an excellent conception of competition and a healthy, stable mental state. Those who are feeble and in a foul mood frequently gain from the sensations of physical activity (Manninen et al., 2022). This is also because diverse cognitive ability information content is introduced into the body during physical activity, which stimulates And it enhances the function level of the system software of the internal organs, causing people to seem refreshed. Participating in physical

exercise can lessen the sensitivity of adrenal hormone protein kinase, which enlightens and clears up the misunderstanding in the public when they are in a bad mood due to shame or irritation in their busy study and training, work, and daily life. Participating in sports exercises, exercises, fitness exercises, and perspiration accelerates the body's fundamental metabolism; after exercise, you feel relaxed, in a good mood, with increased hunger and better sleep (Poon, 2022).

All of these measures are targeted at minimizing job strain, enhancing physical and mental health, and decreasing psychological prevention and distortions. Currently, college students face increasing levels of academic and employment difficulties. Maintaining their mental and emotional health at all times is essential. Physical activity can reduce college students' low mood, save money, relieve stress, and increase their joy and happiness. Psychological fulfilment. College students should develop a positive attitude about physical exercise, shifting from "tell me to participate in physical exercise" to "I want to participate in physical exercise," and comprehend the physical and mental health advantages of physical exercise.

On the one hand, it is recommended that schools promote reforms and innovations in school sports work, expand the scope of publicity plans for college students' participation in sports exercises, organize various sports-themed activities, and open "sunlight sports-themed activities" promptly to encourage students to deal with dormitories (Taniguchi et al., 2022). Step into the stadium and experience the joy of outdoor activities; on the other hand, it is recommended that the person in charge of the Ministry of Education implement the tax preferential policy text document that encourages college students to participate in sports training and strengthen the "1-hour daily exercise" key. The ability to apply the concept fiercely advertises the role of sports training in promoting mental, physical, and mental health, resulting in the notion of sports training and involuntary participation.

Extracurricular physical activity includes free time to improve students' physical fitness and exercise habits, regulate their mood, broaden their minds, and use a variety of physical activities in conjunction with natural strength and hygiene measures, as well as a comprehensive physical education program. Zhao (2022). is to perform the workouts routinely. Activities outside the classroom contribute to pupils' overall development. Objectives. It supports physical education and sports training and contributes to the school's physical education goals and objectives. The school provides a variety of extracurricular sports activities that not only address the physical demands of pupils but also encourage their interest in sports and allow them to make up for the lost time in 90 minutes. Extensive participation in extracurricular and extracurricular sports activities will allow college students to share their sports experiences with others, facilitating the interchange of ideas and the development of more harmonious relationships among students (Zhang & Velez, 2022). Therefore, the author suggests adding color to extracurricular activities so that more students will engage in physical activity, which will benefit them physically and intellectually.

Conclusion

There is a high association between six categories of physical activity and several mental health parameters. Conclusion: The gap in mental health between male and female college students is attributable to the disparity in physical activity. According to the different comparisons of the survey data, the psychological status of boys is superior to that of girls. The mental health of students who regularly engage in physical activity is superior to those who rarely engage in physical activity. The mental health questionnaire reveals that over forty percent of students experience mild psychological pressure, while thirteen percent experience significant psychological pressure. Physical activity is one of the most effective strategies to alleviate psychological stress. In terms of exercise intensity, moderate exercise has better mental health than those who do not exercise or exercise infrequently. By engaging in physical activity, you can decrease the sensitivity of adrenaline receptors, refresh people, and eliminate problems. During physical activity, sweat is expelled, and the human metabolism is accelerated; after exercise, I feel relaxed and comfortable, my appetite increases, and my sleep quality improves, all of which are of great benefit for relieving stress, improving physical and mental health, reducing psychological barriers, and eliminating morbid psychology. Focus on encouraging pupils' interest in sports. Lifelong sports participation is the ultimate objective. To enhance physical and mental health, colleges and universities cultivate a positive sports culture, encourage students to actively participate in sports, strengthen the atmosphere of physical activity, and provide more channels for students to experience the joy and vitality of sports. It is suggested that education authorities issue policy documents to promote college students' participation in physical exercise, strengthen the implementation of the "exercise 1 hour per day" concept, vigorously publicize the effect of physical exercise on their mental health, and cultivate a physical exercise awareness and habit.

Theoretical Implications

This study contributes to the body of knowledge because relatively few studies have been undertaken previously to examine the association between college students' mental health and their academic success concerning mental exercise. This study demonstrates that improving policies to provide students with better mental facilities facilitates the development of better and more appropriate mental health. In this regard, the proper measures must be implemented to improve the students' level of life and psychological health. Therefore, the education department authorities must promote the children's psychological health. In this way, fair judgments would contribute to the student's mental health capacity for enhanced learning. In this sense, the study's contribution would aid management and stakeholders in formulating an effective policy for mental health and mental exercise. However, future research will take into account the elements that influence mental capacity because, owing to changes in these variables, the right measures are taken to deal with these issues effectively and reasonably.

Practical Implications

This study also presents crucial practical implications for enhancing mental health and well-being. First and foremost, it is the students' responsibility to learn physical education and exercise appropriately. Moreover, in schools and colleges, the administration must train pupils in exercise and other activities that would lead to their effective performance. In addition, it is the responsibility of the students' parents to improve their mental health by providing them with better educational and living options. Students' psychological growth and effective critical reasoning can be fostered in this manner.

Similarly, management and stakeholders would design effective and applicable policies. If these policies for mental health were implemented realistically, additional health-related chances for improved growth would be made available. In addition, the management's concentrate would be on realistically considering the study's factors for better and more advanced outcomes to increase mental health ability through mental exercise.

Future Directions

This study was done to evaluate the connection between physical activity and the mental health of pupils. During the literature research, it was discovered, however, that substantial other elements also contribute to improving the student's mental health. Thus, future research must concentrate on the importance of perceived norms for student mental health. Similarly, cross-cultural literacy must be recognized to establish the connection between student achievement and mental health abilities. The role of effective teaching methods must be determined by future research on pupils' mental health.

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