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THE IMPACT OF PROACTIVE PERSONALITY ON ENTREPRENEURIAL BEHAVIOR: AN EMPIRICAL STUDY BASED ON CHINESE HIGHER VOCATIONAL COLLEGES

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Abstract:
This study investigates the process and conditions under which a proactive personality influences entrepreneurial behavior among college students. Utilizing scales for proactive personality, entrepreneurial self-efficacy, entrepreneurial intention, and entrepreneurial behavior, a survey was conducted among 987 students from five higher vocational colleges in Jiangxi Province, China. The findings reveal that a proactive personality has a positive and significant impact on entrepreneurial behavior. In the influence of proactive personality on entrepreneurial behavior, entrepreneurial self-efficacy plays a fully mediating role, while entrepreneurial intention partially mediates this relationship. Furthermore, a proactive personality affects entrepreneurial behavior through a chain mediation of entrepreneurial self-efficacy and entrepreneurial intention. This research enriches the theoretical framework of entrepreneurial behavior formation and provides empirical evidence for higher education institutions to develop targeted entrepreneurial education strategies. The results enhance our understanding of the mechanisms through which a proactive personality influences entrepreneurial behavior among college students, offering both theoretical and empirical significance for promoting entrepreneurial behavior in this demographic.

Keywords: proactive personality, entrepreneurial self-efficacy, entrepreneurial intention, entrepreneurial behavior, higher vocational education

1. Introduction

1.1 Research Background and Significance

Entrepreneurship has a recognized impact on a country's economic growth, job creation, and innovation (Cardella *et al.*, 2020; Laguía *et al.*, 2019). Governments at all levels often

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rely on entrepreneurial startups to generate employment opportunities (Laguía *et al.*, 2019; Sanchez-Garcia *et al.*, 2018). Entrepreneurship can bring about technological innovation and organizational breakthroughs, alleviate employment pressure, and ultimately promote economic development (Gieure *et al.*, 2020). As an increasing number of people in China pursue and complete higher education, securing a suitable job has become a significant concern for college students. Consequently, universities are encouraging students to engage in entrepreneurial practices to alleviate employment pressure (Li *et al.*, 2020).

Despite substantial investments from both the government and educational institutions, the entrepreneurial rate and success rate among students in Chinese higher vocational colleges remain relatively low. According to the latest statistical data (see Table 1), the entrepreneurial rate of graduates from higher vocational colleges in China in 2023 was only 3.287%, significantly lower than the 5.962% of graduates from undergraduate institutions (National Bureau of Statistics, 2024). This situation underscores the necessity and urgency of conducting in-depth research into the factors influencing the entrepreneurial behavior of students in higher vocational colleges.

Table 1: Comparison of Entrepreneurial rates of Chinese College Graduates from 2019 to 2023

Years	The entrepreneurship rate of higher vocational colleges (%)	The entrepreneurship rate of undergraduate colleges (%)
2019	2.453	4.782
2020	2.687	5.103
2021	2.892	5.435
2022	3.105	5.721
2023	3.287	5.962

Existing research has shown that individual psychological traits and cognitive abilities play a crucial role in the entrepreneurial process (Frese & Gielnik, 2014). Among these, proactive personality has a decisive impact on individual entrepreneurial behavior (Neneh, 2019), entrepreneurial self-efficacy positively influences entrepreneurial intention (Aima *et al.*, 2020), and entrepreneurial intention is the strongest predictor of entrepreneurial behavior (Gieure *et al.*, 2020). However, these studies primarily focus on undergraduate or graduate students in Western contexts, with relatively less attention given to students in Chinese higher vocational colleges. Furthermore, existing research often overlooks the combined role of entrepreneurial self-efficacy and entrepreneurial intention in the influence of personality traits on entrepreneurial behavior.

1.2 Research Objectives

Based on the aforementioned background, this study focuses on students from higher vocational colleges in Jiangxi Province, China, to explore the complex relationships among proactive personality, entrepreneurial self-efficacy, entrepreneurial intention, and entrepreneurial behavior. Specifically, this study has the following three main objectives: To construct and validate a theoretical model integrating proactive personality,

entrepreneurial self-efficacy, entrepreneurial intention, and entrepreneurial behavior, and to delve into the mechanisms of interaction among these variables. To investigate the mechanism of entrepreneurial self-efficacy in the influence of proactive personality on entrepreneurial behavior, thereby enriching the theoretical understanding of entrepreneurial self-efficacy.

To examine the impact of entrepreneurial intention on the relationship between proactive personality and entrepreneurial behavior, offering new perspectives for the personalization and differentiation of entrepreneurial education.

1.3 Theoretical Contribution and Practical Value

This study has important theoretical and practical significance:

1.3.1 Theoretical Contributions

This study extends the existing theoretical framework of entrepreneurial behavior, particularly by introducing the combined role of entrepreneurial self-efficacy and entrepreneurial intention, providing a more detailed and comprehensive explanatory mechanism. This multidimensional perspective contributes to a deeper understanding of the formation process of entrepreneurial behavior (Neneh, 2019).

By exploring the chain-mediating role of entrepreneurial self-efficacy and entrepreneurial intention, this study enriches our understanding of the boundary conditions in the relationship between proactive personality and entrepreneurial behavior, offering new theoretical insights into the role of individuals in the entrepreneurial process.

Focusing on students from higher vocational colleges in Jiangxi Province, China, this study fills a gap in entrepreneurial research in this field and provides new empirical evidence for cross-cultural entrepreneurial studies. This perspective aids in understanding the differences in entrepreneurial behavior across various cultural contexts.

1.3.2 Practical Value

This study provides empirical support for the development of more targeted entrepreneurial education strategies in Chinese higher vocational colleges, helping to enhance students' entrepreneurial intentions and success rates (Luo *et al.*, 2022). This is of significant importance for improving students' entrepreneurial capabilities and market competitiveness.

By revealing the specific roles of proactive personality, entrepreneurial self-efficacy, and entrepreneurial intention in entrepreneurial behavior, this study offers concrete guidance for the design of entrepreneurial education curricula and the optimization of training programs. Specifically, it provides insights into how to enhance students' innovation capabilities, risk tolerance, and opportunity identification skills through education.

The study's finding of the chain-mediating role of entrepreneurial self-efficacy and entrepreneurial intention provides a theoretical basis for implementing personalized and differentiated entrepreneurial education. Such tailored educational strategies can improve the effectiveness of education and support students' entrepreneurial development in their respective fields.

2. Literature Review and Hypothesis Formulation

2.1 Proactive Personality and Entrepreneurial Behavior

Proactive personality refers to a relatively stable personality tendency where individuals are inclined to actively seek out opportunities, take action, and persist until meaningful change is achieved (Bateman & Grant, 1993). In the field of entrepreneurship, a proactive personality is regarded as a key individual trait that significantly predicts entrepreneurial behavior (Grant, 1996; Prabhu *et al.*, 2012).

Previous research has shown that individuals with a high level of proactive personality are more likely to identify and seize entrepreneurial opportunities and demonstrate greater resilience and perseverance when facing challenges (Rauch & Frese, 2007). For example, Fuller & Marler (2009) found a significant positive correlation between proactive personality and entrepreneurial intention ($r = 0.37$, $p < 0.001$). In the Chinese context, Zhou *et al.* (2019) also found that a proactive personality has a significant positive impact on entrepreneurial behavior ($\beta = 0.412$, $p < 0.01$) in their study of 438 college students. However, these studies primarily focus on undergraduate students, with relatively less attention given to students in higher vocational colleges. Based on the above literature, the researchers propose the following hypothesis:

H1: Proactive personality has a significant positive impact on college students' entrepreneurial behavior.

2.2 Proactive Personality and Entrepreneurial Intention

Previous research has found that proactive individuals exhibit higher entrepreneurial intentions (Crant, 1995). Entrepreneurial intention reflects an individual's subjective willingness to engage in entrepreneurship and can thus serve as a suitable predictor of entrepreneurial behavior (Bird, 1988). Empirical studies have shown that personality traits significantly influence college students' entrepreneurial intentions, with individuals possessing proactive personalities being more likely to pursue entrepreneurship (Awwad & Al-Aseer, 2021; Cai *et al.*, 2021; Tong *et al.*, 2022). In the field of educational research, a proactive personality has been found to significantly impact college students' entrepreneurial intentions (Paul & Shrivatava, 2016; Zareieshamsabadi *et al.*, 2010). For instance, a study focusing on students from two universities in Turkey revealed that a proactive personality positively predicts their entrepreneurial intentions (Yıldırım & Aşkun, 2016). Certain personality traits are considered prerequisites for entrepreneurship and influence entrepreneurial intentions (Utsch & Rauch, 2000). A

proactive personality has a significant and positive impact on entrepreneurial intention (Luo *et al.*, 2022). Based on these findings, this study proposes the following hypothesis:

H2: A proactive personality has a significant positive impact on college students' entrepreneurial intention.

2.3 Proactive Personality and Entrepreneurial Self-Efficacy

Parker and Collins (2010) proposed a model of proactive inspiration processes and antecedents, which demonstrates that proactive personality orientation influences self-efficacy. Individuals with highly proactive personalities tend to view themselves positively, believing that they can generate favorable outcomes, which in turn affects their entrepreneurial self-efficacy (Campbell *et al.*, 2004). Self-efficacy enhances an individual's sense of control and the perceived likelihood of achieving success (Morrison *et al.*, 1999), making it crucial for proactive personalities. Barling and Beattie (1983) suggested that task-related self-efficacy can increase individuals' effort and reduce feelings of fatigue, thereby improving their chances of completing challenging tasks. The self-efficacy associated with proactive personalities enables individuals to overcome obstacles and achieve difficult goals (Locke & Latham, 1990). Therefore, this study proposes the following hypothesis:

H3: A proactive personality has a significant positive impact on college students' entrepreneurial self-efficacy.

2.4 Entrepreneurial Self-Efficacy and Entrepreneurial Behavior

Empirical research by De Noble (1999) has shown that entrepreneurial self-efficacy significantly predicts whether individuals will engage in entrepreneurial behavior. Individuals who believe in their own abilities in a particular area exhibit stronger goal persistence (Halper & Vancouver, 2016). Entrepreneurial self-efficacy contributes to entrepreneurial behavior (Darmanto & Yuliari, 2018; Neneh, 2019). It can predict the selection, maintenance, and ultimate outcomes of entrepreneurial behavior, and is closely linked to entrepreneurial actions. The level and strength of entrepreneurial self-efficacy are largely influenced by socio-cultural contexts (Darmanto & Yuliari, 2018). Zhao *et al.* (2005) demonstrated the positive correlation between entrepreneurial self-efficacy and entrepreneurial behavior. Furthermore, entrepreneurial self-efficacy plays a constructive role in shaping entrepreneurial prospects, the development of new projects, and the execution of individual entrepreneurial tasks. Therefore, this study proposes the following hypothesis:

H4: Entrepreneurial self-efficacy has a significant positive impact on college students' entrepreneurial behavior.

2.5 Entrepreneurial Self-Efficacy and Entrepreneurial Intention

Entrepreneurial self-efficacy has a significant positive impact on entrepreneurial intention (Borchers & Park, 2010; Chen *et al.*, 1998; De Noble *et al.*, 2007). Entrepreneurial self-efficacy is considered the strongest antecedent of entrepreneurial intention (Niu *et*

al., 2022). Past experiences and behaviors can influence future entrepreneurial intentions and actions by enhancing entrepreneurial self-efficacy (McGee & Peterson, 2019). Pihie and Bagheri (2013), in their study on Malaysian university students, found that entrepreneurial self-efficacy significantly and positively influences entrepreneurial intention. Similarly, Liu *et al.* (2019), in their research on Chinese university students, discovered that entrepreneurial self-efficacy significantly and positively affects entrepreneurial intention. Studies on Indonesian university students also revealed that entrepreneurial self-efficacy significantly and positively influences entrepreneurial intention (Aima *et al.*, 2020). Neneh (2020), through a survey of valid questionnaires from university students, found that entrepreneurial self-efficacy positively impacts entrepreneurial intention. Based on these findings, this study proposes the following hypothesis:

H5: Entrepreneurial self-efficacy has a significant positive impact on college students' entrepreneurial intention.

2.6 Entrepreneurial Intention and Entrepreneurial Behavior

Entrepreneurial intention is associated with an individual's willingness to develop entrepreneurial behavior and commit to starting a new business (Ceresia & Mendola, 2019). Previous studies have acknowledged the importance of the entrepreneurial intention model in understanding entrepreneurial phenomena and have proven it to be an effective indicator for measuring entrepreneurial behavior (Fayolle & Gailly, 2015; Shirokova *et al.*, 2016). Entrepreneurial intention ultimately leads to entrepreneurial behavior (Shirokova *et al.*, 2016; Yi, 2021). Entrepreneurial intention is the strongest predictor of entrepreneurial behavior (Neneh, 2019). Entrepreneurial behavior is the practical manifestation of entrepreneurial intention (Covin *et al.*, 1989). College students' entrepreneurial intention has a significant positive impact on entrepreneurial behavior (Gieure *et al.*, 2020). Research by Ajzen *et al.* (2009) on the relationship between entrepreneurial intention and entrepreneurial behavior indicates a correlation ranging between 0.900 and 0.960. Peng *et al.* (2013) stated that entrepreneurial intention reflects an individual's strong subjective attitude toward entrepreneurial activities and is the best indicator for predicting entrepreneurial behavior. Based on these findings, this study proposes the following hypothesis:

H6: Entrepreneurial intention has a significant positive impact on college students' entrepreneurial behavior.

2.7 Proactive Personality, Entrepreneurial Self-Efficacy, and Entrepreneurial Behavior

Based on an analysis of previous research, entrepreneurial self-efficacy often plays a mediating role in the cognitive processes of individuals. Cai *et al.* (2020), in their study on the passion for entrepreneurship, entrepreneurial alertness, entrepreneurial self-efficacy, and proactive personality, found that entrepreneurial self-efficacy mediates the relationship between proactive personality and entrepreneurial behavior. Wu *et al.* (2019) analyzed the relationships among the Dark Triad traits (narcissism, psychopathy, and

Machiavellianism), entrepreneurial self-efficacy, and entrepreneurial intention. Their research revealed that entrepreneurial self-efficacy mediates the relationship between the three Dark Triad traits and entrepreneurial intention. Entrepreneurial self-efficacy partially mediates the relationship between narcissistic personality and entrepreneurial intention (Gao & Huang, 2021). Chien *et al.* (2020), focusing on college students as social entrepreneurs, examined the relationships between emotional competence, entrepreneurial self-efficacy, and entrepreneurial intention. The results indicated that all dimensions of entrepreneurial self-efficacy are significantly positively correlated with entrepreneurial intention, and entrepreneurial self-efficacy mediates the relationship between emotional competence and entrepreneurial intention. Based on these findings, this study proposes the following hypothesis:

H7: Entrepreneurial self-efficacy mediates the relationship between proactive personality and entrepreneurial behavior among college students.

2.8 Proactive Personality, Entrepreneurial Intention, and Entrepreneurial Behavior

The positive predictive effect of a proactive personality on entrepreneurial behavior has been well-documented (Neneh, 2019). Proactive personality enhances entrepreneurial behavior among college students (Brandstätter, 2011; Li *et al.*, 2020). The formation of individual entrepreneurial intention is closely linked to the personal traits of entrepreneurs (Franke, 2012), and entrepreneurial intention is a prerequisite for entrepreneurial behavior (Ajzen, 1991). Research exploring the relationship between entrepreneurial intention and entrepreneurial behavior has shown a strong correlation ranging from 0.900 to 0.960 (Ajzen *et al.*, 2009). Entrepreneurial intention mediates the relationship between entrepreneurial cognition and entrepreneurial behavior (Chen *et al.*, 2022). While entrepreneurial intention is influenced by individual personality traits, it also impacts entrepreneurial behavior. Individuals with stronger entrepreneurial intentions are more likely to exhibit entrepreneurial-related behaviors (Kautonen *et al.*, 2015; Krueger & Carsrud, 2000). Zheng *et al.* (2022), in their study on the impact of proactive personality on college students' entrepreneurial behavior, found that entrepreneurial intention partially mediates the relationship between proactive personality and entrepreneurial behavior. Based on these findings, this study proposes the following hypothesis:

H8: Entrepreneurial intention mediates the relationship between proactive personality and entrepreneurial behavior among college students.

2.9 Proactive Personality, Entrepreneurial Self-Efficacy, Entrepreneurial Intention, and Entrepreneurial Behavior

Crant (1996) argued that proactive individuals typically exhibit a strong tendency to identify opportunities and take action, highlighting the importance of a proactive personality in predicting entrepreneurial behavior and its interaction with entrepreneurial intention. Major *et al.* (2012) found that students with highly proactive personalities are more likely to actively plan and take necessary actions to achieve their

academic goals. In the context of entrepreneurship, proactive individuals are seen as those who ultimately act on the opportunities they identify (Brandstätter, 2011). Proactive personality plays a crucial role in predicting entrepreneurial intention and behavior, as individuals with high levels of proactive personality are more likely to be motivated to design and take necessary actions to achieve their goals (Van Gelderen *et al.*, 2008; Neneh, 2019). Entrepreneurial self-efficacy is often a critical measure of business intentions (Zhao *et al.*, 2005). Zhao *et al.* (2005) found that entrepreneurial self-efficacy mediates the relationship between entrepreneurial experience and entrepreneurial intention. Similarly, Prabhu *et al.* (2012) demonstrated that entrepreneurial self-efficacy mediates the relationship between proactive personality and entrepreneurial intention. Individuals with stronger entrepreneurial intentions are more inclined to engage in actual behaviors related to new business development. Existing literature has significantly contributed to understanding the impact of entrepreneurial intention on entrepreneurial behavior, highlighting its positive influence (Daim *et al.*, 2016; Feola *et al.*, 2019; Kautonen *et al.*, 2013). Entrepreneurial intention positively affects entrepreneurial behavior and serves as an effective indicator for measuring entrepreneurial behavior (Fayolle & Gailly, 2015; Shirokova *et al.*, 2016). Based on these findings, this study proposes the following hypothesis:

H9: Entrepreneurial self-efficacy and entrepreneurial intention play a chain-mediating role in the relationship between proactive personality and entrepreneurial behavior among college students.

2.10 Research Hypothesis and Theoretical Model

Based on the above literature review and assumptions, the researchers proposed a theoretical model as shown in Figure 1:

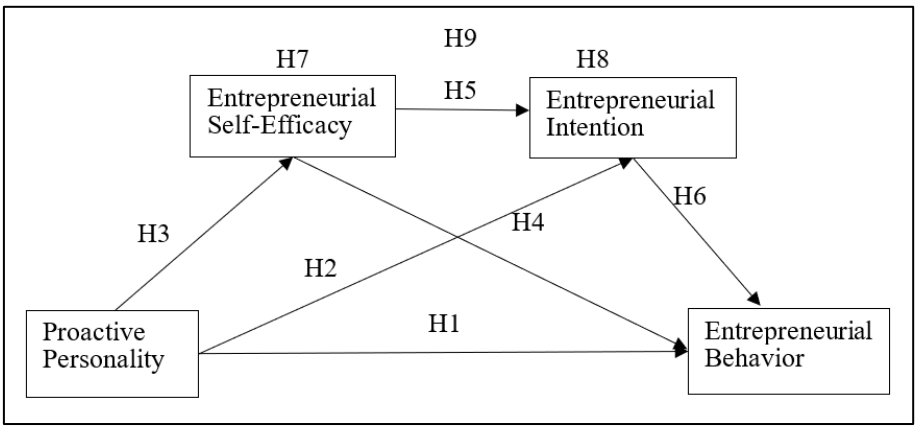

Figure 1: Theoretical Model

This theoretical model integrates multidimensional constructs such as proactive personality, entrepreneurial self-efficacy, entrepreneurial intention, and entrepreneurial behavior, aiming to provide a comprehensive explanation of the formation mechanism of entrepreneurial behavior among students in Chinese higher vocational colleges.

3. Research Methods

3.1 Sample and Data Collection

This study employed a questionnaire survey method to collect data from higher vocational college students in mainland China. The researchers used a stratified random sampling method, first stratifying by region and school type and then randomly selecting schools and students within each stratum. The questionnaires were distributed both online and offline, with the online surveys conducted via a digital platform and the offline surveys distributed as paper questionnaires in classrooms.

Data collection took place from September to December 2023. A total of 1,050 questionnaires were distributed, and 987 were deemed valid, resulting in an effective collection rate of 94.00%. The criteria for eliminating invalid questionnaires included an answer time that was too short (less than 5 minutes), a large number of missing responses (missing rate exceeding 10%), and patterns in the answers that indicated regularity.

The basic characteristics of the final sample are shown in Table 2:

Table 2: Basic Characteristics of Samples (N=987)

Feature	Category	Frequency	Percentage (%)
Gender	Male	540	54.71
	Female	447	45.29
Subject Background	Science and Engineering	511	51.77
	Humanities and Social Sciences	476	48.23
Family Entrepreneurial Background	Yes	395	40.02
	No	592	59.98

3.2 Variable Measurement

The main variables involved in this study include proactive personality, entrepreneurial self-efficacy, entrepreneurial behavioral, gender, and subject background. All scales were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Proactive personality: The simplified proactive personality scale developed by Seibert *et al.* (1999) was used, which contains 10 items. Sample items include: "I am always looking for ways to improve things" and "No matter what obstacles I encounter, as long as I believe, I will definitely realize my ideas." In this study, the Cronbach's α coefficient of this scale was 0.918, indicating good internal consistency reliability.

Entrepreneurial self-efficacy: The entrepreneurial self-efficacy scale developed by Tang Ming (2009) was used. The scale covers five dimensions: innovation, marketing, management, risk-taking, and financial control, with a total of 22 items. Example items include: "I am confident in discovering new business opportunities" and "I can manage financial resources effectively." In this study, the Cronbach's α coefficient of the scale was 0.965, showing a high internal consistency.

Entrepreneurial Intention: The scale developed by Thompson (2009) was adopted to assess college students' self-evaluation of entrepreneurial intention. The scale is

unidimensional and consists of 6 items. The Cronbach's Alpha value for this scale is 0.790, the KMO sampling adequacy value is 0.753, and the cumulative variance explained is 80.662%.

Entrepreneurial behavioral: The entrepreneurial intention scale developed by Gieure *et al.* (2020) was used, which includes 6 items. Sample items include: "I am ready to do anything to become an entrepreneur" and "My career goal is to become an entrepreneur." The Cronbach's α coefficient of this scale in this study is 0.905, indicating that the scale has good reliability.

Gender: Coded as a dummy variable where male = 0 and female = 1.

Academic Background: Based on students' academic backgrounds, they were categorized into science and engineering majors, and humanities and social sciences majors. Dummy variable coding was used, with science and engineering majors as the reference group.

Additionally, this study controlled for other potential influencing factors, such as age, family entrepreneurial background (whether parents have entrepreneurial experience), and entrepreneurial education experience (whether they have participated in entrepreneurship-related courses or training). The inclusion of these control variables helps reduce the impact of external factors on the research results, ensuring the accuracy and scientific rigor of the analysis.

3.3 Data Analysis Methods

This study utilized SPSS 26.0 and AMOS for detailed data analysis. The main steps are as follows:

- Descriptive Statistical Analysis: First, the mean, standard deviation, and correlation coefficients of each variable were calculated to outline the basic characteristics of the data.
- Reliability and Validity Tests: Cronbach's α coefficient was used to evaluate the internal consistency reliability of the scales, and Confirmatory Factor Analysis (CFA) was employed to test the fit of the measurement model, ensuring the reliability and validity of the scales.
- Common Method Bias Test: Harman's single-factor test was used to assess the impact of common method bias, verifying whether bias in the study would significantly affect the results (Pihie & Bagheri, 2013).
- Hierarchical Regression Analysis: This was used to test the direct impact of proactive personality on entrepreneurial behavior (Hypothesis 1). This analytical method reveals the independent contribution of the independent variable to the dependent variable.
- Bootstrap Method: Following Prabhu *et al.* (2012), 5,000 repeated samplings were conducted to test the mediating roles of entrepreneurial self-efficacy and entrepreneurial intention in the relationship between proactive personality and entrepreneurial behavior (Hypotheses 7 and 8). This method provides robust estimates of the mediation effects.

- Robustness test: To ensure the stability of the research results, this study also employed other statistical methods, such as Structural Equation Modeling (SEM), to replicate the main analyses. This process helps verify the stability and consistency of the analytical results, ensuring the reliability of the research conclusions.

In order to more intuitively demonstrate the data analysis process, the researchers provided the following analysis flow chart:

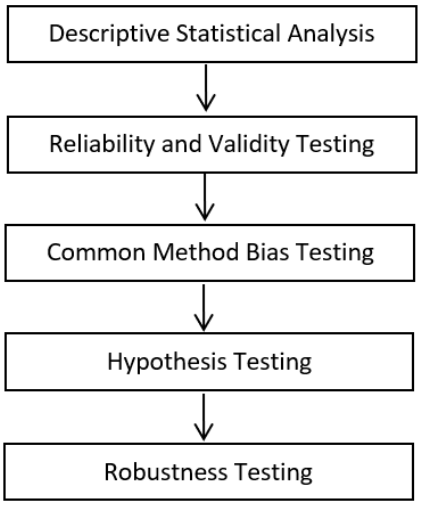

Figure 2: Data Analysis Flow Chart

Through these rigorous data analysis methods, the researchers aim to fully test the research hypotheses and ensure the reliability and validity of the research results. In the next section, the researchers will present the results of the data analysis in detail.

4. Research Results

4.1 Descriptive Statistics and Correlation Analysis

Table 3 presents the descriptive statistics and correlation coefficient matrix of the main variables.

Table 3: Descriptive Statistics and Correlation Analysis Results (N=987)

Variable	M	SD	PP	ESE	EI	EB
PP	3.858	0.772	1			
ESE	3.767	0.810	0.872***	1		
EI	3.638	0.777	0.653***	0.710***	1	
EB	3.262	1.116	0.612***	0.725***	0.698***	1

Note: The values in the diagonal brackets are the Cronbach's α coefficients of the scale;
*p < 0.05, **p < 0.01, ***p < 0.001.
PP=Proactive Personality, ESE=Entrepreneurial Self-Efficacy, EI=Entrepreneurial Intention, EB=Entrepreneurial Behavior.

From Table 3, it can be observed that there are significant correlations among the main variables. The results show that the mean scores for college students are as follows: proactive personality (M = 3.858), entrepreneurial self-efficacy (M = 3.767), entrepreneurial intention (M = 3.638), and entrepreneurial behavior (M = 3.262). These indicate that proactive personality, entrepreneurial self-efficacy, entrepreneurial intention, and entrepreneurial behavior are all at a moderately high level among college students.

Proactive personality is significantly positively correlated with entrepreneurial self-efficacy (R = 0.872, $p < 0.001$), entrepreneurial intention (R = 0.653, $p < 0.001$), and entrepreneurial behavior (R = 0.612, $p < 0.001$). Entrepreneurial self-efficacy also shows strong positive correlations with entrepreneurial intention (R = 0.710, $p < 0.001$) and entrepreneurial behavior (R = 0.725, $p < 0.001$). Additionally, the entrepreneurial intention is significantly positively correlated with entrepreneurial behavior (R = 0.698, $p < 0.001$). These preliminary results provide support for the researchers' hypotheses.

4.2 Regression Analysis

The researchers employed hierarchical regression analysis to test the direct impact of proactive personality on entrepreneurial behavior (Hypothesis 1) and the mediating roles of entrepreneurial self-efficacy and entrepreneurial intention in the relationship between proactive personality and entrepreneurial behavior (Hypotheses 7 and 8). The results of the regression analysis are presented in Table 4 and Table 5.

Table 4: Regression Analysis of the Mediating Effect of Entrepreneurial Self-Efficacy (N=987)

Variable	Model 1 EB	Model 2 ESE	Model 2 EB	VIF
Control variables	-	-	-	-
Gender	-0.187**	-0.080*	-0.102	1.544
Subject background	0.022	-0.020	0.044	1.514
Independent variable	-	-	-	-
PP	0.850***	0.903***	-0.116	4.187
Mediation variable	-	-	-	-
ESE	-	-	1.070***	4.253
R^2	0.392	0.765	0.534	-
Adj R^2	0.389	0.764	0.531	-
F	126.615***	638.186***	187.110***	-

Note: The table presents standardized regression coefficients.
*p < 0.05, **p < 0.01, ***p < 0.001 ;
PP=Proactive Personality, ESE=Entrepreneurial Self-Efficacy, EB=Entrepreneurial Behavior.

The research results are shown in Table 4. After controlling for the background variables of gender and major, in Model 1, proactive personality has a significant positive impact on entrepreneurial behavior ($\beta = 0.850$, $p < 0.001$). In Model 2, a proactive personality has a significant positive impact on entrepreneurial self-efficacy ($\beta = 0.903$, $p < 0.001$). In Model 3, entrepreneurial self-efficacy has a significant positive impact on entrepreneurial

behavior (β = 1.070, $p < 0.001$), while the direct effect of proactive personality on entrepreneurial behavior becomes insignificant, decreasing from (β = 0.850, $p < 0.001$) to (β = -0.116, $p > 0.05$). The results indicate that entrepreneurial self-efficacy plays a fully mediating role in the relationship between proactive personality and entrepreneurial behavior.

Table 5: Regression Analysis of the Mediating Effect of Entrepreneurial Intention (N=987)

Variable	**Model 1 EB**	**Model 2 EI**	**Model 2 EB**	**VIF**
Control variables	-	-	-	-
Gender	-0.187**	-0.042	-0.157**	1.535
Subject background	0.022	0.032	0.000	1.514
Independent variable	-	-	-	-
PP	0.849***	0.672***	0.376***	1.712
Mediation variable	-	-	-	-
EI	-	-	0.704***	1.682
R^2	0.392	0.406	0.551	-
Adj R^2	0.389	0.403	0.548	-
F	126.615***	133.890***	200.598***	-

Note: The table presents standardized regression coefficients.
*p < 0.05, **p < 0.01, ***p < 0.001 ;
PP=Proactive Personality, EI=Entrepreneurial Intention, EB=Entrepreneurial Behavior.

The research findings are presented in Table 5. After controlling for the variables of gender and major, in Model 1, proactive personality has a significant positive impact on entrepreneurial behavior (β = 0.849, $p < 0.001$). In Model 2, proactive personality significantly and positively influences entrepreneurial intention (β = 0.672, $p < 0.001$). In Model 3, after introducing entrepreneurial intention as a mediating variable, the impact of entrepreneurial intention on entrepreneurial behavior remains significant (β = 0.704, $p < 0.001$), while the direct effect of proactive personality on entrepreneurial behavior significantly weakens but remains significant, with the standardized regression coefficient β decreasing from (β = 0.849, $p < 0.001$) to (β = 0.376, $p < 0.001$). The results indicate that entrepreneurial intention plays a partial mediating role in the influence of proactive personality on entrepreneurial behavior.

4.3 Mediation Effect Test

To examine the mediating role of entrepreneurial self-efficacy (Hypothesis 7), the researchers employed the Bootstrap method for analysis. Table 6 presents the results of the mediation effect analysis of entrepreneurial self-efficacy.

Table 6: Analysis Results of the Mediation Effect of Entrepreneurial Self-Efficacy (N=987)

Path	Effect Size	SE	95% CI
Direct Effect：PP→EB	-0.117	0.065	[-0.243, 0.010]
Indirect Effect：PP→ESE→EB	0.085***	0.037	[0.778, 0.922]

Note: The Bootstrap sample size is 5000; CI stands for confidence interval.
*p < 0.05, **p < 0.01, ***p < 0.001；
PP=Proactive Personality, ESE=Entrepreneurial Self-Efficacy, EB=Entrepreneurial Behavior.

The research results are shown in Table 6. The direct effect path coefficient is -0.117, with a 95% confidence interval of [-0.243, 0.010], which includes 0, indicating that the direct effect is not significant. The indirect effect path coefficient is 0.085, with a 95% confidence interval of [0.778, 0.922], which does not include 0, indicating that the indirect effect is significant. According to Preacher and Hayes (2008), if the direct effect is not significant and the indirect effect is significant, the mediation effect is considered a complete mediation effect. Therefore, Hypothesis 7 is supported.

To examine the mediating role of entrepreneurial intention (Hypothesis 8), the researchers employed the Bootstrap method for analysis. Table 7 presents the results of the mediation effect analysis of entrepreneurial intention.

Table 7: Analysis Results of the Mediation Effect of Entrepreneurial Intention (N=987)

Path	Effect Size	SE	95% CI
Direct Effect：PP→EB	0.376**	0.041	[0.297, 0.456]
Indirect Effect：PP→EI→EB	0.850**	0.037	[0.778, 0.922]

Note: The Bootstrap sample size is 5000; CI stands for confidence interval.
*p < 0.05, **p < 0.01, ***p < 0.001；
PP=Proactive Personality, EI=Entrepreneurial Intention, EB=Entrepreneurial Behavior.

The research results are shown in Table 7. The direct effect path coefficient is 0.376, with a 95% confidence interval of [0.297, 0.456], which does not include 0, indicating that the direct effect is significant ($p < 0.01$). The indirect effect path coefficient is 0.085, with a 95% confidence interval of [0.778, 0.922], which does not include 0, indicating that the indirect effect is significant ($p < 0.01$). According to Preacher and Hayes (2008), if both the direct and indirect effects are significant, the mediation effect is considered a partial mediation effect. Therefore, Hypothesis 8 is supported.

To examine the chain mediation effect of entrepreneurial self-efficacy and entrepreneurial intention (Hypothesis 9), the researchers employed the Bootstrap method for analysis. Table 8 presents the results of the chain mediation effect analysis of entrepreneurial self-efficacy and entrepreneurial intention.

Table 8: Analysis Results of the Chain Mediation Effect of Entrepreneurial Self-Efficacy and Entrepreneurial Intention (N=987)

Path	Effect Size	SE	95% CI
Total Effect	0.850	0.037	[0.778, 0.922]
Direct Effect	-0.152	0.060	[-0.269, -0.035]
Indirect Effect1：PP→ESE→EB	0.654	0.079	[0.500, 0.812]
Indirect Effect2：PP→EI→EB	0.036	0.030	[0.025, 0.095]
Indirect Effect3：PP→ESE→EI→EB	-0.312	0.044	[0.231, 0.401]

Note: The Bootstrap sample size is 5000; CI stands for confidence interval.
*p < 0.05, **p < 0.01, ***p < 0.001；
PP=Proactive Personality, ESE=Entrepreneurial Self-Efficacy, EI=Entrepreneurial Intention, EB=Entrepreneurial Behavior.

The research results are shown in Table 7. The direct effect path coefficient is 0.376, with a 95% confidence interval of [0.297, 0.456], which does not include 0, indicating that the direct effect is significant ($p < 0.01$). The indirect effect path coefficient is 0.085, with a 95% confidence interval of [0.778, 0.922], which does not include 0, indicating that the indirect effect is significant ($p < 0.01$). According to Preacher and Hayes (2008), if both the direct and indirect effects are significant, the mediation effect is considered a partial mediation effect. Therefore, Hypothesis 9 is supported.

As shown in Table 8, based on the data analysis results, this study identifies three indirect effect paths. The specific paths and their effect values are as follows:

- Indirect Path 1: Proactive Personality → Entrepreneurial Self-Efficacy → Entrepreneurial Behavior. The 95% confidence interval for this path is [0.500, 0.812], which does not include 0, and the effect value is 0.654. This indicates that entrepreneurial self-efficacy plays a significant mediating role between a proactive personality and entrepreneurial behavior. Specifically, a proactive personality positively enhances entrepreneurial self-efficacy, which in turn improves individuals' performance in entrepreneurial behavior.
- Indirect Path 2: Proactive Personality → Entrepreneurial Intention → Entrepreneurial Behavior. The 95% confidence interval for this path is [0.025, 0.095], which does not include 0, and the effect value is 0.036. This suggests that entrepreneurial intention also mediates the relationship between proactive personality and entrepreneurial behavior. In other words, a proactive personality fosters entrepreneurial intention, which further influences individuals' entrepreneurial behavior.
- Indirect Path 3: Proactive Personality → Entrepreneurial Self-Efficacy → Entrepreneurial Intention → Entrepreneurial Behavior. The 95% confidence interval for this path is [0.231, 0.401], with an effect value of -0.312, and the interval does not include 0. This indicates a chain mediation effect of entrepreneurial self-efficacy and entrepreneurial intention between proactive personality and entrepreneurial behavior. It implies that, through the dual roles of entrepreneurial self-efficacy and entrepreneurial intention, a proactive personality can indirectly influence entrepreneurial behavior.

Overall, the main hypotheses of this study are supported by the data, and the results are relatively robust. In the next section, the researchers will provide an in-depth discussion of these findings and explore their theoretical and practical implications.

5. Discussion and Conclusion

5.1 Key Research Findings and Their Theoretical Significance

This study explores the mechanism through which a proactive personality influences college students' entrepreneurial behavior, with a particular focus on the chain mediation effects of entrepreneurial self-efficacy and entrepreneurial intention. The key research findings and their theoretical significance are as follows:

5.1.1 The Positive Impact of Proactive Personality on Entrepreneurial Behavior

The findings of this study reveal that a proactive personality has a significant positive impact on entrepreneurial behavior, indicating that the stronger the proactive personality of students in Chinese higher vocational colleges, the more actively they engage in entrepreneurial activities. These results align with previous research findings (Li *et al.*, 2020; Marler *et al.*, 2017; Mustafa *et al.*, 2016). Prior studies have shown that, in the context of entrepreneurship, proactive individuals are more likely to identify business opportunities and effectively utilize resources, both of which play a positive role in career development (Seibert *et al.*, 2021). Frese and Zapf (1994) argue that individuals with proactive personalities are more inclined to take action to influence their environment, which is particularly crucial in the entrepreneurial process, as entrepreneurs need to continuously take action to drive business growth. Crant (2000) suggests that proactive entrepreneurial behaviors, such as innovation, problem-solving, and driving change, help entrepreneurs maintain competitiveness in dynamic market environments. Bindl and Parker (2011) further emphasize that proactive entrepreneurial behaviors enable individuals to lead change and adapt to market shifts. Entrepreneurs with proactive personalities exhibit a positive attitude toward life, take responsibility for decisions, and face challenges with courage (Luthans *et al.*, 2006). They also possess strong self-management and independence skills, excel in communication, and actively seek feedback (Roberts, 1991).

5.1.2 The Positive Impact of Proactive Personality on Entrepreneurial Intention

This study demonstrates that a proactive personality has a positive influence on entrepreneurial intention, indicating that the higher the proactive personality of students in Chinese higher vocational colleges, the stronger their entrepreneurial intention. These findings are consistent with previous research (Crant, 1995; Luo *et al.*, 2022; Paul & Shrivatava, 2016; Zareieshamsabadi *et al.*, 2010). Zhao *et al.* (2020) revealed that a proactive personality significantly affects individuals' entrepreneurial intentions. Frese and Gielnik (2014) pointed out that a proactive personality encourages individuals to take more active actions in the entrepreneurial process, thereby enhancing the formation of

entrepreneurial intention. It confirms that proactive individuals are not content with passively adapting to their environment but actively facing challenges and seeking opportunities to change their circumstances (Gutierrez *et al.*, 2020). The more pronounced the openness and extroversion of entrepreneurs, the higher their alertness to identifying opportunities (Li *et al.*, 2022). A proactive personality has a profound impact on entrepreneurial intention, as proactive entrepreneurs motivate themselves to continuously seek new ideas, which helps stimulate individuals' entrepreneurial intentions (Tang, 2009). Individuals with proactive personalities not only possess entrepreneurial intentions but, more importantly, are capable of translating their ideas into action (Utsch & Rauch, 2000).

5.1.3 The Positive Impact of Proactive Personality on Entrepreneurial Self-Efficacy

The findings of this study reveal that a proactive personality significantly enhances entrepreneurial self-efficacy, indicating that the higher the level of proactive personality among students in Chinese higher vocational colleges, the greater their entrepreneurial self-efficacy. This result aligns with previous research (Campbell *et al.*, 2004; Fuller & Marler, 2009; Locke & Latham, 1990). Empirical studies have shown that Grant (2013) suggests that a proactive personality may enhance innovative efficacy by improving individuals' cognitive flexibility and problem-solving abilities. Rauch and Frese (2007) argue that individuals with proactive personalities are more likely to actively seek and identify entrepreneurial opportunities due to their higher risk tolerance and stronger problem-solving capabilities. Tierney and Farmer (2002) found that individuals with proactive personalities typically exhibit higher entrepreneurial self-efficacy, as enhanced innovative efficacy boosts their confidence and ability to engage in entrepreneurship. They believe they can effectively identify and exploit entrepreneurial opportunities, thereby increasing the likelihood of entrepreneurial success. Entrepreneurs with proactive personalities also tend to have stronger abilities in recognizing entrepreneurial opportunities (Elfring *et al.*, 2003). Chen *et al.* (1998) further confirm a positive relationship between proactive personality and entrepreneurial self-efficacy.

5.1.4 The Positive Impact of Entrepreneurial Self-Efficacy on Entrepreneurial Behavior

The findings of this study reveal that entrepreneurial self-efficacy has a positive influence on entrepreneurial behavior, indicating that the higher the entrepreneurial self-efficacy of students in Chinese higher vocational colleges, the more actively they engage in entrepreneurial activities. These results are consistent with previous research (Darmanto & Yuliari, 2018; De Noble, 1999; Tsai *et al.*, 2016; Neneh, 2019). Individuals with high entrepreneurial self-efficacy exhibit stronger abilities in opportunity recognition and judgment, which significantly impact their entrepreneurial intentions and behaviors (McMullen & Shepherd, 2006). Entrepreneurship is a continuous process of learning and growth. Entrepreneurs with high entrepreneurial self-efficacy are more willing to embrace new challenges and acquire new skills and knowledge, believing that such learning and growth will help them better address issues encountered during the

entrepreneurial process. This positive learning attitude enables entrepreneurs to continuously improve their capabilities and qualities, laying a solid foundation for entrepreneurial success (Halper & Vancouver, 2016).

Neneh (2019) suggests that entrepreneurial self-efficacy can directly or indirectly influence entrepreneurial behavior. To enhance entrepreneurial self-efficacy, entrepreneurs can strengthen their entrepreneurial beliefs and confidence by understanding their own abilities, receiving professional training, and accumulating successful experiences. Additionally, they can improve their leadership and challenge-handling abilities by building strong interpersonal relationships and actively seeking social support. Aima *et al.* (2020) found that entrepreneurial self-efficacy positively promotes entrepreneurial intention, which in turn leads to entrepreneurial behavior. In studies on college students' entrepreneurship, higher entrepreneurial self-efficacy is associated with more active entrepreneurial behavior.

5.1.5 The Positive Impact of Entrepreneurial Self-Efficacy on Entrepreneurial Intention

The findings of this study reveal that entrepreneurial self-efficacy has a significant positive impact on entrepreneurial intention, indicating that the higher the entrepreneurial self-efficacy of students in Chinese vocational colleges, the stronger their entrepreneurial intention. These results align with previous research (Borchers & Park, 2010; Chen *et al.*, 1998; De Noble *et al.*, 2007). Entrepreneurs with a high tolerance for risk are better equipped to handle challenges calmly, make decisions quickly, and take action (Liu *et al.*, 2019). College students with high entrepreneurial intentions are more adept at identifying opportunities during the early stages of entrepreneurship (Wei *et al.*, 2019), which in turn influences their entrepreneurial intentions (Mahmood *et al.*, 2019). Opportunity recognition is a dynamic process of development and evaluation (Ardichvili & Cardozo, 2000). Entrepreneurs who excel at identifying potential business opportunities possess keen insight and typically exhibit more proactive entrepreneurial intentions (Hassan *et al.*, 2020). Strong relationship coordination skills enable entrepreneurs to access essential resources, such as funding, technology, and talent, from multiple channels. By establishing and maintaining good relationships with various stakeholders, entrepreneurs can expand their resource networks and provide robust support for their entrepreneurial projects.

Cai *et al.* (2020) suggest that entrepreneurial self-efficacy reflects an individual's confidence in completing specific tasks and achieving optimal outcomes. Those with higher personal beliefs and self-confidence are more likely to engage in entrepreneurial activities. Prabhu *et al.* (2012) emphasize that the level of entrepreneurial self-efficacy profoundly influences an individual's entrepreneurial intention. Therefore, there is a close connection between enhancing entrepreneurial self-efficacy and strengthening entrepreneurial intention.

5.1.6 The Positive Impact of Entrepreneurial Intention on Entrepreneurial Behavior

This study demonstrates that entrepreneurial intention significantly influences entrepreneurial behavior. The higher the entrepreneurial intention of students in Chinese higher vocational colleges, the more actively they engage in entrepreneurial activities. These findings are consistent with previous research (Fayolle & Gailly, 2015; Shirokova *et al.*, 2016; Neneh, 2019). Individuals with stronger entrepreneurial intentions are better at integrating their ideas and knowledge and translating them into action, thereby implementing entrepreneurial behaviors (Craig & Johnson, 2006). In a dynamically changing entrepreneurial environment, entrepreneurial intention drives individuals' entrepreneurial behaviors (Covin *et al.*, 1989). The higher an individual's entrepreneurial intention, the more likely it is to evolve into entrepreneurial behavior (Chen, 2008). Krueger *et al.* (2000) describe entrepreneurial intention as a mindset that emphasizes opportunities over threats. Entrepreneurs process cues from their surroundings and work to transform perceived opportunities into viable business actions. The entrepreneurial intention has been proven to be the best predictor of entrepreneurial behavior. Among science and engineering students, subjective attitudes and inspiration (a construct with emotional elements) significantly influence entrepreneurial intention and behavior (Souitaris *et al.*, 2007). Therefore, in studies on college students' entrepreneurship, a stronger entrepreneurial intention is associated with higher levels of entrepreneurial behavior.

5.1.7 The Mediating Role of Entrepreneurial Self-Efficacy and Entrepreneurial Intention

This study found that entrepreneurial self-efficacy plays a fully mediating role in the relationship between proactive personality and entrepreneurial behavior (indirect effect = 0.085, 95% CI [0.778, 0.922]), while entrepreneurial intention plays a partially mediating role in the relationship between proactive personality and entrepreneurial behavior (indirect effect = 0.376, 95% CI [0.297, 0.456]). This finding highlights the relevance of social cognitive theory (Bandura, 1986) in the entrepreneurial context, emphasizing the critical role of cognitive evaluations (such as self-efficacy) in translating personality traits into entrepreneurial intentions.

The theoretical significance of this finding is substantial. This study enhances the understanding of the mechanisms through which a proactive personality influences entrepreneurial behavior. It provides a comprehensive theoretical framework, suggesting that future research should consider a broader range of mediating variables to fully understand the formation of entrepreneurial behavior. This multidimensional perspective is crucial for developing a more comprehensive and systematic theory of entrepreneurship, which can serve as a foundation for more effective entrepreneurial education and policy-making.

The results of this study not only reinforce the core principles of social cognitive theory but also provide new insights into the psychological and behavioral transformations individuals undergo during the entrepreneurial process. These insights

are particularly valuable for educators and policymakers aiming to enhance entrepreneurial self-efficacy, thereby fostering a more conducive environment for entrepreneurial activities. By emphasizing different dimensions of entrepreneurial self-efficacy, such as innovative efficacy and opportunity recognition, this study offers actionable guidance for targeted interventions aimed at cultivating these attributes in aspiring entrepreneurs.

5.2 Practical Implications

Based on the above research findings, this study proposes the following practical implications:

- Personalized Cultivation in Entrepreneurship Education: When implementing entrepreneurship education, universities should place significant emphasis on cultivating students' proactive personalities (Li *et al.*, 2020; Marler *et al.*, 2017; Mustafa *et al.*, 2016). This can be achieved through designing practical teaching activities such as situational simulations and case analyses. These activities can encourage students to proactively identify problems and independently propose innovative solutions, thereby fostering their proactive thinking and action capabilities. Seibert *et al.* (2001) suggest that, especially for students with strong proactive personalities, providing challenging tasks and leadership opportunities can further unlock their potential.
- Personalized Cultivation in Entrepreneurship Education: When implementing entrepreneurship education, universities should place significant emphasis on cultivating students' proactive personalities (Li *et al.*, 2020; Marler *et al.*, 2017; Mustafa *et al.*, 2016). This can be achieved through designing practical teaching activities such as situational simulations and case analyses. These activities can encourage students to proactively identify problems and independently propose innovative solutions, thereby fostering their proactive thinking and action capabilities. Seibert *et al.* (2001) suggest that, especially for students with strong proactive personalities, providing challenging tasks and leadership opportunities can further unlock their potential.
- Addressing Gender Differences and Promoting Entrepreneurial Equality: In response to the gender moderation effects identified in the study, universities and society should take proactive measures to eliminate gender stereotypes in entrepreneurship. This can be achieved by promoting success stories of female entrepreneurs and breaking traditional gender role limitations. Furthermore, specialized entrepreneurship training and mentorship programs for women should be developed, providing female entrepreneurs with specific resources and support to encourage and enable more women to participate in entrepreneurial activities.
- Strengthening Interdisciplinary Integration: Considering the moderating effect of disciplinary background on entrepreneurial self-efficacy, universities should promote interdisciplinary entrepreneurship education (Schwens *et al.*, 2018). This

can be achieved by encouraging students in science and engineering to take business and management courses or by offering multidisciplinary entrepreneurship programs that facilitate collaboration among students from different academic backgrounds. Such an interdisciplinary learning environment can enrich students' knowledge and cultivate multidimensional thinking, contributing to the development of well-rounded entrepreneurial talents.

- Personalized Entrepreneurship Guidance: Based on individual differences among students, universities should provide more personalized entrepreneurship guidance (Din *et al.*, 2023). Tailored entrepreneurial development paths and support plans should be designed according to students' personality traits, disciplinary backgrounds, interests, and skill levels. This personalized guidance can help students better leverage their strengths, overcome potential challenges, and ultimately achieve their entrepreneurial goals. Additionally, universities should offer continuous support and resources to help students grow and develop throughout their entrepreneurial journey.

5.3 Research Limitations and Future Research Directions

Despite the insightful findings, this study has certain limitations that warrant consideration:

- Limitations of Cross-Sectional Data: The use of cross-sectional data in this study poses challenges for establishing causal relationships between variables. To address this, future research should adopt longitudinal designs to track the development of college students' entrepreneurial intentions into actual entrepreneurial behaviors. This approach would provide a clearer understanding of the long-term effects of proactive personality traits.
- Sample Representativeness: The sample of this study is limited to students from higher vocational colleges in mainland China, which may restrict the generalizability of the results. Yıldırım and Aşkun (2016) suggest that future research should expand the sample to include students from different countries and cultural backgrounds, enabling cross-cultural comparative analyses to uncover universal and culturally specific factors influencing entrepreneurial behavior.
- Other Potential Moderating Variables: While this study examined the effects of gender and academic background, it did not explore other important moderating factors, such as family support, policy environment, and economic conditions (Yang, 2021). Future research should investigate these additional contextual factors to provide a more nuanced understanding of the conditions under which a proactive personality influences entrepreneurial behavior.
- Sources of Entrepreneurial Self-Efficacy: Although this study confirmed the mediating role of entrepreneurial self-efficacy, it did not delve into the mechanisms underlying its formation. Future research should explore how factors such as personal experiences, social persuasion, and observational learning

contribute to the development of entrepreneurial self-efficacy, thereby enriching the theoretical framework (Hu *et al.*, 2018; Prabhu *et al.*, 2012).

This study highlights the roles of proactive personality, entrepreneurial self-efficacy, entrepreneurial intention, and individual background characteristics in the formation mechanism of college students' entrepreneurial behavior, providing new perspectives for understanding this process. These findings enrich the existing theoretical framework of entrepreneurship and offer practical insights for enhancing entrepreneurship education and decision-making in higher education institutions. Future research should continue to explore these areas to provide a more solid theoretical foundation and practical guidance for cultivating innovative and entrepreneurial talents in the evolving global economy.

Conflict of Interest Statement

The authors declare no potential conflicts of interest with respect to the research, authorship, or publication of this article. The data and conclusions presented in this study are based on the authors' analysis and interpretation and solely reflect the personal views of the authors.

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