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PAPER

The Influence of Science and Technology Innovation Perception Education on Entrepreneurial Intention of College Students

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ABSTRACT

The current employment situation is grim, and the era of science and technology is conducive to college students providing new opportunities for innovation and entrepreneurship. The inclusion of entrepreneurship education in college courses can open up more employment opportunities for students. Therefore, the educational environment is crucial for students' employment choices. This paper conducted a questionnaire survey on 582 college students from nine universities in Fujian Province, China, to develop a relationship model between science and technology innovation perception, education, and entrepreneurial intention. The results show that: 1. Science and technology innovation perception education has been proven to have a direct positive influence on college students' entrepreneurial intention; 2. Undergraduates work value orientation (including career orientation, mission orientation, and livelihood orientation) significantly affects entrepreneurial self-efficacy and thus entrepreneurial intention; and 3. Both work value orientation and entrepreneurial self-efficacy have a direct influence on entrepreneurial intention, but the influence of entrepreneurial self-efficacy is greater than that of work value orientation. Therefore, enhancing college students' entrepreneurial self-efficacy is the main way to improve entrepreneurial intention. Based on this, to improve the entrepreneurial intention of college students, colleges and universities should strengthen science and technology innovation perception education, do a good job in student employment guidance, improve students' self-efficacy, meet undergraduates' diverse employment needs, and provide more entrepreneurship resources to undergraduates.

KEYWORDS

hybrid teaching, learning attitude, learning confidence, learning, management, self-learning strategies

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1 INTRODUCTION

In the context of the COVID-19 epidemic, undergraduate employment is challenging than in previous years, and competition for high-quality employment opportunities is fiercer. In a 2023 survey of undergraduates, the proportion of most graduates choosing unit employment and slow employment gradually increased, accounting for 76.5%, reflecting Chinese college students' low intention to start their own businesses [1]. College graduates have become the focus group for "employment difficulties." It is an important measure toward resolving this problem by encouraging college students to start their own businesses. To be specific, college students create more jobs while solving their own employment problems through entrepreneurship, which can effectively relieve employment pressure and significantly improve the structure and quality of college students' employment [2]. However, the proportion of college students who start their own businesses is relatively low. In this severe employment situation, it is imperative to promote the entrepreneurial intentions of college students.

The research on college students' entrepreneurial intentions has attracted wide attention. Researchers and policymakers have recognized the importance of encouraging and nurturing entrepreneurship among college students, which can not only provide new job opportunities but also drive economic growth and social innovation. The research on entrepreneurial intention mostly concentrates on the theoretical background of entrepreneurial intention [3], influencing factors [4], education and training [5], and entrepreneurial intention and entrepreneurial behavior [6]. Most theoretical research on entrepreneurial intentions focuses on the planned behavior model [7] and the entrepreneurial event model [8]. According to the theory of planned behavior, a person's behavioral intention (such as entrepreneurial intention) is determined by his attitude, subjective norms, and sense of behavioral control [9]. However, the entrepreneurial event model suggests that an individual's entrepreneurial intention is influenced by a combination of personal characteristics (such as personality, motivation, etc.), environmental factors (such as social culture, market environment, etc.), and the perception of entrepreneurial opportunities [10]. In terms of the study of the influencing factors, many researchers have discussed the factors affecting the entrepreneurial intention of undergraduates from multiple perspectives. These include personal factors, such as gender [11], family background [12], education level [13], personality characteristics [14], risk tolerance [15], social environmental factors, such as social culture [16], market environment [17], policy support [18], and educational training factors, such as entrepreneurship education [19], entrepreneurship training [20], entrepreneurship mentor [21], and so on. These studies found that the formation of undergraduates' entrepreneurial intentions is a complex process requiring multiple supports and influences. Some scholars pay special attention to the influence of entrepreneurship classes and training on undergraduates' entrepreneurial intentions. They found that entrepreneurship education and training can improve undergraduates' entrepreneurship knowledge and skills, enhance entrepreneurial confidence, and thus improve entrepreneurial intention [22]. It also makes policy recommendations for education, such as the importance of focusing on and promoting entrepreneurship education and training. Most of the studies on entrepreneurial intention are related to the transformation of entrepreneurial behavior. Although many studies have found a positive relationship between undergraduates' entrepreneurial intention and their subsequent entrepreneurial behavior, some studies have pointed out that there is no one-to-one correspondence between the two [23][24]. Even if they have

a strong entrepreneurial intention, the actual entrepreneurial possibility of college students will be affected by many other factors, such as entrepreneurial opportunities, resource access, market risks, etc. [25][26]. To sum up, the study of college students' entrepreneurial intentions is an interdisciplinary field that requires a combination of psychology, sociology, economics, and other theories and methods. In-depth research in this field can not only help to better understand the entrepreneurial process of college students but also provide valuable basis and suggestions for policymaking.

College students are the group with the highest acceptance, practicality, and application of high-tech in the smart era of science and technology, and the key lies in how to refine it into their own ability, and transform it into a new advantage of individual employment, and explore its internal mechanisms [27]. During the university period, when school and society are integrated, their teachers' educational ideas and social needs have a greater influence on their thoughts and even have an important impact on their future career planning [28]. Therefore, college teachers must play a good leadership role in education so that students can perceive the advantages of scientific and technological innovation in this era and apply it to practical needs in order to better create their own value. Perception of science and technology innovation refers to individuals' cognition and understanding of science and technology development and innovation, affects college students' identification and grasp of science and technology innovation opportunities, and thus influences their entrepreneurial behavior and willingness [29]. This paper holds that college teachers' science and technology innovation perception education can arouse college students' deep understanding of one aspect, carry out employment planning, and generate entrepreneurial intention based on personal value recognition. The following questions require to be further explored: (1) How do college students perceive science and technology innovation education, and how do they find inspiration from it? (2) Does science and technology innovation perception education influence entrepreneurial self-efficacy? (3) Does science and technology innovation perception education have an impact on college students' entrepreneurial intentions? How significant is the impact? (4) How can universities effectively provide entrepreneurship education and support to college students?

Based on this, this article focuses on social cognitive theory and uses a questionnaire method to investigate the impact of university science and technology innovation perception education on college students' entrepreneurial intentions, while verifying the mediating role of personal work value orientation and entrepreneurial self-efficacy. The findings are beneficial for enriching research on college students' entrepreneurial intentions and also for providing theoretical and practical support for improving students' employment rates through entrepreneurship education in universities.

2 LITERATURE REVIEW AND RESEARCH HYPOTHESIS

According to the research on entrepreneurial intention, personal and environmental factors influence undergraduates' entrepreneurial intentions. Personal factors may come from family influences, personal ideas, and other factors that are deeply rooted and difficult to change. Environmental factors can be shaped, and the university education environment has the most profound impact on college students. Lu Zenghui et al. (2021) proposed entrepreneurial support policies such as entrepreneurial capital support, low-interest loans, and entrepreneurial training

bases to encourage and increase the entrepreneurial willingness of college students. And, with the support of the country's active entrepreneurial policies, entrepreneurs can effectively overcome the challenges and difficulties in the entrepreneurial process and improve the success rate of entrepreneurship [30]. In addition, the policy environment has an influence on entrepreneurial intention. According to the survey results of Hu Guiyun and Luo Mingling (2022), college students stated that they did not understand the entrepreneurial support policies and laws issued by the state, which resulted in their overall low entrepreneurial intention [31]. In terms of school environment, Yang Tao (2018) suggests that schools organize entrepreneurial-oriented practical activities, which will not only create an environment for students to have entrepreneurial intentions but will also encourage them to accumulate practice experience, increasing the probability of transforming their intentions into entrepreneurial behaviors [32]. Pan Bingchao and Lu Genshu (2020) et al. conducted a questionnaire survey on 20,716 undergraduate and junior college graduates from colleges and universities in Shaanxi Province and found that entrepreneurship courses in colleges and universities have the greatest impact on college students' entrepreneurial intentions [33]. It can be seen that a lack of information channels, a lack of policy understanding, a lack of opportunities for practical training, and the employment environment of public examination and compilation are important factors that lead to the low entrepreneurial intention of college students. However, university education can make up for this lack by increasing college students' understanding of self-employment policies and providing opportunities for innovation and entrepreneurship practice.

Chinese undergraduates require a good external environment to support their entrepreneurship. For college students' entrepreneurship, college students proficient in high-tech intelligent equipment have unique entrepreneurial advantages, and government departments have specially formulated supporting policies for college students' technological innovation and entrepreneurship, which is conducive to solving the problem of start-up funds. At present, the extracurricular life of college students is varied. Some college students will choose part-time jobs or entrepreneurship to improve their social practice abilities or earn living expenses. However, starting a business requires a high initial cost, college students lack access to start-up capital, the government's start-up funds are limited, and the threshold is high, reducing college students' entrepreneurial enthusiasm. At the beginning of the business, the preferential policies for scientific and technological innovation included in the policy document, as well as the provision of start-up venues and other initial resources, will also help college students solve many problems. The promotion of college undergraduates' entrepreneurial intentions largely depends on the government's support for undergraduates' technological innovation and entrepreneurship. Therefore, it is an effective way for college students to achieve the transformation from innovation and entrepreneurship education to entrepreneurial intention by perceiving their own value from science and technology innovation education and realizing the transformation of relevant policies into entrepreneurial motivation. In view of this, this paper proposes the following hypothesis:

H1: Science and technology innovation perception education obviously had a positive impact on college students' entrepreneurial intention.

The variable self-efficacy, which is the core concept of social learning theory, is usually introduced in the study of entrepreneurial intention. Yu Hong et al. (2020) proved that men are more determined than women to play various entrepreneurial

roles and complete various entrepreneurial tasks, and men have higher entrepreneurial self-efficacy than women [34]. Some scholars took it as an intermediary variable to study the relationship between entrepreneurial intention and entrepreneurial self-efficacy in entrepreneurial education [35]. As self-efficacy is mainly affected by personal subjective factors, some scholars have found that it plays an intermediary role between personality traits and entrepreneurial intention [36]. Because different individuals have different environmental perceptions and entrepreneurial intentions, there are certain differences in personality traits and work value orientation. Therefore, when discussing individual entrepreneurial activities, differences in entrepreneurial self-efficacy, science and technology innovation perception education, and entrepreneurial intention will all have corresponding changes. In view of this, this paper proposes the following hypothesis:

H2: Science and technology innovation perception education obviously had positive effect on entrepreneurial self-efficacy.

When college students look forward to their future career plans, they are often affected by a variety of complex factors. All of these affect their employment values and shape their work-value orientation. The work value orientation shows college students' attitudes toward the questions "What is work?", "What am I looking for in my job?", and "What kind of job is right for me?" [37]. Work value orientation differs conceptually from work value. Work value is an individual's understanding and view of work, which is a part of individual value and runs throughout the job hunting process. The value orientation of work interprets the meaning of work through the perspective of work objectives and emphasizes the relationship between people and work [38]. Work value orientation is often divided into livelihood orientation, career orientation, and career (mission) orientation. Livelihood orientation expects material income; occupational income is biased toward career development, reputation, and sense of identity; career orientation is also known as mission orientation due to its emphasis on subjective achievement and meaning of work. The three orientations are successively increasing in terms of work objectives and significance, with the livelihood orientation being the lowest and the mission orientation being the highest [39]. In view of this, this paper proposes the following hypothesis:

H3: Science and technology innovation perception education positively affected work value orientation.
H3a: Science and technology innovation perception education positively affected career orientation.
H3b: Science and technology innovation perception education positively affected mission orientation.
H3c: Science and technology innovation perception education positively affected livelihood orientation.

According to self-efficacy theory, self-efficacy plays an important role in the relationship between individual cognition and behavior [40]. The work value orientation of college students can provide value guidance for college students when faced with employment choice, which is one of the sources of college students' self-efficacy. Entrepreneurial self-efficacy is a subjective cognition of one's own success in entrepreneurship, and it is based on one's perception of oneself as well as conformity and correspondence with inner conditions. Therefore, work-value orientation affects college students' entrepreneurial self-efficacy to some extent.

After receiving higher education, college students can feel their ease in coping with vocational skills in the face of professional knowledge and high-tech learning, which enhances their sense of value and thus enhances their self-esteem. The work value orientation then becomes a positive source of self-assessment for college students and generates the idea and willingness of high-tech entrepreneurship [41].

H4: Work-value orientation has a significant positive influence on entrepreneurial self-efficacy.
H4a: Career orientation positively affected entrepreneurial self-efficacy.
H4b: Mission orientation positively affected entrepreneurial self-efficacy.
H4c: Livelihood orientation positively affected entrepreneurial self-efficacy.

Young people give high importance to external rewards and their own values and show higher entrepreneurial intentions [42]. In technology innovation perception education, college students have some understanding of the prospect of technology innovation and entrepreneurship. On this basis, if there is a match with the value orientation of their work, they will incorporate it into their future career planning, leading to entrepreneurial intention. Tian Xizhou found that the work value orientation of college students' entrepreneurs, namely, livelihood orientation, career orientation, and mission orientation, had a positive influence on the self-efficacy of work entrepreneurship [43]. High entrepreneurial self-efficacy promotes the transformation of entrepreneurial intention into higher entrepreneurial intention. Therefore, this paper argues that the earning orientation, career orientation, and mission orientation of work value orientation play an intermediary role between perceived scientific education, technological innovation, and entrepreneurial intention.

H5: Work-value orientation positively affected entrepreneurial intention.
H5a: Occupation orientation positively affected entrepreneurial intention.
H5b: Mission orientation positively affected entrepreneurial intention.
H5c: Livelihood orientation positively affected entrepreneurial intention.

Pan Bingchao and Lu Genshu also pointed out that college students' entrepreneurial self-efficacy had a positive impact on their entrepreneurial intentions [44]. Entrepreneurship education can affect not only entrepreneurial intentions, but also self-efficacy [45]. Therefore, according to SOR cognitive-organic-behavioral theory, when college students are stimulated by perceived education of scientific and technological innovation (S), their internal state changes, namely entrepreneurial self-efficacy (O), which ultimately affects college students' choice of entrepreneurial intention (R) [46]. The purpose of this paper is to investigate the mediating effect of entrepreneurial self-efficacy on the relationship between perceived education of science and technology innovation and work value orientation. Based on this, the following hypotheses are proposed:

H6: Entrepreneurial self-efficacy positively affected on entrepreneurial intention.

Based on the above research assumptions, a model is built to clarify the influence mechanisms of perceived education of science and technology innovation, work value orientation, and entrepreneurial self-efficacy on entrepreneurial intention. The specific research hypothesis relationship is shown in Figure 1.

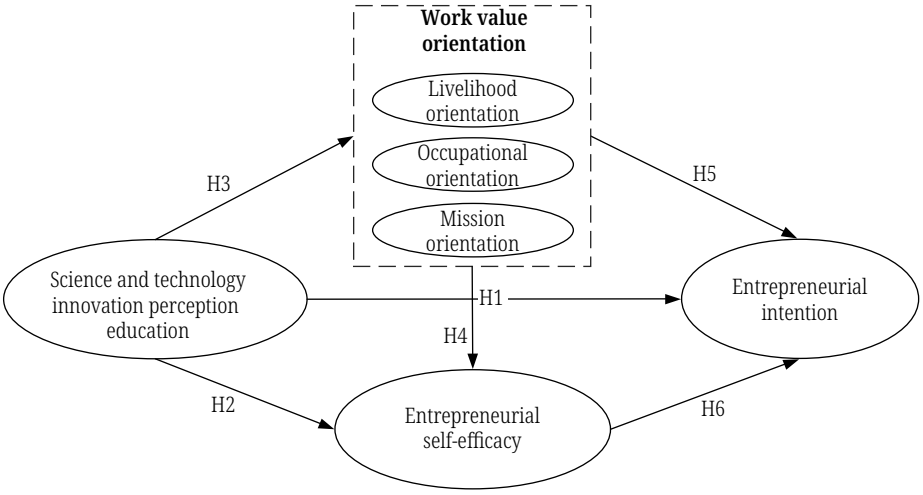

Fig. 1. Influencing factor model of college students' entrepreneurial intention

3 RESEARCH METHODS AND DATA

3.1 Variable measurement

This study used a questionnaire survey method, and a five-level Likert scale was adopted (options 1–5 represented from completely disagreeing to completely agreeing) to indicate the degree of agreement of the respondents. This questionnaire is divided into five parts. The first part contains statistics on respondents' social and demographic characteristics, such as gender, major, whether they are the only child, city of residence, family entrepreneurial experience, and internship experience. The second part is the scale of science and technology innovation perception education, referring to the questionnaire items of Franke (2004) and Qi Weihong (2017) [47] [48]. The third part is the scale of entrepreneurial intention, which refers to Gelderen (2008) and Li Hailei (2012) and contains five items [49] [50]. The fourth part is the measurement of work value orientation, which adopts the measurement items of Wrzesniewski (1997) and Ni Yuan (2021) [51] [52]. The fifth part is entrepreneurial self-efficacy, referring to the measurement items of Barakat (2014) and Liu Wanli (2011) [53] [54].

3.2 Research sample and data collection

This paper aims to investigate the entrepreneurial intentions of undergraduates and chooses colleges in Fujian Province as the research sample for the following reasons: (1) The first reason is that the researchers are Fujian Province residents with a good understanding of the education situation of colleges and universities in Fujian Province, which is conducive to the researchers going deep into colleges and universities to issue questionnaires. (2) Second, by concentrating in a certain region, the regional higher education resources, policy environment, and entrepreneurial environment are all in a unified environment, which is conducive to controlling the influencing factors of the research. For example, in terms of environmental perception, different regions have different policies, and regional changes will affect the filling of questionnaires, which is not conducive to the research of this paper.

(3) Fujian Province has an above-average level of higher education in China. The top ten universities in Fujian Province are selected for their representativeness at the level of running schools, including liberal arts, science, and comprehensive majors, which are universal and representative for the study of entrepreneurial intention in Chinese universities.

In order to avoid similar employment directions for certain majors or classes at universities, the research results will be affected by differences in entrepreneurship education, educational background, and other factors, so students are not selected by class. Instead, a simple random sampling method was adopted on campus to randomly distribute questionnaires to college students from Xiamen University, Fuzhou University, Fujian Normal University, Fujian Agriculture and Forestry University, Huaqiao University, and so on. Questionnaires were issued both online and offline; 582 questionnaires were collected, and 534 questionnaires were validated (effective recovery rate of 91.8%); after missing filling, short answering time, and only filling in the same option, they were eliminated. Table 1 shows the demographic information.

Table 1. Basic information of the research object

Basic Information		Number of People	Percentage (%)
Gender	Man	193	36.1
	Woman	341	63.9
Family Information	Only Child	335	62.7
	Eldest Child	71	13.3
	Secondary Children	101	18.9
	Others	27	5.1
Information of Place of Residence	First- and Second-Tier Cities	143	26.8
	Third-Tier City	240	44.9
	Fourth-Tier City	88	16.5
	Fifth-Tier City	63	11.8
Family Business Background	Yes	341	63.9
	No	193	36.1
Work or Internship Experience	Yes	221	41.4
	No	313	58.6

According to the survey, work or internship experience gives college students more opportunities to understand the market, enables them to have personal experience with the operation and management of modern enterprises, and is conducive to improving college students' entrepreneurial intentions. Male college students with entrepreneurial intentions are slightly more than female. The entrepreneurial intention of college students from first-tier and second-tier cities is slightly higher than that of college students living in other areas, which may be related to the fact that first-tier and second-tier cities can accept a more entrepreneurial culture and provide more entrepreneurial opportunities. The factors of family entrepreneurial background play an irreplaceable influence on the entrepreneurial intentions of undergraduates. Meanwhile, we find that in entrepreneurial families, the demonstration effect of the mother has a great influence on the daughter.

4 EMPIRICAL RESULTS AND ANALYSIS

4.1 Reliability and validity analysis

Generally speaking, a Cronbach's α value higher than 0.7 is acceptable, and a value between 0.7 and 0.98 is considered to pass the test with good reliability. The specific results of this questionnaire are shown in Table 2. Cronbach's α values range from 0.842 to 0.923 (> 0.7). AMOS 26 software was used to conduct confirmatory factor analysis on each latent variable, and the standardized factor load coefficient ranged between 0.778 and 0.873, which met the requirement that the standardized factor load should be greater than 0.5. Generally, the validity test is used to evaluate the polymerization and discriminant validity, and AVE measures the polymerization validity. When AVE > 0.5, the discriminant validity of the scale is considered good. The AVE value in this paper ranges from 0.6271 to 0.7074, all of which are greater than 0.5. And the combination reliability was between 0.8434 and 0.9236, greater than 0.7; this indicates that the questionnaire had preferably aggregation validity.

Table 2. Reliability and convergence validity

Latent Variable	Item	Factor Loading	Cronbach' α	AVE	CR
Science and technology innovation perception education	ST1	0.799	0.842	0.6423	0.8434
	ST2	0.816			
	ST3	0.789			
Entrepreneurial intention	EI1	0.798	0.854	0.6644	0.8558
	EI2	0.825			
	EI3	0.822			
Livelihood orientation	LO1	0.833	0.923	0.7074	0.9236
	LO2	0.873			
	LO3	0.807			
	LO4	0.842			
	LO5	0.849			
Occupational orientation	OO1	0.784	0.9	0.6475	0.9018
	OO2	0.821			
	OO3	0.808			
	OO4	0.807			
	OO5	0.803			
Mission orientation	MO1	0.788	0.87	0.6271	0.8705
	MO2	0.786			
	MO3	0.815			
	MO4	0.778			
Entrepreneurial self-efficacy	ES1	0.814	0.886	0.6595	0.8857
	ES2	0.791			
	ES3	0.815			
	ES4	0.828			

Discriminant validity mainly verifies whether there is a statistical difference between two latent variables. When the square root of AVE is greater than the correlation coefficient between latent and observable variables, it indicates that the scale has good differential validity. As shown in Table 3, the diagonal value is the square root of the AVE value, and the remaining values are the correlation coefficients between variables. In this paper, the AVE value is always larger than the correlation coefficients between latent variables, indicating good discriminative validity [55]. In addition, innovation perception education was significantly positively influenced by entrepreneurial intention ($y = 0.457$, $P < 0.01$), entrepreneurial self-efficacy ($y = 0.514$, $P < 0.01$), career orientation ($y = 0.502$, $P < 0.01$), and mission orientation ($y = 0.476$, $P < 0.01$), was positively correlated with livelihood orientation ($y = 0.48$, $P < 0.01$); The occupation orientation has an obvious positive effect on entrepreneurial intention ($y = 0.462$, $P < 0.01$), mission orientation and entrepreneurial intention ($y = 0.467$, $P < 0.01$), livelihood orientation and entrepreneurial intention ($y = 0.478$, $P < 0.01$), occupation orientation and entrepreneurial self-efficacy ($y = 0.515$, $P < 0.01$), mission orientation was significantly positively correlated with entrepreneurial self-efficacy ($y = 0.531$, $P < 0.01$), livelihood orientation has an obvious positive effect on entrepreneurial self-efficacy ($y = 0.538$, $P < 0.01$); Entrepreneurial self-efficacy was significantly positively correlated with entrepreneurial intention ($y = 0.531$, $P < 0.01$). All the variables are correlated, which lays the foundation for the hypothesis study in this paper.

Table 3. Differential validity test

	Science and Technology Innovation Perception Education	Entrepreneurial Intention	Livelihood Orientation	Occupational Orientation	Mission Orientation	Entrepreneurial Self-Efficacy
Science and technology innovation perception education	0.8014					
Entrepreneurial intention	0.457	0.8151				
Livelihood orientation	0.48	0.478	0.8411			
Occupational orientation	0.502	0.462	0.49	0.8047		
Mission orientation	0.476	0.467	0.529	0.518	0.7919	
Entrepreneurial self-efficacy	0.514	0.531	0.538	0.515	0.531	0.8121

Note: The value on the diagonal is the square root of each variable AVE.

4.2 Model fitting results and hypothesis testing

AMOS 26 was used to test the fitting degree of the model (shown in Table 4), with a value of 2.65, which meets the standard of less than 3. The approximate error RMSEA value is 0.07, which meets the standard of less than 0.08. The fitting indexes CFI = 0.947, IFI = 0.948, and TLI = 0.938 are all greater than 0.9, which meets the standard requirements, indicating that the overall fitting degree of the theoretical model is perfect [56]. The hypothetical path analysis of the theoretical model can be further conducted (Table 5).

Table 4. Analysis of model fitting results

	X^2/df	IFI	CFI	TLI	RMSEA
Standardization	<3.00	>.900	>.900	>.900	<.080
Fitting result	2.65	0.948	0.947	0.938	0.07

Table 5. Path coefficient and hypothesis test results of structural equation model

Hypothesis	Hypothetical Path	Standardization Coefficient	t-Value	P-Value	Result
H1	Science and technology innovation perception education → entrepreneurial intention	0.7655	21.8434	***	Hypothesis is true
H2	Science and technology innovation perception education → entrepreneurial self-efficacy	0.811	25.483	***	Hypothesis is true
H3a	Science and technology innovation perception education → career orientation	0.8481	29.3855	***	Hypothesis is true
H3b	Science and technology innovation perception education → mission orientation	0.8118	25.5256	***	Hypothesis is true
H3c	Science and technology innovation perception education → livelihood orientation	0.7612	21.5469	***	Hypothesis is true
H4a	Career orientation → entrepreneurial self-efficacy	0.839	28.358	***	Hypothesis is true
H4b	Mission orientation → entrepreneurial self-efficacy	0.854	30.081	***	Hypothesis is true
H4c	Livelihood orientation → entrepreneurial self-efficacy	0.814	25.756	***	Hypothesis is true
H5a	Career orientation → Entrepreneurial intention	0.792	23.788	***	Hypothesis is true
H5b	Mission orientation → Entrepreneurial intention	0.793	23.857	***	Hypothesis is true
H5c	Livelihood orientation → entrepreneurial intention	0.769	22.087	***	Hypothesis is true
H6	Entrepreneurial self-efficacy → entrepreneurial intention	0.862	31.171	***	Hypothesis is true

1. **Main effect test.** It can be concluded from Table 5 that the standardization coefficient of H1 is 0.7655 ($t = 21.844$, $p < 0.001$), indicating that the perceived education of scientific and technological innovation among undergraduates has a positive effect on entrepreneurial intention, indicating that hypothesis H1 is valid. Assuming that the standardization coefficient of H2 is 0.811 ($t = 25.483$, $p < 0.001$), it indicates that the perceived education of science and technology innovation among undergraduates has a positive impact on entrepreneurial self-efficacy, indicating that hypothesis H2 is valid. It is assumed that the standardization coefficient of H3a is 0.8481 ($t = 29.3855$, $p < 0.001$), indicating that the perceived education of science and technology innovation has a positive impact on the career orientation of undergraduates, indicating that hypothesis H3a is valid. It is assumed that the standardization coefficient of H3b is 0.8118 ($t = 25.5256$, $p < 0.001$). This indicates that the perceived education of science and technology innovation among college students positively affects the mission orientation, indicating that hypothesis H3b is valid. It is assumed that the standardization coefficient of H3c is 0.7612 ($t = 21.5469$, $p < 0.001$), indicating that the perceived education of science and technology innovation positively affects the livelihood orientation of college students, indicating that the hypothesis H3c is valid.

Assume that the standardization coefficient of H4a is 0.839 ($t = 28.358$, $p < 0.001$), which shows that the career orientation of college students has a positive impact on entrepreneurial self-efficacy, indicating that hypothesis H4a is valid. Assume that the standardization coefficient of H4b is 0.854 ($t = 30.081$, $p < 0.001$), indicating that undergraduates' mission orientation positively affects entrepreneurial self-efficacy, indicating that hypothesis H4b is valid. Assume that the standardization coefficient of H4c is 0.814 ($t = 25.756$, $p < 0.001$), indicating that undergraduates' livelihood orientation positively affects entrepreneurial self-efficacy, indicating that hypothesis H4c is valid. It is assumed that the standardization coefficient of H5a is 0.792 ($t = 23.788$, $p < 0.001$), indicating that the career orientation of college students positively affects the entrepreneurial intention of college students, indicating that the hypothesis H5a is valid. It is assumed that the standardization coefficient of H5b is 0.793 ($t = 23.857$, $p < 0.001$), indicating that the mission orientation of undergraduates positively affects the entrepreneurial intention of college students, indicating that the hypothesis H5b is valid. It is assumed that the standardization coefficient of H5c is 0.769 ($t = 22.087$, $p < 0.001$), indicating that the livelihood orientation of college students positively affects their entrepreneurial intention, which indicates that the hypothesis H5c is valid. Assume that the standardization coefficient of H6 is 0.862 ($t = 31.171$, $p < 0.001$), indicating that college students' entrepreneurial self-efficacy has a positive impact on entrepreneurial intention, indicating that hypothesis H6 is valid.

Table 6. Test results of mediating effect

Hypothetical Path	Effect Type	Effect Coefficient	SE-Value	LLCL	ULCL	Percentage of Effect
Science and technology innovation perception education → career orientation → entrepreneurial intention	Total effect	0.772	0.042	0.685	0.849	100%
	Direct effect	0.338	0.075	0.194	0.487	43.80%
	Indirect effect	0.434	0.067	0.301	0.562	56.20%
Science and technology innovation perception education → mission orientation → entrepreneurial intention	Total effect	0.772	0.042	0.686	0.848	100%
	Direct effect	0.361	0.065	0.230	0.486	46.81%
	Indirect effect	0.411	0.057	0.302	0.524	53.21%
Science and technology innovation perception education → livelihood orientation → entrepreneurial intention	Total effect	0.772	0.042	0.686	0.852	100%
	Direct effect	0.432	0.060	0.307	0.547	55.95%
	Indirect effect	0.340	0.050	0.253	0.450	44.05%
Science and technology innovation perception education → entrepreneurial self-efficacy → entrepreneurial intention	Total effect	0.772	0.042	0.686	0.850	100%
	Direct effect	0.196	0.054	0.091	0.301	25.39%
	Indirect effect	0.576	0.052	0.474	0.679	74.62%
Science and technology innovation perception education → career orientation → entrepreneurial self-efficacy → entrepreneurial intention	Standardized effect value	0.288	0.052	0.189	0.394	
Science and technology innovation perception education → mission orientation → entrepreneurial self-efficacy → entrepreneurial intention	Standardized effect value	0.288	0.043	0.206	0.372	
Science and technology innovation perception education → livelihood orientation → entrepreneurial self-efficacy → entrepreneurial intention	Standardized effect value	0.219	0.035	0.153	0.292	

2. **Intermediate effect test.** In this paper, the process plug-in recommended by Hayes was used to test the mediating effect. Model 6 was selected, the boot strap method was applied, and 5000 iterations were repeated to observe whether zero existed in LLCL and ULCL, so as to test the significance of the mediating effect. If LLCL and ULCL contain zero value, the hypothesis is not valid; if the confidence interval does not contain zero value, the mediation effect is valid [57]. In this paper, science and technology innovation perception education is taken as antecedent variable and college students' entrepreneurial intention as result variable to test the mediating effect (see Table 6). ① The indirect effect of path innovation perception education → career orientation → entrepreneurial intention was significant (β = 0.434), Bootstrap 95%CI (0.301,0.562). ② The indirect effect of path technology innovation perception education → mission orientation → entrepreneurial intention was significant (β = 0.411), Bootstrap 95%CI (0.302,0.524). ③ The indirect effect of path technology innovation perception education → livelihood orientation → entrepreneurial intention was significant (β = 0.34), Bootstrap 95%CI (0.253,0.45). ④ The indirect effect of path technology innovation perception education → entrepreneurial self-efficacy → entrepreneurial intention was significant (β = 0.576), Bootstrap 95%CI (0.474,0.679). ⑤ The effect value of path technology innovation perception education → career orientation → entrepreneurial self-efficacy → entrepreneurial intention is 0.288, and Bootstrap 95%CI (0.189,0.394) excluding 0, indicating a significant mediating effect. ⑥ The effect value of path science and technology innovation perception education → mission orientation → entrepreneurial self-efficacy → entrepreneurial intention is 0.288, and Bootstrap 95%CI (0.206,0.372), which does not contain 0, that is, the intermediary effect is significant. ⑦ The effect value of path innovation perception education → livelihood orientation → entrepreneurial self-efficacy → entrepreneurial intention was 0.219, and Bootstrap 95%CI (0.153,0.292), so the mediating effect was significant.

5 CONCLUSION AND SUGGESTION

5.1 Conclusion

Based on the perceived education of science and technology innovation, this paper focuses on the effects of career orientation, mission orientation, and livelihood orientation under the perceived education of science and technology innovation on college students' entrepreneurial self-efficacy and entrepreneurial intention. It turns out that perceived education in science and technology innovation and work value orientation can significantly affect the entrepreneurial self-efficacy and entrepreneurial intention of college students.

1. College students' scientific and technological innovation perception education positively affected their entrepreneurial intentions. Previous studies did not take science and technology innovation perception education as an independent variable, but this paper did, and it confirmed that the science and technology innovation perception education of college students can directly and positively affect their entrepreneurial intentions. College students obtain relevant information about entrepreneurship through entrepreneurship education courses and have expectations about their future career plans. When college students' educational

concepts are roughly consistent with their employment expectations, they will be driven to affirm their entrepreneurial ideas and take the initiative to obtain relevant policies to promote the initiation of entrepreneurial intentions.

2. College students' work-value orientation has a significant impact on their entrepreneurial self-efficacy. According to the path coefficient, career orientation, mission orientation, and livelihood orientation all have a positive effect on college students' entrepreneurial self-efficacy, and the path coefficients are all greater than 0.8. It shows that the higher the degree of work value perceived by college students through science and technology innovation and entrepreneurship education, the higher the self-efficacy of college students in entrepreneurship. As intermediary variables, work value orientation and entrepreneurial self-efficacy significantly affect the entrepreneurial intentions of college students. Therefore, it can guide the work value orientation of undergraduates, improve entrepreneurial self-efficacy, and thus enhance the entrepreneurial intention of college students.
3. Work-value orientation and entrepreneurial self-efficacy have a direct impact on entrepreneurial intention. Through the comparison of path coefficients, it is found that the path coefficient of entrepreneurial self-efficacy and entrepreneurial intention is greater than that of work-value orientation and entrepreneurial intention. It indicates that entrepreneurial self-efficacy is the primary condition for college students to consider whether to start a business. Therefore, to improve college students' entrepreneurial intentions, mainly by increasing undergraduates' sense of entrepreneurial self-efficacy.

5.2 Management suggestion

The current employment situation is grim; promoting entrepreneurship among undergraduates can effectively relieve the employment pressure. China vigorously promotes preferential policies to encourage entrepreneurship among undergraduates, which has achieved certain effects in improving the entrepreneurial intentions of college students, but the current situation of undergraduates' entrepreneurship is not optimistic. It is found that science and technology innovation perception education has a significant positive effect on improving students' entrepreneurial awareness and that different work-value orientations have different effects on the entrepreneurial intentions of college students. Entrepreneurship education can make good use of this law to develop entrepreneurial intention enhancement programs that meet the personality characteristics of college students. In view of this, this paper puts forward some suggestions on how to improve the entrepreneurial intentions of undergraduates for innovation and entrepreneurship education in universities.

Universities should strengthen science and technology innovation perception education and do a good job in student employment guidance. Science and technology innovation perception education has positively affected college students' entrepreneurial intention. Therefore, schools should invest more in science and technology innovation education, including science and technology innovation, entrepreneurship, and other related content in the curriculum. Encourage students to participate in scientific and technological innovation projects and competitions such as the "Youth Creation" and National College Students Entrepreneurship Competition, which help in improving college students' scientific and technological innovation awareness and ability, guide them to understand the

importance of scientific and technological innovation, and develop a passion for it through competition-based learning and training. Further clarify the direction of the future.

In addition to strengthening the practice of innovation and entrepreneurship education, the questionnaire survey shows that college students have little understanding and insufficient interpretation of innovation and entrepreneurship policies, which has become an important factor restricting the further improvement of college students' entrepreneurial intentions. Compared with other groups of entrepreneurs, there are gaps in capital, contacts, management level, and so on. For college entrepreneurs with insufficient social experience and limited policy information channels, university education should do a good job in entrepreneurship guidance, provide the latest scientific and technological information and trends, cultivate students' scientific and technological sensitivity and innovation consciousness, and feedback students' demands and suggestions on policies to optimize the entrepreneurial environment.

Universities improve students' self-efficacy and achieve diversified employment. Work-value orientation significantly affects college students' sense of entrepreneurial self-efficacy. Therefore, schools should guide students to develop the correct work-value orientation, such as encouraging students to focus on personal development and career planning, respect labor and innovation, and cultivate a sense of responsibility and mission. Entrepreneurship classes can guide college students to develop values conducive to their own development, such as a sense of responsibility and mission for their career, through courses, seminars, and lectures. Understanding the value of work will increase their entrepreneurial self-efficacy, which will enhance their entrepreneurial intentions.

Entrepreneurial self-efficacy is the primary condition for college students to consider whether to start a business. Therefore, schools should take measures to improve college students' entrepreneurial self-efficacy, such as offering entrepreneurship courses, providing entrepreneurship guidance services, and establishing an entrepreneurship tutor system. Outside the classroom, a series of entrepreneurship training and educational opportunities can be conducted to improve the entrepreneurial skills and self-confidence of undergraduates, such as entrepreneurship consulting, setting up a simulated entrepreneurial environment, or inviting successful entrepreneurs to share their experiences and stories. Strengthen students' entrepreneurial ability and confidence, improve their awareness of self-entrepreneurial ability, and stimulate their entrepreneurial intentions.

Universities provide more resources related to entrepreneurship to guide college students to start their own businesses. Colleges and universities should guide students to plan in advance about employment, to understand the comprehensive qualities required to enter society, and to prepare for employment. Firstly, universities should set up Maker Spaces to provide a series of entrepreneurial support services for college students with entrepreneurial intentions, including consulting, project guidance, venture capital links, and so on. A start-up fund can also be set up to provide financial support for college students with innovative and entrepreneurial ideas. Schools should provide a series of support measures to enhance the entrepreneurial intentions of undergraduates, such as venture capital support, business incubators, and other resources. Finally, it provides opportunities for role simulation or actual combat so that students can consider the whole entrepreneurial process as entrepreneurs and try to make college students' entrepreneurial projects from conception to implementation to enhance their entrepreneurial confidence.

The content of entrepreneurship courses and training education courses will change from book to practical, in-depth interpretation of the entrepreneurial process and preferential policies, so that students have a basic understanding of it and make good use of the preferential policies of the government and universities for college students to start businesses. In the initial stages, most college students tend to occupy the market with their expertise in technological innovation. Currently, intellectual property protection can provide a more favorable policy environment and business environment for these entrepreneurs, as well as timely provide consulting services for senior personnel related to entrepreneurship for college students, which is conducive to the transformation of entrepreneurial projects and escort for college students' entrepreneurship.

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