

The Impacts of Business Management Elements by CAS Theory on Entrepreneurial Behavior: An Empirical Examination from the Positive Psychology Intervention

Yongling Zhang¹, Peng Gao^{2,*}

¹School of Information and Communication Engineering, North University of China, Taiyuan, China

²School of Business Administration, Guangxi University of Finance and Economics, Nanning, China

5yzyl@nuc.edu.cn; gaopeng@gxufe.edu.cn (Corresponding author)

Abstract. The exploration expects to improve the enthusiasm of college students for the choice of entrepreneurship and promote the development and implementation of their entrepreneurial behaviors. The relevant factors affecting the entrepreneurial intention of college students are analyzed from the perspective of positive psychology. The "positive psychological capital" with the positive psychological power of people as the core is emphasized. Based on the Complex Adaptive System (CAS) theory, the mechanism and complexity of business management and knowledge innovation are discussed further. A model of enterprise knowledge innovation is built, and the simulation is completed using AnyLogic simulation software. The simulation results show that when selecting partners in the process of forming a knowledge innovation team, leaders should choose employees who cooperate more often and have higher credibility between them. On this basis, it investigates the psychological capital and entrepreneurial intention of college students through questionnaires, and explores the internal mechanism between the variables. The data results show that the average value of college students' psychological capital is 100.3, and the average value of self-efficacy, resilience, hope and optimism is 26.7, 25.5, 24.3 and 23.8, respectively. The four dimensions of college students' individual entrepreneurial intention and psychological capital are significantly positively correlated. To sum up, mental health counseling is conducive to accumulating positive psychological capital and promoting the formation of college students' entrepreneurial consciousness.

Keywords: Positive psychology; CAS theory; Business management; College students' entrepreneurship

1. Introduction

Under the background of the era with innovation as the main theme, innovation is a key factor for enterprises to maintain competitive advantages and promote long-term development. At this stage, driven by the market environment and national policies, the concept of “Mass Entrepreneurship and National Innovation” has been deeply rooted in the hearts of the people (Khurana and Dutta, 2021; Duval-Couetil et al., 2021; Berger Et al., 2021). Entrepreneurship has not only become a universal consensus of the public, but also a key concern of local governments at all levels. As an important part of the knowledge economy, entrepreneurship plays an increasingly significant role in promoting economic development. With the increase in the number of college graduates year by year, the employment of fresh college students is also the focus of the country in the graduation season every year. Let college students who have a strong will and interest in starting a business practice in advance, and choose to start their own business after graduation, and the success rate will be higher (Debelo and Ram, 2021). At the level of the country, it is the college students who have the most potential and should be cultivated with great effort. For the training of these college students, in addition to the traditional teaching methods, it is also necessary to increase the opportunities and proportions of practice through innovation and entrepreneurship training programs.

Contemporary college students are prone to psychological fluctuations due to the lack of education on the psychological quality of entrepreneurship in the process of entrepreneurship, resulting in losing confidence in entrepreneurship. Some even choose to give up in the middle of starting a business (Raza et al., 2021; Shepherd et al., 2021). Therefore, it is necessary to strengthen the research on the entrepreneurial psychological quality of young people and use scientific and effective means to analyze the entrepreneurial psychology of young people. Through the innovation and entrepreneurship training program, the school's practical academic arrangements can be increased, so that students can participate in the real entrepreneurial process in advance (Ephrem et al., 2021). Understanding how a company goes from zero to one, and the factors that need to be considered in the process, such as funding, team, marketing, production, etc., is far more intuitive than just learning through textbook knowledge. From the perspective of social development, more and more college students are beginning to have a clearer intention to invest in the entrepreneurial boom. It can not only provide college students with more diversified theoretical and practical opportunities, but also play a very important role in promoting social and economic development (Othman et al., 2019; Wu et al., 2017; Wu and Song, 2019).

With the increasing pressure of competition and the speed of change in modern enterprises, more and more enterprise managers realize that employees generally have work pressure and ideological burden. They pay attention to compensation and benefits but more attention to growth and progress. They can accept the realistic pressure of heavy work and declining salary, but they urgently need psychological comfort. It takes the view of positive psychology as the thinking framework, and emphasizes the "positive psychological capital" with people's positive psychological power as the core, such as self-efficacy, optimism and persistence. In this way, employees of the enterprise can be full of confidence in the entrepreneurial team, adjust their mentality in time when facing difficulties, and finally achieve success. On this basis, based on the Complex Adaptive System (CAS) theory, the mechanism and complexity of business management and knowledge innovation are discussed. The enterprise knowledge innovation model is constructed and the simulation is completed. Finally, the simulation results are analyzed. On this basis, the psychological capital and entrepreneurial intention of college students are investigated through questionnaires, and the internal mechanism between variables is discussed.

2. Theoretical Basis and Research Methods

2.1 Business management and innovation supported by CAS theory

CAS theory is adaptable, because individual and collective behaviors will be self-organized with the occurrence of micro-events or event sets. CAS can be regarded as a "complex macro set" formed by

"similar and partially connected microstructures" to adapt to changing environments and improve viability (Zhang and Tang, 2022; Weichhart et al., 2016). Within CAS, an individual is an agent that can actively adapt to the environment and other individual abilities. From a microscopic point of view, individuals are constantly learning in the process of interacting with the environment. By adjusting their own structure and behavior, they can better adapt to the environment and survive.

The entrepreneurial organization can be regarded as a complete CAS, and the individual students in the organization are the actors. When the organizational system is in a creative space on the edge of chaos, it is also novel and creative. For the work of cultivating the innovation ability of college students, it is also a complex and systematic project, which directly affects the quality of cultivating innovative talents. By reorganizing themselves, individuals compete and cooperate with each other, stimulate each other and depend on each other. The growth of individuals will have a positive impact on the improvement of the entrepreneurial ability of the whole organization and the optimization of the entrepreneurial environment. Complex adaptive subjects have active adaptation characteristics, and different subjects have a certain feedback ability when receiving external stimuli. In the end, the evolution of the overall system is the result of the interaction of multiple subject adaptive behaviors. The relationship between the subjects in the process of knowledge innovation of entrepreneurial organizations is shown in Figure 1.

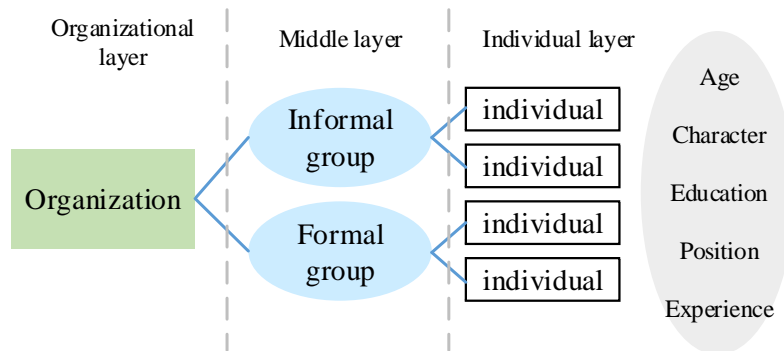


Fig.1: The relationship between the subjects in the process of knowledge innovation of entrepreneurial organizations

Under the "synergy effect" mechanism of CAS, adaptive subjects interact nonlinearly with each other and carry out adaptive learning activities (Medda et al., 2020). After all subjects at the same level complete adaptive learning, a level will emerge, which is more conducive to the continuous adaptation of the enterprise knowledge innovation system to the complex external environment. After that, the same level will also interact nonlinearly, causing a higher level of emergence. Usually, emergence occurs in a steady-state system under the action of certain rules. Therefore, the enterprise knowledge innovation system can self-regulate and stabilize over a long period of time, and can overcome the influence of random factors, thereby ensuring the overall stability of the system structure can be maintained. Based on this, the emergence level of enterprise knowledge innovation is constructed, as shown in Figure 2.

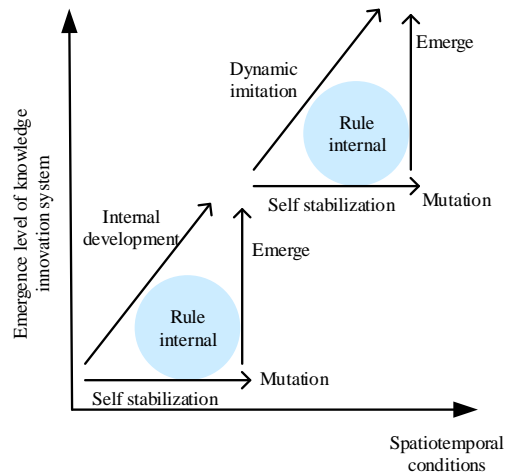


Fig.2: The emergence level of enterprise knowledge innovation

2.2 Innovation and entrepreneurship education system structure in colleges and universities based on CAS theory

Career guidance courses for students in colleges and universities are a powerful measure to promote the employment of graduates. The employment service system in the United States is characterized by providing long-term effective personalized employment guidance, including career planning, application skills, etc. Colleges and universities attach great importance to the cultivation of college students' application ability, especially in the curriculum arrangement, including career planning, career training, etc. Some colleges and universities also set job hunting ability, scientific research, teaching, and serving society as the goal of cultivating students (Wei et al., 2019; Yi, 2021; Liu et al., 2019). American colleges and universities are most interested in the cultivation of the job-seeking ability of college students. The cultivation of this ability does not only depend on the strength of colleges and universities, but requires universities, enterprises, and the government to complete it together.

At the basic stage of entrepreneurship education, students first assume that they have the will to innovate and start a business. If so, students follow their willingness to devote themselves to the second stage of entrepreneurial skills education. If the assumption does not hold, they will no longer continue entrepreneurship education. In the stage of entrepreneurial skills education, students need to measure the entrepreneurial ability they need to have, and make an overall assessment of the knowledge they want to acquire from entrepreneurship education. When students enter the stage of entrepreneurial practice education, they need to plan their start-up projects according to their personal ability and market environment. If the evaluation of the project is successful, it will enter the entrepreneurship incubation stage. After the entrepreneurial project of students has been tested by a quasi-corporatization, it means that it has successfully passed the start-up period.

Based on CAS theory, individuals are subject to non-unidirectional linear effects of the environment. Different individuals will adopt different ways to shape innovation ability under the influence of the environment, and finally apply what they have learned to real life (Koithan et al., 2012; Wa Ng, 2020). It shows that the impact of the external environment on individuals is complex. Therefore, as far as the current innovation and entrepreneurship education system of colleges and universities is concerned, it is necessary to divide the elements into internal elements and external elements. The internal elements include three aspects: teacher level, practice base and curriculum system. The external elements mainly refer to the construction of national policies and teaching platforms. The model of innovation and entrepreneurship education system in colleges and universities based on CAS theory is shown in Figure 3.

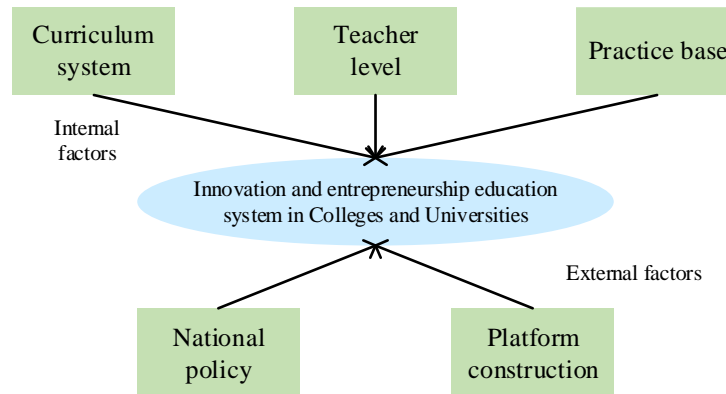


Fig.3: The model of innovation and entrepreneurship education system in colleges and universities based on CAS theory

Combined with the actual needs of the construction of the innovation and entrepreneurship education system in colleges and universities, firstly, it is to respond to the national policy. Colleges and universities should sort out the important innovation and entrepreneurship policies issued by the country in a timely manner and teach and guide students in detail. Secondly, as a key link in the whole innovation and entrepreneurship education, colleges and universities should constantly improve the teaching level of teachers, organize and arrange teachers to participate in relevant training and lectures, and update the relevant knowledge of teachers' innovation and entrepreneurship. Finally, as a significant carrier of innovation and entrepreneurship education, the curriculum system determines the final teaching quality. Therefore, colleges and universities should increase the relevant courses of innovation and entrepreneurship, take students as the center, and constantly strengthen students' understanding of innovation and entrepreneurship.

2.3 Entrepreneurial behavior of college students based on positive psychology

Positive psychology is the use of positive and optimistic forces to overcome negative forces, so that people can live a happy life. The theory of positive psychology provides a new way of thinking for the employment guidance courses of colleges and universities and the solution to the employment problems of college athletes. Since the concept of "psychological capital" was put forward, it has been frequently applied to human resources management and personal career development (Sun, 2020; Hasan et al., 2019). Psychological capital is a positive psychological state, which is manifested by individuals in the process of growth and development. This positive psychological element is closely related to the development of individuals of all ages, and can positively affect the long-term development of individuals. To effectively improve and improve psychological capital, the intervention and adjustment of specific dimensions of college students' psychological capital can have a significant impact on students' psychological capital status and way of thinking. Students' corresponding positive attitudes and behaviors can be played (Zhang, 2021; Ortega-Mal Donado et al., 2018; Zhao et al., 2020). This is of theoretical significance for accumulating and enriching the theory of psychological capital itself and improving the psychological situation of oneself in work and life. Students' employment mentality and employment success rate are inseparable from their ability reserve. However, because psychological capital can play a unique positive role in internship and employment, students can use internship activities to cultivate and improve their psychological level.

When exploring people's psychology based on the theory of positive psychology, it mainly takes potential positive factors as the starting point and takes promoting the cultivation of positive psychological quality as the main purpose. In the process of cultivating the entrepreneurial psychological quality of college students, the educational concepts related to positive psychology are integrated into the content of entrepreneurship education, so that college students can carry out entrepreneurial activities with richer knowledge accumulation. Colleges and universities can adopt experiential training strategies to formulate a series of entrepreneurial practical tasks for college students, so that students can constantly strengthen their positive entrepreneurial psychological quality

in the process of completing the tasks. As a college student, you should comprehensively analyze your own lack of psychological quality, and explore the best way to cultivate a positive entrepreneurial psychological quality that meets your own characteristics.

2.4 Modeling and simulation of business management knowledge innovation

In CAS theory, Agent is an intelligent subject, and the general model is shown in Figure 4. The general composition and structure of the Agent mainly include the basic properties of the Agent and the communication module, the learning module, the reasoning module and the event processing module. Through the application of local connection rules and related relationship functions of enterprise knowledge innovation subjects, a complex interactive network system is jointly built. Moreover, based on the three elements of the subjects in the complex adaptive system of enterprise knowledge innovation, the interaction between subjects and the network structure of the subjects, the emergence level of the enterprise knowledge innovation system will be further explored. In the process of modeling, the complex and changeable environment will lead to incomplete behavior of rule sets, and there may be contradictions or redundancy among them.

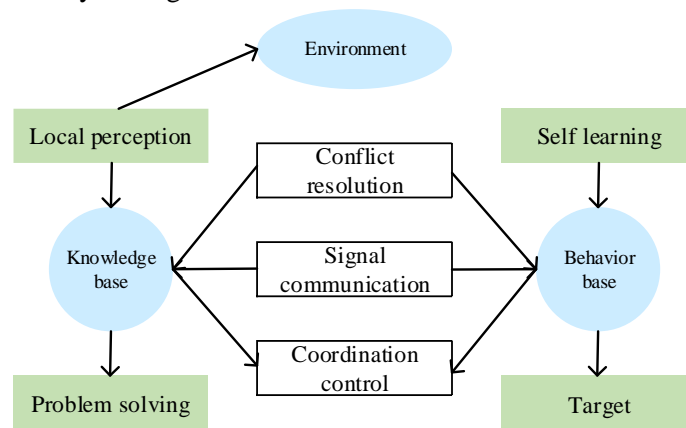


Fig.4: General model structure of Agent intelligent subject

According to the different states of intelligent subjects, the intelligent subjects of enterprise employees can be divided into four types: unoccupied state, leadership state, member state and extinction state. In an enterprise, the intelligent subject of enterprise employees in different states can reflect the role of enterprise knowledge innovation and evolution. When the enterprise knowledge innovation activities are completed, both the member state and the leadership state of the enterprise intelligence subject will be transformed into the unoccupied state. The simulation cycle is set to 280 days, and other parameters are set to default values.

Compared with traditional modeling platforms, the selected AnyLogic has a high open architecture and powerful analysis functions. In the AnyLogic simulation platform, through input and output bidirectional ports, the main interaction between individuals and the transmission of messages between different individuals can be realized. The enterprise knowledge innovation model is based on multi-Agent, including individual employees, department subjects, enterprise subjects and the entire enterprise environment. In the process of interacting with another subject or environment, the various interactions generated by employees will constitute the overall behavior of the whole system. The specific steps of model construction on the Anylogic simulation platform are shown in Figure 5.

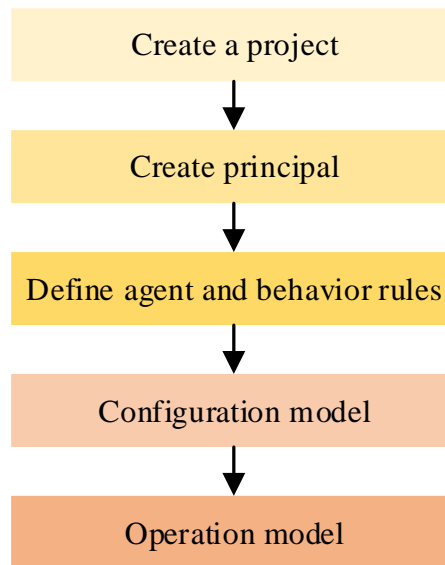


Fig.5: The specific steps of model construction on the Anylogic simulation platform

2.5 The influence of positive psychological capital on entrepreneurial behavior: an empirical study

In the psychological process of people, creative tendencies are indispensable psychological qualities for innovative talents. They play an important role in entrepreneurial behavior and guide creativity through promotion, regulation, etc. (Hong et al., 2012; Baluku et al., 2020). It is precisely because of the tendency that individual creativity can have a clear development direction. The personality characteristics of entrepreneurs are also a very vital quality in the psychological quality of entrepreneurship, which can reflect the spiritual style of entrepreneurs and affect the whole process of implementing specific entrepreneurial behaviors. The psychological capital of entrepreneurial college students is used as an independent variable to control the background factors of individuals. The entrepreneurial intention is used as a dependent variable to analyze the mechanism of psychological capital on entrepreneurial intention.

The questionnaire is based on the theoretical basis of college students' entrepreneurship. The scale of positive psychological capital uses the Positive Psycap Questionnaire (PPQ) compiled by Kuo zhang et al. (Kuo, 2010). There are 26 items in the four dimensions, such as self-efficacy, resilience, hope and optimism. The Cronbach's α coefficients of each subscale are 0.858, 0.860, 0.913 and 0.778 respectively, all greater than 0.5. The Kaiser Meyer Olkin (KMO) values of the total scale are 0.774. There are 2 items in the entrepreneurship intention scale, and the Cronbach's α coefficient of the scale is 0.894 and the KMO value is 0.805. The survey results are measured using a five-point Likert scale, with 1 to 5 indicating "strongly disagree", "disagree", "not necessarily", "agree" and "strongly agree" with the statement content.

The selected research objects are three colleges and universities in Guangzhou, covering students with different educational backgrounds, different grades and different majors. A total of 169 questionnaires are distributed and 166 are recovered, of which 165 are valid, with an effective recovery rate of 97.6%. SPSS21.0 is used for descriptive statistics of test samples, and independent samples T test is performed.

3. Results and Discussion

3.1 Modeling Analysis of business management and innovation based on CAS theory

Figure 6 shows the results of data changes when the simulation model is running. It indicates that the number of individual employees in the enterprise knowledge innovation team oscillates between 1 and 10. With the advancement of the evolution of knowledge innovation, the number of cooperation between individual intelligent subjects of enterprise employees will also increase. Meanwhile, the transaction cost of knowledge innovation for enterprises is also reduced. Therefore, when selecting partners in the process of forming a knowledge innovation team, leaders should choose employees who have cooperated frequently and have higher credibility between them. The simulation results of CAS theory can provide a microscopic understanding of the evolution process of employee knowledge innovation, and simultaneously can understand the evolution of the entire enterprise knowledge innovation system from a macroscopic perspective.

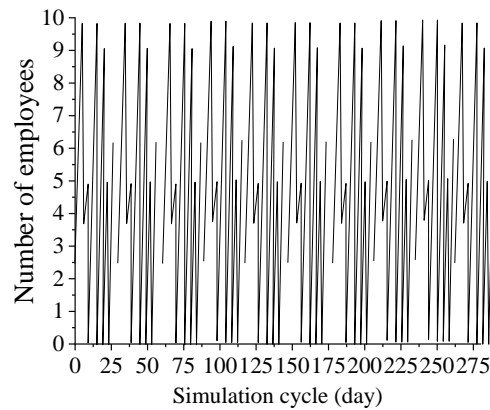


Fig. 6: The results of data changes when the simulation model is running

3.2 Survey results of students' psychological capital and entrepreneurial intention

Descriptive statistical analysis is carried out on the psychological capital of college students and its various factors, and the results are shown in Figure 7. It indicates that the average value of college students' psychological capital is 100.3, and the average values of self-efficacy, resilience, hope and optimism are 26.7, 25.5, 24.3, and 23.8, respectively. The average scores of each factor item in college students' psychological capital are all above 3.5. The mean values of each factor are ranked in descending order: self-efficacy, resilience, hope and optimism. It shows that the psychological capital of college students is better in two aspects of "self-efficacy" and "toughness".

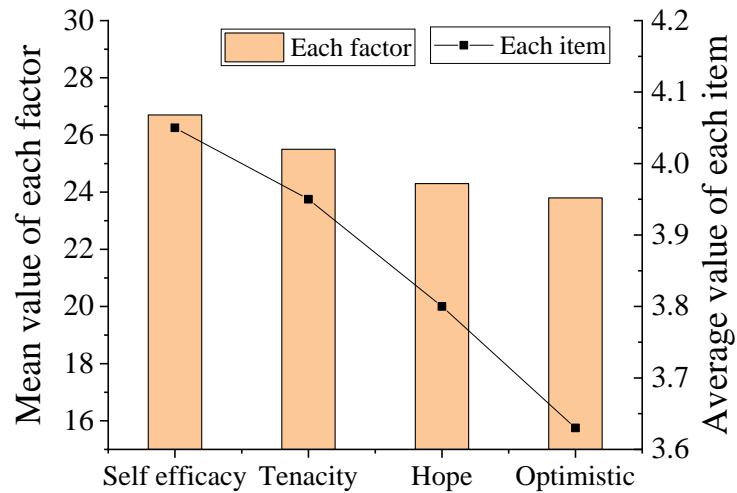


Fig.7: The score statistics of college students' psychological capital and its various factors

The survey on students' entrepreneurial intentions involved two items. The first question is "They will start a business after graduation" and the second question is "If the time is right after graduation, they will consider starting a business". The results of the survey are shown in Figure 8. The average score for the first question is 3.12, and the average score for the second question is 3.41. It expresses that for contemporary college students, most students have a wait-and-see attitude and uncertainty about entrepreneurship. Only 35% of the students have a clear entrepreneurial intention and have their own plans for entrepreneurship.

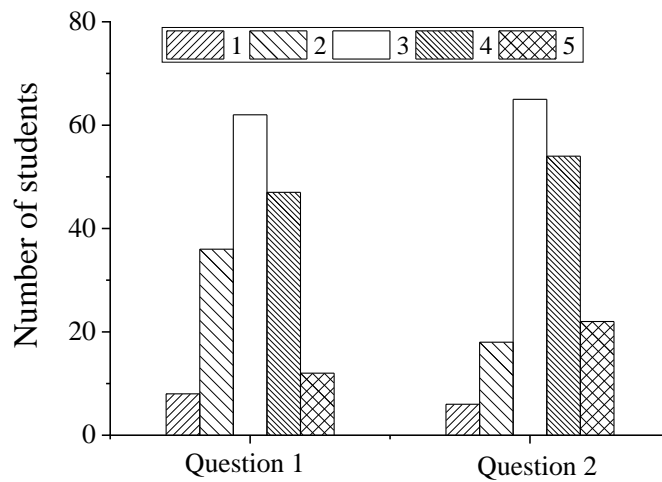


Fig.8: The survey result of students' entrepreneurial intentions

3.3 Correlation analysis results of key variables

Next, Pearson correlation analysis is performed between the scores on the scale of individual entrepreneurial intention and psychological capital. The specific results are shown in Table 1. From the results in the Table, it means that the individual entrepreneurial intention of college students has a significant positive correlation with the four dimensions of psychological capital (self-efficacy, resilience, hope, and optimism). This shows that the concept of self-efficacy, resilience, hope and optimism of psychological capital should be used to design a new system for the cultivation of college students' entrepreneurial quality, to cultivate a high level of entrepreneurial psychological quality and shape students' excellent entrepreneurial personality.

Table 1. Correlation results between students' entrepreneurial intention and psychological capital

	Self-efficacy	Toughness	Hope	Optimism	Entrepreneurial intention
Self-efficacy	1				
Toughness	0.691**	1			
Hope	0.652**	0.652**	1		
Optimism	0.538**	0.612**	0.447**	1	
Entrepreneurial intention	0.245**	0.255**	0.264**	0.160*	1

Note: ** means $P < 0.01$. * means $P < 0.05$.

From a self-confidence point of view, self-efficacy is one's ability to deal with the various stresses of life. People with higher self-efficacy will be more proactive in life, which is the ability to deduce results based on their own behavior. From the analysis of the research results, it can be found that the more college students believe in themselves, the higher their self-efficacy, the more they believe that they can accomplish their entrepreneurial goals, and the stronger their entrepreneurial intentions. Not only that, with high self-efficacy, the individual will be in the expectation and feeling of the successful outcome. The prediction of success will help the individual maintain a positive psychological state, concentrate on analyzing and solving problems, and make their abilities normal or even extraordinary, so it is easier to approach success.

Resilience, as an ability of college students to recover their positive psychology after encountering difficulties, is particularly important in the process of entrepreneurship. College students need to face the ever-changing external environment of entrepreneurship, and various uncertainties will make them face various unknown risks and setbacks. If they can overcome difficulties with the support of resilience, entrepreneurial students will recognize more entrepreneurial opportunities, master valuable entrepreneurial experience, and their entrepreneurial intentions will also increase. An environment that provides solid backing and safe support has a positive impact on the development of mental resilience in college students. Such as a good public safety environment and a high-security welfare system will affect the psychological resilience of individual members

4. Conclusion

Contemporary college students should take self-employment as a life choice. In the process of participating in entrepreneurship education and entrepreneurship practice, they should constantly explore ways to cultivate positive entrepreneurial psychological quality that conform to their own characteristics. Firstly, it takes positive psychology as the starting point to analyze the entrepreneurial behavior of college students. In the process of cultivating the entrepreneurial psychological quality of college students, the educational concepts related to positive psychology are integrated into the content of entrepreneurship education, so that college students can carry out entrepreneurial activities with richer knowledge accumulation. Secondly, based on the CAS theory, the mechanism and complexity of business management and knowledge innovation are discussed. The enterprise knowledge innovation model is built and the simulation is completed. The simulation results of CAS theory can provide a microscopic understanding of the evolution process of employee knowledge innovation, and simultaneously can understand the evolution of the entire enterprise knowledge innovation system from a macroscopic perspective. After empirical investigation, it is found that there is an obvious positive correlation between college students' entrepreneurial intention and psychological capital. Universities can develop the psychological capital of college students and enhance their entrepreneurial intentions by carrying out positive mental health education courses. The data collected in this survey has not yet reflected this feature, and the follow-up can focus on the analysis of time series data.

References

- Baluku M M, Kikooma J F, Otto K, et al. Positive psychological attributes and entrepreneurial intention and action: the moderating role of perceived family support. *Frontiers in Psychology*, 2020, 11, pp. 3461.
- Berger E S C, von Briel F, Davidsson P, et al. Digital or not—The future of entrepreneurship and innovation: Introduction to the special issue. *Journal of Business Research*, 2021, 125, pp. 436-442.
- Debelo B K, Ram B M V. Entrepreneurship Education Impact on Self-employment Intention: Case of University Students in Ethiopia. *International Journal of Economics, Finance and Management Sciences*, 2021, 9(5), pp. 183.
- Duval-Couetil N, Huang-Saad A, Wheadon M. Training Faculty in Entrepreneurship and Innovation: An Evaluation of the National Science Foundation Innovation-Corps™ Program. *Entrepreneurship Education and Pedagogy*, 2021, 4(4), pp. 583-608.
- Ephrem A N, Nguezet P M D, Charmant I K, et al. Entrepreneurial motivation, psychological capital, and business success of young entrepreneurs in the drc. *Sustainability*, 2021, 13(8), pp. 4087.
- Hasan M, Guampe F A, Maruf M I. Entrepreneurship learning, positive psychological capital and entrepreneur competence of students: a research study. *Journal of Entrepreneurship and Sustainability Issues*, 2019, 7(1), pp. 425.
- Hong Z, Hong T, Cui Z, et al. Entrepreneurship quality of college students related to entrepreneurial education: Empirical study on psychological and behavioral characteristics. *Energy Procedia*, 2012, 17, pp. 1907-1913.
- Khurana I, Dutta D K. From latent to emergent entrepreneurship in innovation ecosystems: The role of entrepreneurial learning. *Technological Forecasting and Social Change*, 2021, 167, pp. 120694.
- Koithan M, Bell I R, Niemeyer K, et al. A complex systems science perspective for whole systems of complementary and alternative medicine research. *Complementary Medicine Research*, 2012, 19(Suppl. 1), pp. 7-14.
- Kuo Z, Sai Z, Yinghong D. Positive psychological capital: measurement and relationship with mental health. *Study of Psychology Behavior*, 2010, 8(1), pp. 58.
- Liu X, Lin C, Zhao G, et al. Research on the effects of entrepreneurial education and entrepreneurial self-efficacy on college students' entrepreneurial intention. *Frontiers in Psychology*, 2019, 10, pp. 869.
- Medda N, Patra R, Ghosh T K, et al. Neurotoxic mechanism of arsenic: synergistic effect of mitochondrial instability, oxidative stress, and hormonal-neurotransmitter impairment. *Biological Trace Element Research*, 2020, 198(1), pp. 8-15.
- Ortega-Maldonado A, Salanova M. Psychological capital and performance among undergraduate students: the role of meaning-focused coping and satisfaction. *Teaching in Higher Education*, 2018, 23(3), pp. 390-402.
- Othman N, Ahmad F, El Morr C, et al. Perceived impact of contextual determinants on depression, anxiety and stress: a survey with university students. *International Journal of Mental Health Systems*, 2019, 13(1), pp. 1-9.
- Raza M, Alyoussef I, Dahri A, et al. Effectiveness of entrepreneurship quality education in higher educational institutions: a mediating effect of entrepreneurial training. *Management Science Letters*, 2021, 11(4), pp. 1221-1230.
- Shepherd D A, Parida V, Wincent J. Entrepreneurship and poverty alleviation: the importance of health

and children's education for slum entrepreneurs. *Entrepreneurship Theory and Practice*, 2021, 45(2), pp. 350-385.

Sun X. Exploration and practice of "Internet+ Maker education" university Innovative entrepreneurship education model from the perspective of positive psychology. *Frontiers in Psychology*, 2020, 11, pp. 891.

Wang Z W. Interaction Between the Tourism Industry and Ecological Environment Based on the Complicated Adaptation System (CAS) Theory: A Case Study on Henan Province, China. *Nature Environment and Pollution Technology*, 2020, 19(3), pp. 1039-1045.

Wei X, Liu X, Sha J. How does the entrepreneurship education influence the students' innovation? Testing on the multiple mediation model. *Frontiers in Psychology*, 2019, 10, pp. 1557.

Weichhart G, Guédria W, Naudet Y. Supporting interoperability in complex adaptive enterprise systems: A domain specific language approach. *Data & knowledge engineering*, 2016, 105, pp. 90-106.

Wu Y C J, Wu T. A decade of entrepreneurship education in the Asia Pacific for future directions in theory and practice. *Management Decision*, 2017.

Wu Y, Song D. Gratifications for social media use in entrepreneurship courses: learners' perspective. *Frontiers in Psychology*, 2019, 10, pp. 1270.

Yi G. From green entrepreneurial intentions to green entrepreneurial behaviors: The role of university entrepreneurial support and external institutional support. *International Entrepreneurship and Management Journal*, 2021, 17(2), pp. 963-979.

Zhang X, Tang Z. Construction of computer model for enterprise green innovation by PSO-BPNN algorithm and its impact on economic performance. *Plos one*, 2022, 17(1), pp. e0262963.

Zhang X. On the Strategies of College Students' Entrepreneurial Mental Health Education from the Perspective of Positive Psychology. *Tobacco Regulatory Science*, 2021, 7(5), pp. 4739-4751.

Zhao J, Wei G, Chen K H, et al. Psychological capital and university students' entrepreneurial intention in China: mediation effect of entrepreneurial capitals. *Frontiers in Psychology*, 2020, pp. 2984.