A Study on the Impact for Proactive Personality of College Students on Entrepreneurial Intention: An Empirical Study Based on the Theory of Planned Behavior

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Abstract

Entrepreneurial activities are an important driving force for the development of modern economic and social development, and have become an important engine for economic growth in today's era. Among the relevant studies on college students' entrepreneurship, entrepreneurial intention, as the best entry point for the study of entrepreneurial behavior, has become the focus of entrepreneurship research, and the theory of planned behavior is the most effective theory for studying entrepreneurial intention. At the same time, research on issues such as college students' proactive personality and self-efficacy has gradually attracted the attention of the academic community in recent years.

The results show that 1. There is a significant positive correlation between proactive personality and entrepreneurial intention in the model, and the stronger the proactive personality, the higher the entrepreneurial intention. The fitting indexes of the structural equation model (SEM) all reached the ideal value, indicating that the model fits well and all paths are significant. Among them, proactive personality positively affects self-efficacy, entrepreneurial attitude, subjective norms and perceived behavioral control, and these factors further positively affect entrepreneurial intention. 2. The mediation analysis found that perceived behavioral control, subjective norms, entrepreneurial attitude and self-efficacy play a partial mediating role between proactive personality and entrepreneurial intention. 3. The mediation analysis shows that family self-employment has a significant positive moderating effect on the relationship between proactive personality and entrepreneurial intention. College students with a family self-employment background scored significantly lower than those without a family self-employment background in goal intention, execution intention, motivation, resilience, transformativeness, self-efficacy, entrepreneurial attitude, subjective norms, perceived behavioral control, and entrepreneurial intention.

Keywords: Proactive Personality; College Students; Entrepreneurial Intention; Empirical Study; Theory of Planned Behavior

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Introduction

Entrepreneurship is both a research topic and a real problem that affects the social economy. Entrepreneurship has always been regarded as a key driving force for stimulating innovation and promoting economic growth (Carree & Thurik, 2010; Galindo & Méndez, 2014). Entrepreneurship can not only create social wealth and promote economic growth, but also effectively drive employment and solve social poverty problems. It is an important part of the national economy (Tian Bifei et al., 2023). In fact, entrepreneurial activities are not only an economic accelerator, but also a social stabilizer. Entrepreneurial activities can significantly enhance social stability (Jiao, 2011; Pierre et al., 2013). As Nobel Prize winner in Economics Romer pointed out, knowledge innovation and professional human capital are key economic growth factors. This view subverts the boundaries of traditional growth (Vitasek, 2018). In this context, countries have created a good external environment for entrepreneurship, formulated and improved entrepreneurship policies at different levels, and provided convenient conditions for college students to start their own businesses, so as to encourage and guide college students to engage in entrepreneurship, enhance their entrepreneurial intentions and possibilities, and promote social and economic development (Wong et al., 2005). With the adjustment and transformation of China's economic structure and the continuous advancement of the scientific and technological revolution, the pace of social and economic growth has slowed down, and entrepreneurship has become a core issue that has attracted much attention (Xu Ligang, 2020). In recent years, under the influence of the complex international environment and the COVID-19 epidemic, the employment market has insufficient capacity to absorb graduates on a large scale, while the number of college graduates has repeatedly set new highs, and the employment situation of college students has become increasingly severe (National Development and Reform Commission, 2022). According to statistics, the average national urban survey unemployment rate in June 2023 was 5.3%, of which the survey unemployment rate of the labor force aged 16-24 was 21.3% (State Council Information Office, 2023), and the unemployment rate was close to the historical peak. During the spring 2024 graduate recruitment season, various regions have successively predicted that the number of fresh graduates will continue to increase. Nationwide, the number of graduates from regular higher education institutions is expected to reach 11.79 million, an increase of 210,000 over the previous year. The employment task of colleges and universities is still arduous, and the pressure on graduates to find jobs is heavy (Wang Feng, 2024). Not only in recent years, in fact, since the reform and opening up, as higher education has shifted from elite education to mass education, the number of college graduates has risen sharply. Under severe employment pressure, giving play to the multiplier effect of entrepreneurship in driving employment is an inevitable choice at this stage (Yang Yang, 2021). Compared with other entrepreneurs, college students have more active thinking, stronger willingness to challenge risks, and more sufficient human capital, and their entrepreneurial costs are relatively low (Shahzad, 2021). At the same time, in the context of the knowledge economy, knowledge and technology have gradually become a new generation of production factors. College students who have received higher education have obvious advantages both in terms of subjective intentions and objective conditions (Yang Yang, 2021). However, data shows that the entrepreneurship rate of Chinese undergraduates in 2020 was only 1.6% (Yu Bo, 2023), while the self-employment rate of American college students was close to 20% as early as 2014 (G.E.M., 2014). Although the social, economic and cultural

environments of the two countries are quite different, and there are differences in statistical caliber, in comparison, domestic college students still have great entrepreneurial potential to be tapped. At present, the overall entrepreneurship rate of college students in my country is low, and the survival rate of entrepreneurship is not high. It is very important to identify and predict the development potential of this start-up group (Subati, 2022).

Ajzen proposed the Theory of Planned Behavior (TPB) in 1991. This theory regards intention as a predictor of behavior and believes that external factors affect individuals' intentions by influencing their attitudes (Ajzen, 1991). Therefore, the theory of planned behavior focuses on the changes in individual intentions rather than individual entrepreneurial behavior itself, and has been successfully applied to predict entrepreneurial intentions and behaviors in different countries and contexts (Krueger et al., 2000; Frese & Fay, 2001; Chen et al., 2001; Zhao et al., 2005; Rauch & Frese, 2007). In this model, the formation of intention is influenced by three key attitude variables: attitude toward the act, subjective norms, and perceived behavioral control. Specifically, attitude toward the act reflects an individual's preference for the behavior and his or her expectations and beliefs about the behavior; subjective norms involve the social pressure perceived by an individual when taking action; and perceived behavioral control refers to an individual's cognitive assessment of the difficulty of executing the behavior. The theory of planned behavior has been widely verified in empirical research (Ajzen, 1991). Ajzen believes that these three variables are sufficient to explain people's behavioral intentions (Ajzen & Fishbein, 1982).

Ajzen and Fishbein (2000) believe that in addition to the three factors of the theory of planned behavior (attitude, subjective norm, and perceived behavioral control), there are other factors that may affect an individual's entrepreneurial intention, such as entrepreneurial experience and demographic variables. In addition, the theory of planned behavior also allows other variables to be unified in the model (Ajzen, 1991). Many studies have found that adding certain variables to the theory of planned behavior model can improve the overall predictive power of the model. The theory of planned behavior is superior to individual variables and environmental variables in predicting intentions and behaviors (Krueger, 2000). The entrepreneurial intention model (theory of planned behavior) provides a clear, consistent and effective theoretical framework that helps to explain and predict the entrepreneurial process in more depth (Krueger, 1993; 2000). Studies have shown that the theory of planned behavior can effectively predict entrepreneurial intention and behavior (Krueger et al., 2000; Shook & Bratianu, 2008; Koçoğlu & Hassan, 2012).

Based on the current economic and policy situation and the actual employment needs of today's college students, this paper uses the theory of planned behavior as a basis to conduct an empirical study of 1,029 undergraduate students in Hebei Province, China, to understand the relationship between college students' proactive personality and entrepreneurial intention, the mediating effects of college students' entrepreneurial self-efficacy, entrepreneurial attitude, subjective norms, and perceived behavioral control, and the moderating role of demographic variables.

Objectives

The main objectives of this study are as follows:

1.To examine the direct relationship between proactive personality and entrepreneurial intention among college students based on the Theory of Planned Behavior.

2.To investigate the mediating effects of entrepreneurial self-efficacy, entrepreneurial attitude, subjective norms, and perceived behavioral control between proactive personality and entrepreneurial intention.

3.To analyze the moderating role of family self-employment background in the relationship between proactive personality and entrepreneurial intention among 1,029 undergraduate students in Hebei Province, China.

Research Methodology

1. Research Methods

1.1 Sample and Procedure

In the formal scale survey phase of this paper, following the advice of Wu Minglong (2008), for regional research, the sample size is about 1,000. Based on this, after excluding the classes that have participated in the pre-test scale survey, this paper distributed the formal scale to 1,050 students in three grades of five colleges and universities, A, B, C, D, and E. After the scale was collected, the data was strictly screened and 21 invalid scales were excluded. In the end, 1,029 valid scales were recovered, with a recovery rate of 98%. Therefore, the final number of valid formal samples determined in this paper is 1,029. This sample size not only meets the optimal sample size standard for regional research, but the high recovery rate also ensures the reliability of the data and the validity of the analysis results.

1.2 Measurement variables

1) Entrepreneurial intention

This paper uses the entrepreneurial intention scale compiled by Li Hailei (2012). This paper adopts the scale, which includes 12 items, 6 items measuring entrepreneurial goal intention, and 6 items measuring entrepreneurial execution intention. This scale includes two dimensions: entrepreneurial goal intention and entrepreneurial execution intention. A 7-point score is used, with 1 representing "completely inconsistent", 2 representing "very inconsistent", 3 representing "somewhat inconsistent", 4 representing "unclear", 5 representing "somewhat consistent", 6 representing "very consistent", and 7 representing "completely consistent". The retest reliability of the entrepreneurial goal intention subscale after two weeks is 0.97, and the internal consistency reliability is 0.92; the retest reliability of the entrepreneurial execution intention subscale after two weeks is 0.80, and the internal consistency reliability is 0.82. A high score on entrepreneurial intention indicates that the respondent is more likely to start a business and is more inclined to engage in entrepreneurial interaction.

2) Proactive personality

This paper adopts the proactive personality scale for college students compiled by Chen Meijun (2009) based on localization needs. This scale was finally compiled through localized in-depth interviews and open-ended scales, combined with the 17-item Proactive Personality Scale (PPS) compiled by Bateman and Crant (1993). The PPS scale has 13 items, divided into 3 dimensions, including positivity, resilience, and transformativeness. The Likert

six-point scale method was used for scoring, with the options being "completely inconsistent", "relatively inconsistent", "somewhat inconsistent", "somewhat consistent", "relatively consistent", and "very consistent". The higher the score, the more significant the proactive personality. The Cronbach'α coefficient of the full scale is 0.853, and the Cronbach'α coefficient of each dimension exceeds 0.700.

3) Entrepreneurial self-efficacy

This paper uses the entrepreneurial self-efficacy scale compiled by Wilson et al. (2007) and Zhou Biyu (2015). The scale was first created by Wilson et al. and was appropriately improved by Zhou Biyu for localization. It is specifically designed to measure the entrepreneurial self-efficacy of college students' start-up groups. The scale has 6 items, a single dimension, and is scored using the Likert seven-point scale method. The options are "obviously much worse than the average students", "worse than the average students", "slightly worse than the students", "everyone is about the same", "better than the average students", "better than the average students", and "obviously much better than the average students". The higher the score, the stronger the self-efficacy. The Cronbach's α coefficient of the scale is 0.857.

4) Entrepreneurial attitude, subjective norms, and perceived behavioral control

This paper uses the series of scales (Entrepreneurial Intention Questionnaire, EIQ) developed by Liñán and Chen (2009) based on the theory of planned behavior. The researchers developed a series of scales to measure the core concepts in EIQ, including personal attitudes, subjective norms, perceived behavioral control, and entrepreneurial intentions. As a series of scales, EIQ is based on the overall framework of the theory of planned behavior, ensuring the theoretical continuity between the various parts of the scale, and the scale can consistently measure all the concepts involved. The entrepreneurial attitude scale has 5 items and a single dimension; the subjective norm scale has 3 items and a single dimension; the perceived behavioral control scale has 5 items and a single dimension, and the Likert seven-point scale method is used for scoring. The options are "completely disagree", "disagree", "slightly disagree", "neutral", "slightly agree", "agree", and "completely agree". The Cronbach's α coefficient is 0.943.

2. Research hypothesis

1) The relationship between entrepreneurial attitude and entrepreneurial intention

The theory of planned behavior believes that an individual's performance of a certain behavior is influenced by his attitude toward the behavior. Therefore, the attitude of potential entrepreneurs toward entrepreneurial activities or entrepreneurial behavior will affect their entrepreneurial intention and entrepreneurial behavior. Individuals who hold a positive attitude toward entrepreneurship are more likely to have entrepreneurial intention (Ajzen, 1987). Entrepreneurial attitude plays a core role in the theory of planned behavior. Entrepreneurial attitude not only directly affects entrepreneurial intention as one of the key factors, but also enhances entrepreneurial intention by improving individuals' subjective norms and perceived behavioral control over entrepreneurial behavior (Ajzen, 1991). Individuals with a positive entrepreneurial attitude are more likely to believe that people around them support their entrepreneurship and believe that they are capable of completing entrepreneurial behavior (Krueger et al., 2000). Entrepreneurial attitude may also be affected by personal traits, social environment and other factors. Proactive personality traits and social support may improve an individual's entrepreneurial attitude, thereby enhancing his entrepreneurial intention (Zhao et al., 2005). In summary, entrepreneurial attitude is a key

factor affecting entrepreneurial intention. Individuals who hold a positive entrepreneurial attitude are more likely to have entrepreneurial intentions.

Based on the above, this paper makes the following assumptions:

Hypothesis 1: Entrepreneurial attitude has a positive predictive effect on entrepreneurial intention.

2) The relationship between subjective norms and entrepreneurial intention

Subjective norms play an important role in the theory of planned behavior. The theory believes that subjective norms, as one of the key factors, have a direct impact on entrepreneurial intentions (Ajzen, 1991). Subjective norms are an important factor affecting entrepreneurial intentions, referring to an individual's perception of whether important others support his or her entrepreneurial behavior. Subjective norms enhance an individual's entrepreneurial intentions by enhancing his or her cognition and evaluation of entrepreneurial behavior (Autio et al., 2001). When an individual believes that important others support his or her entrepreneurship, he or she will have a stronger entrepreneurial intention (Krueger et al., 2000). Social support, family background and other factors can affect an individual's entrepreneurial intentions by influencing subjective norms (Carr & Sequeira, 2007). For example, the support of family and friends will enhance an individual's subjective norms, thereby enhancing his or her entrepreneurial intentions. The influence of subjective norms in different cultural backgrounds is also different. In collectivist culture, subjective norms have a more significant impact on entrepreneurial intention, while in individualistic culture, the role of subjective norms is relatively weak (Liñán & Chen, 2009). In summary, subjective norms are an important factor affecting entrepreneurial intention. When individuals believe that important others support them in starting a business, they will have a stronger entrepreneurial intention.

Based on the above, this paper proposes the following hypothesis:

Hypothesis 2: Subjective norms have a positive predictive effect on entrepreneurial intention.

3) The relationship between perceived behavioral control and entrepreneurial intention

Perceived behavioral control plays an important role in the theory of planned behavior. As one of the key factors, perceived behavioral control has a direct impact on entrepreneurial intention (Ajzen, 1991). Perceived behavioral control is an important factor affecting entrepreneurial intention. Perceived behavioral control refers to an individual's subjective perception of whether he or she can successfully perform a certain behavior (Krueger et al., 2000). Perceived behavioral control enhances the individual's sense of control over entrepreneurial behavior. When individuals believe that they have the ability to successfully start a business, they will have a stronger entrepreneurial intention (Zhao et al., 2005). Personal traits, educational background, entrepreneurial experience and other factors can affect individuals' entrepreneurial intention by affecting perceived behavioral control (Liñán & Chen, 2009). For example, individuals with rich entrepreneurial experience will have a stronger sense of control and thus show a higher entrepreneurial intention. People who have a positive attitude towards their own abilities regard difficulties in the entrepreneurial process as opportunities rather than risks, and have stronger entrepreneurial intentions than those who are negative (Wilson et al., 2007). The impact of perceived behavioral control also varies in different cultural backgrounds. In individualistic cultures, the impact of perceived

behavioral control on entrepreneurial intention is more significant, while in collectivist cultures, the effect of perceived behavioral control is relatively weak (Liñán & Chen, 2009). In summary, perceived behavioral control is an important factor affecting entrepreneurial intention. When individuals believe that they have the ability to successfully start a business, they will have a stronger entrepreneurial intention.

Based on the above, this paper proposes the following hypothesis:

Hypothesis 3: Perceived behavioral control has a positive predictive effect on entrepreneurial intention.

4) The relationship between proactive personality and entrepreneurial intention

According to social cognitive theory, individuals will take proactive measures to influence the environment under the constraints of the environment (Bandura, 1986). Bateman and Crant (1993) pointed out that people with proactive personality traits are less constrained by the environment, meet challenges and actively take responsibilities, change their own environment to promote the completion of tasks, and thus enhance their ability to adapt to the environment. Proactive personality is a stable behavioral tendency. Taking the initiative to change the environment is a significant feature of proactive personality. This behavioral tendency is considered to be one of the main reasons why individuals choose self-employment as a career (Crant & Bateman, 1993). Empirical evidence shows that proactive people are more likely to have a greater sense of self-determination in the process of work and career development (Seibert et al., 1999). Based on the theory of career choice, scholar Holland (1997) found in empirical research that individuals are more inclined to choose careers that match their personality traits, and individuals with proactive personality have a higher degree of match with entrepreneurial activities. This trait often has a positive effect on the development of organizations and individuals (Hsu et al., 2017). For example, it strengthens employee advice behavior, inhibits procrastination behavior, and stimulates entrepreneurial behavior. Proactive individuals will actively start a company rather than buy or inherit a company, and proactive personality is related to the number of companies started by individuals (Becherer & Maurer, 1999). Studies have shown that there is a significant positive correlation between proactive personality and entrepreneurial intention (Mustafa et al., 2016)

Hypothesis 4: Proactive personality has a significant positive predictive effect on entrepreneurial intention.

5) The relationship between proactive personality and entrepreneurial attitude

Proactive personality is positively correlated with entrepreneurial attitude, and individuals with strong initiative are more likely to have a positive attitude towards entrepreneurship (Crant, 1996). Proactive personality improves an individual's entrepreneurial attitude by enhancing their entrepreneurial self-efficacy and sense of entrepreneurial control (Rauch & Frese, 2007). People with strong initiative believe more in their entrepreneurial ability and believe that the results of entrepreneurship depend on their own efforts, thus showing a more positive entrepreneurial attitude (Chen et al., 1998). Proactive personality may enhance their entrepreneurial attitude by improving their awareness of entrepreneurial opportunities and proactive exploration; people with strong initiative pay more attention to and explore entrepreneurial opportunities, thus showing a more positive entrepreneurial attitude (Ardichvili et al., 2003). In summary, proactive personality traits enhance individuals' entrepreneurial attitudes by enhancing entrepreneurial self-efficacy, entrepreneurial control and entrepreneurial opportunity awareness, thereby affecting their entrepreneurial intention and entrepreneurial behavior.

Based on the above, this paper makes the following hypothesis:

Hypothesis 5: Proactive personality has a positive predictive effect on entrepreneurial attitude.

5) The relationship between proactive personality and subjective norms

As the core concept of the theory of planned behavior, subjective norms have an important impact on individuals' entrepreneurial intention and entrepreneurial behavior (Ajzen, 1991). Proactive personality is positively correlated with subjective norms. Proactive personality enhances individuals' subjective norms by enhancing social awareness and other-orientedness (Bateman & Crant, 1993). People with strong initiative pay more attention to the ideas and expectations of others and are more willing to follow the opinions of others, thus showing stronger subjective norms (Crant, 2000). Individuals with strong initiative tend to pay more attention to the expectations and opinions of others, thus showing stronger subjective norms; people with strong initiative believe more in their own abilities and believe that the results depend on their own efforts, which may also enhance their subjective norms (Liñán & Chen, 2009). Proactive personality may also indirectly affect subjective norms through other mediating variables, such as self-efficacy and internal locus of control (Krueger & Reilly, 2000). In summary, proactive personality traits enhance social awareness and other-orientation, improve individuals' subjective norms, and thus affect their entrepreneurial intentions and entrepreneurial behaviors.

Based on the above, this paper proposes the following hypothesis:

Hypothesis 6: Proactive personality has a positive predictive effect on subjective norms.

6) The relationship between proactive personality and perceived behavioral control

Perceived behavioral control, as a core concept of the theory of planned behavior, has an important impact on an individual's entrepreneurial intention and entrepreneurial behavior. Individuals with strong proactiveness believe that they have the ability to control and influence the results of their behavior, thus showing stronger perceived behavioral control (Crant, 1996). Proactive personality improves an individual's perceived behavioral control by enhancing self-efficacy and internal locus of control (Hmieleski & Corbett, 2006). People with strong proactiveness believe that they have the ability to achieve their goals and believe that the results depend on their own efforts, thereby enhancing their perceived behavioral control (Bateman & Crant, 1993). Proactive personality also affects an individual's perception and interpretation of the environment, making the individual more inclined to believe that the environment is controllable and enhancing their perceived behavioral control (Seibert et al., 1999). Proactivity affects an individual's entrepreneurial intention and entrepreneurial behavior by improving perceived behavioral control (Liñán & Chen, 2009). In summary, proactive personality traits can enhance individuals' perceived behavioral control by enhancing self-efficacy, internal locus of control and environmental perception, thereby affecting their entrepreneurial intention and entrepreneurial behavior.

Based on the above, this paper proposes the following hypothesis:

Hypothesis 7: Proactive personality has a positive predictive effect on perceived behavioral control.

8) The relationship between proactive personality and entrepreneurial self-efficacy

Proactive personality traits have a significant impact on entrepreneurial self-efficacy (Kickul et al., 2009). Crant (1996) investigated the relationship between proactive personality traits and entrepreneurial intention of college students. The results showed that proactive personality significantly and positively predicted an individual's entrepreneurial self-efficacy. Proactive individuals are more likely to actively seek entrepreneurial opportunities and believe that they have the ability to successfully start a business. Hmieleski and Carr (2008) investigated the proactive personality and entrepreneurial self-efficacy of entrepreneurs in small and medium-sized enterprises in the United States. The study found that proactive personality positively affected the entrepreneurial self-efficacy of entrepreneurs, that is, entrepreneurs with strong initiative are more confident that they have the ability to successfully start a business. Kickul et al. (2009) explored the relationship between proactive personality, entrepreneurial self-efficacy and entrepreneurial intention. The results showed that proactive personality positively affects entrepreneurial intention by improving personal entrepreneurial self-efficacy. Rauch and Frese (2007) conducted a meta-analysis of multiple related studies and found that proactive personality was significantly positively correlated with entrepreneurial self-efficacy, and initiative was an important personal trait for predicting entrepreneurial self-efficacy.

In summary, this paper proposes the following hypothesis:

Hypothesis 8: Proactive personality has a significant positive predictive effect on entrepreneurial self-efficacy.

9) The relationship between entrepreneurial self-efficacy and entrepreneurial intention

Self-perception is the premise of self-evaluation, and self-belief is the result of self-evaluation. They are an inseparable process of succession (Cao Zhiran, 2023). Individuals influence their relevant attitudes and behavioral tendencies based on their cognition and evaluation of their own abilities, that is, their self-efficacy will affect their cognition and evaluation rather than their objective abilities (Markman et al., 2002). Entrepreneurial self-efficacy is an individual's confidence and sense of control over his or her entrepreneurial ability, and is one of the key factors affecting entrepreneurial intention (Chen et al., 1998). The stronger the entrepreneurial self-efficacy, the more likely the individual is to have entrepreneurial intention (Krueger & Brazeal, 1994). Entrepreneurial self-efficacy can enhance an individual's expectation of entrepreneurial success, thereby increasing his or her entrepreneurial intention (Chen et al., 2004).

Therefore, this paper proposes the following hypothesis:

Hypothesis 9: Entrepreneurial self-efficacy has a significant positive predictive effect on entrepreneurial intention.

10) The mediating role of entrepreneurial self-efficacy

In previous studies, the motivational mediating mechanism of proactive personality mainly includes self-efficacy, learning motivation, self-consistency and knowledge sharing. Entrepreneurial self-efficacy plays an important mediating role in connecting personal traits (such as initiative, innovation, etc.) and entrepreneurial intention (Kickul et al., 2009). Personal traits enhance entrepreneurial intention by improving entrepreneurial self-efficacy (Zhao & Seibert, 2006).

To verify this statement, Brown et al. (2006) conducted further research and believed that highly proactive individuals have higher self-efficacy, stronger belief in their ability to complete an activity or task, longer persistence in a field, and more significant

results, thus showing better job search results. Hmieleski and Corbett (2008) also confirmed that proactive personality traits enhance individuals' entrepreneurial self-efficacy and thus improve their entrepreneurial intentions. Zhao et al. (2005) also believed that entrepreneurial self-efficacy is an important mediating variable connecting proactive personality and entrepreneurial intention.

Therefore, this paper proposes the following hypothesis:

Hypothesis 10: Entrepreneurial self-efficacy plays a mediating role between proactive personality and entrepreneurial intention.

11) The mediating role of entrepreneurial attitude

As the core concept of the theory of planned behavior, entrepreneurial attitude has an important impact on an individual's entrepreneurial intention and entrepreneurial behavior. Proactivity affects an individual's entrepreneurial intention and entrepreneurial behavior by improving entrepreneurial attitude (Shane & Venkataraman, 2000). Many studies have confirmed that entrepreneurial attitude plays a mediating role between entrepreneurial traits and entrepreneurial tendencies. The entrepreneurial tendency model established by scholars Phan et al. (2002) further emphasizes that entrepreneurial attitude and entrepreneurial beliefs play a mediating role between the individual background of entrepreneurs and entrepreneurial tendencies. Guo Hong et al. (2009) established an influencing factor model from proactive personality to entrepreneurial education and finally to entrepreneurial intention. The results show that entrepreneurial attitude has a significant impact on entrepreneurial intention. In summary, the entrepreneurial attitude and entrepreneurial cognition of potential entrepreneurs will play a mediating role in the path model, and individual traits will indirectly affect entrepreneurial tendencies through the mediating role of entrepreneurial attitude.

Based on the above, this paper makes the following hypothesis:

Hypothesis 11: Entrepreneurial attitude plays a mediating role between proactive personality and entrepreneurial intention.

12) The mediating role of subjective norms

Subjective norms are an important factor in the theory of planned behavior. They reflect an individual's expectations and evaluations of important others' behavior (Ajzen, 1991). Proactive personality traits reflect an individual's initiative, enthusiasm, and independence. This trait affects an individual's perception of others' expectations and evaluations (Crant, 2000).

Individuals with proactive personality traits tend to pay more attention to and value others' expectations and evaluations of their entrepreneurial behavior (Zhao et al., 2010), so they will be more proactive in understanding and meeting others' expectations, thus forming stronger subjective norms. Stronger subjective norms will enhance an individual's entrepreneurial intention, and individuals will be more inclined to fulfill others' expectations, thereby generating entrepreneurial motivation and willingness (Liñán & Chen, 2009).

In summary, proactive personality traits enhance subjective norms by enhancing individuals' attention and recognition of others' entrepreneurial expectations, thereby promoting the formation of entrepreneurial intentions.

Based on the above, this paper proposes the following hypothesis:

Hypothesis 12: Subjective norms mediate the relationship between proactive personality and entrepreneurial intention.

13) The mediating role of perceived behavioral control

Proactive personality traits reflect an individual's initiative, enthusiasm, and independence, which will affect an individual's perception of their own abilities and sense of control (Ajzen, 1991). Individuals with proactive personality traits tend to believe that they are capable of completing entrepreneurial tasks and maintain a strong sense of control over the entrepreneurial process. They will actively seek and utilize various resources to improve their entrepreneurial abilities (Zhao et al., 2010). Stronger perceived behavioral control will enhance an individual's entrepreneurial intention, and individuals will be more confident that they are capable of completing entrepreneurship, thereby generating stronger entrepreneurial motivation and willingness (Liñán & Chen, 2009). In summary, proactive personality traits enhance individuals' perception of their own entrepreneurial abilities and sense of control, thereby improving perceived behavioral control and promoting the formation of entrepreneurial intention.

Based on the above, this paper proposes the following hypothesis:

Hypothesis 13: Perceived behavioral control plays a mediating role between proactive personality and entrepreneurial intention.

14) Family self-employment

Self-employed families, that is, families where at least one parent is self-employed, have a significant impact on their children's entrepreneurial intention. Studies have shown that parents who are entrepreneurs can positively influence their children's entrepreneurial choices by setting an example (Aldrich et al., 1998) and provide their children with opportunities for self-employment, thereby enhancing their children's intention to pursue entrepreneurship. Individuals from self-employed families generally show higher entrepreneurial intentions, while children whose parents are not self-employed show less entrepreneurial intentions (Escolar et al., 2019).

Role models have a significant impact on individuals' preferences for self-employment (Brockhaus, 1986; Scott & Twomey, 1988; Matthews & Moser, 1995, 1996). In particular, parents play an important role in establishing the desirability and credibility of entrepreneurial actions (Shapero & Sokol, 1982). Empirical studies have also found that the proportion of business owners whose parents are entrepreneurs is relatively high (Cooper & Dunkelberg, 1986; Timmons, 1978). Hisrich and Brush (1984) found in their study of female entrepreneurs that most of them came from self-employed families. Zapkau et al. (2015) emphasized that role models are important in the formation of entrepreneurial intentions, but role models themselves cannot convey the necessary skills. Individuals need to learn through practice and experience to gain the necessary confidence and ability (Tolentino et al., 2014). Personal proactive personality traits are also an important factor affecting entrepreneurial intentions. People with personality traits such as foresight and initiative are more likely to have entrepreneurial intentions (Zheng Xuhui, Li Kunhuang, 2017). There is an interaction between family background and personal proactive personality traits, that is, family background will moderate the relationship between proactive personality and entrepreneurial intention (Xu Ju et al., 2018). The family background factor of family self-employment will affect the formation of entrepreneurial intentions by regulating personal proactive personality traits.

Hypothesis 14: Household self-employment plays a mediating role between proactive personality and entrepreneurial intention.

Results

1. Data analysis and results

1.1 Reliability and validity analysis

The reliability analysis results show that the Cronbach's α coefficient values of each scale range from 0.926 to 0.892. Confirmatory factor analysis (CFA) was completed using the maximum likelihood method to ensure the fitness of the measurement model. After analysis and testing, the fit index data of this study are as follows:

x^2/df (chi-square ratio) is 1.072, which meets the standard value requirement of less than 5;

RMR (root mean square residual) is 0.044, which is less than the standard of 0.08;

RMSEA (approximate root mean square error) is 0.008, which is lower than the standard of 0.1;

AGFI (average fit index) is 0.962, which exceeds the standard of 0.8;

NFI (normative fit index) is 0.969, CFI (comparative fit index) is 0.998, RFI (relative fit index) is 0.966, IFI (incremental fit index) is 0.998, all higher than the excellent fit standard of 0.9;

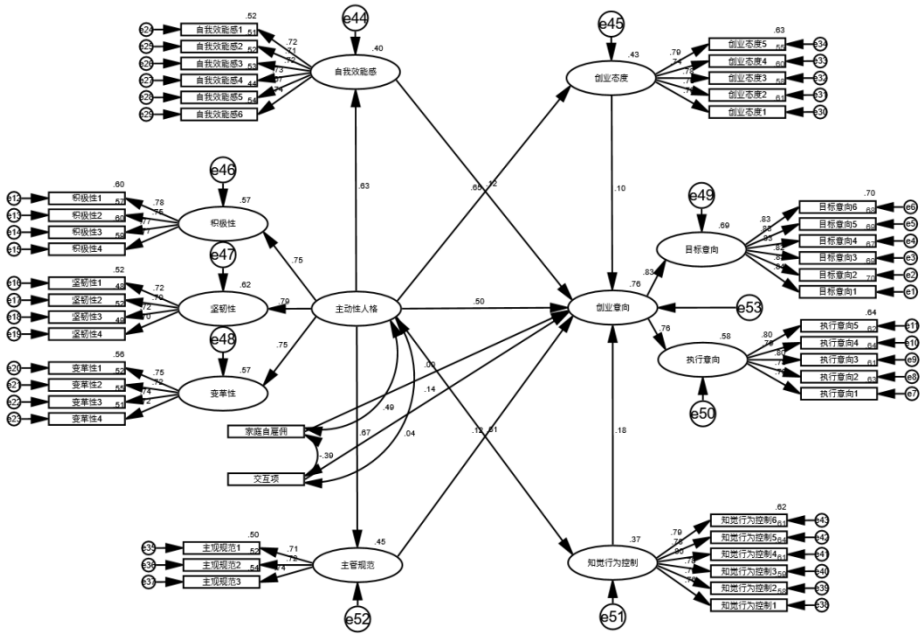
PNFI (Paran root mean square fit index) is 0.901, PCFI (Parsimonious fit index) is 0.928, both exceeding the standard of 0.5.

The achievement of all these fitness indicators confirms that the model of this study has good fitness according to the standards of Bentler and Chou (1987) and Hair et al. (2004).

After confirming the fitness, this paper tested the convergent validity of the scale. The results showed that the standardized factor loading ranges of the nine dimensions of goal intention, execution intention, motivation, resilience, change, self-efficacy, entrepreneurial attitude, subjective norms and perceived behavioral control in the scale were 0.742 to 0.769, 0.744 to 0.753, 0.718 to 0.774, 0.667 to 0.723, 0.699 to 0.757, 0.685 to 0.731, 0.746 to 0.752, 0.717 to 0.738, and 0.748 to 0.773, respectively. These values all meet the standard of standardized factor loading greater than 0.5, and all reach the significance level, which is in line with the standards proposed by Hair et al. (1998) and Nunnally (1978). The combined reliability (CR) values of the scale facets range from 0.766 to 0.903, and the average variation extraction (AVE) values range from 0.512 to 0.659. Both indicators meet the convergent validity standards of CR values greater than 0.6 and AVE values greater than 0.5. According to the research of Bagozzi and Yi (1988), this shows that the scale has high internal consistency and structural validity.

1.2 Correlation analysis

The path coefficient of the model was verified using the structural equation, and the structural equation model was established according to the theoretical hypothesis as follows:



Path analysis was used to test the hypothesis. According to the table below, all paths were significant less than 0.05, so all paths were significant. Proactive personality has a significant impact on other variables. Proactive personality has a very significant positive impact on self-efficacy, entrepreneurial attitude, supervisor norms and perceived behavioral control. The estimated coefficients of these paths are 1.064, 1.078, 1.010 and 1.076, respectively, and the corresponding critical ratios (C.R.) are all much greater than 1, indicating that these effects are very strong. Self-efficacy, entrepreneurial attitude, supervisor norms and perceived behavioral control have a significant impact on entrepreneurial intention, especially perceived behavioral control, which has the most significant impact on entrepreneurial intention, with an estimated coefficient of 0.157 and a critical ratio of 4.944. The effects of self-efficacy, entrepreneurial attitude and supervisor norms are relatively small, but still significant, with P values of 0.001, 0.011 and 0.005, respectively. Proactive personality has a direct impact on entrepreneurial intention, and proactive personality also indirectly affects entrepreneurial intention through self-efficacy, entrepreneurial attitude, supervisor norms, and perceived behavioral control. The total effect of proactive personality on entrepreneurial intention is 0.780, and the critical ratio is 5.862, indicating that proactive personality is an important factor affecting entrepreneurial intention.

Table 1 Path analysis table

Path	Estimate	S.E.	C.R.	P
Proactive personality → self-efficacy	1.064	0.070	15.174	***
Proactive personality → entrepreneurial attitude	1.078	0.067	16.086	***
Proactive personality → supervisor norms	1.010	0.068	14.939	***

Proactive personality → perceived behavioral control	1.076	0.070	15.402	***
Self-efficacy → entrepreneurial intention	0.114	0.035	3.265	0.001
Entrepreneurial attitude → entrepreneurial intention	0.093	0.036	2.559	0.011
Supervisory norms → entrepreneurial intention	0.125	0.045	2.781	0.005
Perceived behavioral control → entrepreneurial intention	0.157	0.032	4.944	***
Proactive personality → entrepreneurial intention	0.780	0.133	5.862	***

1.3 Mediation analysis

The Bootstrap method was used to sample 5000 times and the confidence interval was 95% for testing. According to the table below, in the first step, the overall effect was observed, and the 95% confidence interval [0.765, 0.896] did not contain 0, and P = 0.000 < 0.05. Therefore, perceived behavioral control, supervisor norms, entrepreneurial attitude and self-efficacy may play a mediating role in the relationship between proactive personality and entrepreneurial intention. In the second step, the indirect effect interval [0.065, 0.154] of proactive personality → perceived behavioral control → entrepreneurial intention was checked, and it did not contain 0, and P = 0.000 < 0.05. The indirect effect interval [0.018, 0.144] of proactive personality → supervisor norms → entrepreneurial intention did not contain 0, and P = 0.000 < 0.05. The indirect effect interval of proactive personality → entrepreneurial attitude → entrepreneurial intention [0.009, 0.116] does not include 0, P = 0.000 < 0.05. The indirect effect interval of proactive personality → self-efficacy → entrepreneurial intention [0.027, 0.127] does not include 0, P = 0.000 < 0.05. This shows that the four mediation paths have obvious mediation effects. The third step is to test the direct effect interval of proactive personality → entrepreneurial intention [0.355, 0.648] does not include 0, and P = 0.000 < 0.05. This shows that the mediation effects of the four mediation paths are all partial mediation effects. Specifically, in the relationship between proactive personality and entrepreneurial intention, the mediating effect of proactive personality on entrepreneurial intention through perceived behavioral control is 13.03% (0.108/0.829); the mediating effect of proactive personality on entrepreneurial intention through supervisory norms is 9.77% (0.081/0.829); the mediating effect of proactive personality on entrepreneurial intention through entrepreneurial attitude is 7.72% (0.064/0.829); the mediating effect of proactive personality on entrepreneurial intention through self-efficacy is 9.41% (0.078/0.829).

Table 2 Mediation effect test table

Path	SE	S.E.	P	95%CI	
				LB	UB
Standardized total effect	0.829	0.034	0.000	0.765	0.896
Standardized total indirect effect	0.331	0.054	0.000	0.226	0.434
Proactive personality → perceived behavioral control → entrepreneurial intention	0.108	0.023	0.000	0.065	0.154
Proactive personality → supervisor norms → entrepreneurial intention	0.081	0.032	0.018	0.018	0.144
Proactive personality → entrepreneurial attitude → entrepreneurial intention	0.064	0.027	0.020	0.009	0.116
Proactive personality → self-efficacy → entrepreneurial intention	0.078	0.025	0.001	0.027	0.127
Standardized direct effect	0.498	0.075	0.000	0.355	0.648

Discussion

This study yields several interesting findings that both support and challenge previous research on entrepreneurial intentions among college students.

First, our findings reveal a strong positive relationship between proactive personality and entrepreneurial intention ($\beta = 0.780$, CR = 5.862), which aligns with Mustafa et al.'s (2016) research. However, the strength of this relationship in our study is notably higher than the correlation ($\beta = 0.52$) reported in their study of university students in emerging economies. This stronger correlation might be attributed to the unique characteristics of Chinese college students or the current entrepreneurial environment in China.

Second, our study found that perceived behavioral control exhibited the strongest mediating effect (13.03%) among all mediating variables. This finding partially contradicts Liñán and Chen's (2009) research, which suggested that in collectivist cultures like China, perceived behavioral control should have a relatively weak effect. Our results instead align more closely with Wilson et al.'s (2007) findings, which emphasized the crucial role of perceived behavioral control in entrepreneurial intention formation. This unexpected result might suggest a shift in Chinese college students' mindset towards a more individualistic approach to entrepreneurship.

Third, an intriguing and unexpected finding is that students with family self-employment backgrounds scored significantly lower in entrepreneurial intention and related variables compared to those without such backgrounds. This contrasts sharply with Aldrich et al.'s (1998) findings, which indicated that entrepreneurial parents positively influence their children's entrepreneurial choices. Our results also diverge from Escolar et al.'s (2019) research, which found higher entrepreneurial intentions among individuals from self-employed families. This surprising finding might suggest that direct exposure to entrepreneurial challenges through family experiences leads to more cautious attitudes toward entrepreneurship among Chinese students.

Fourth, the mediating effects of self-efficacy (9.41%) and subjective norms (9.77%) were relatively similar in strength, which differs from Zhao et al.'s (2010) findings where self-efficacy showed a substantially stronger mediating effect than subjective norms. This balanced influence of personal capability beliefs and social pressures might reflect the unique characteristics of Chinese society, where individual confidence and social expectations carry similar weights in career decisions.

These findings contribute significantly to our understanding of entrepreneurial intention formation among Chinese college students and highlight the need to consider cultural and contextual factors when applying western-developed theories in different cultural settings. The unexpected results, particularly regarding family self-employment background, call for further investigation into the complex dynamics between family influence and entrepreneurial intentions in the Chinese context.

Conclusion

This study conducted an empirical analysis of the relationship between college students' proactive personality and entrepreneurial intention through structural equation modeling (SEM). The results showed that there was a significant positive correlation between proactive personality and entrepreneurial intention. Specifically, proactive personality had a significant positive impact on self-efficacy, entrepreneurial attitude, subjective norms, and perceived behavioral control, with path coefficients of 1.064, 1.078, 1.010, and 1.076, respectively, and the critical ratios (C.R.) of these paths were all much greater than 1, indicating that the effect strength was large. Self-efficacy, entrepreneurial attitude, subjective norms, and perceived behavioral control all had significant positive effects on entrepreneurial intention, among which perceived behavioral control had the most significant effect, with an estimated coefficient of 0.157 and a critical ratio of 4.944. In addition, the total effect of proactive personality on entrepreneurial intention was 0.780, and the critical ratio was 5.862, which showed that proactive personality was an important factor affecting entrepreneurial intention.

Proactive personality affects entrepreneurial intention through four mediating variables, among which perceived behavioral control has the most significant mediating effect, with a mediating effect of 13.03%, followed by self-efficacy (9.41%), entrepreneurial attitude (7.72%) and subjective norm (9.77%). These data show that proactive personality not only directly affects entrepreneurial intention, but also indirectly promotes the formation of entrepreneurial intention by improving individual self-efficacy, entrepreneurial attitude, subjective norm and perceived behavioral control.

Suggestions

Based on the findings of this study, several important implications and suggestions are proposed for future research and practice:

1.Theoretical and Research Implications

This study highlights several directions for future research. First, longitudinal studies are needed to examine how entrepreneurial intentions evolve into actual entrepreneurial behaviors among college students. Second, the unexpected negative relationship between family self-employment background and entrepreneurial intention warrants further

investigation across different cultural contexts. Third, future research should consider expanding the sample to include different regions and university types in China to enhance the generalizability of findings. Additionally, investigating the role of other potential moderating variables (e.g., gender, academic major, economic background) could provide more comprehensive insights into the formation mechanism of entrepreneurial intention.

2.Practical Implications for Education

The findings suggest that entrepreneurship education should focus more on enhancing students' perceived behavioral control, given its strongest mediating effect (13.03%) on entrepreneurial intention. Educational institutions should consider developing integrated programs that combine theoretical knowledge with practical experience. Moreover, the curriculum should be designed to strengthen students' proactive personality traits while simultaneously building their entrepreneurial self-efficacy. These programs should also incorporate real-world entrepreneurial experiences and case studies to provide students with realistic insights into entrepreneurial challenges.

3.Policy Implications

The study's findings have important implications for policy development. Given the complex relationship between family background and entrepreneurial intention, policymakers should consider developing differentiated support mechanisms for students from various backgrounds. Furthermore, policies should focus on creating a more supportive environment for college student entrepreneurship, including financial support, technical assistance, and risk mitigation measures. The relatively low entrepreneurship rate among Chinese college students (1.6%) compared to their international counterparts suggests the need for more targeted policy interventions.

4.Implementation Considerations

To effectively implement these suggestions, a systematic approach is recommended. First, regular assessment mechanisms should be established to evaluate the effectiveness of entrepreneurship education programs. Second, stronger collaboration networks should be built between universities, industries, and government agencies to provide comprehensive support for student entrepreneurship. Third, intervention programs should be designed specifically to enhance students' perceived behavioral control and entrepreneurial self-efficacy, as these factors demonstrate significant influence on entrepreneurial intention.

These suggestions are proposed with consideration of both theoretical advancement and practical application in the field of entrepreneurship education and support. Future research and practice should focus on validating and implementing these recommendations while remaining sensitive to the unique characteristics of the Chinese educational and entrepreneurial context.

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