

Article

Fostering Sustainable Entrepreneurs: Evidence from China College Students' "Internet Plus" Innovation and Entrepreneurship Competition (CSIPC)

Xiaohan Yan ¹, Dongxiao Gu ^{1,*}, Changyong Liang ^{1,2}, Shuping Zhao ¹ and Wenxing Lu ¹

¹ School of Management, Hefei University of Technology, Hefei 230009, China; xiaohany95@gmail.com (X.Y.); cyliang@hfut.edu.cn (C.L.); zhaoshuping1753@hfut.edu.cn (S.Z.); wxluhfut@gmail.com (W.L.)

² Ministry of Education Key Laboratory of Process Optimization and Intelligent Decision-making, Hefei University of Technology, Hefei 230009, China

* Correspondence: gudongxiao@hfut.edu.cn; Tel.: +86-138-6616-7367

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Abstract: Entrepreneurial activities of college students have received unprecedented attention under the “mass entrepreneurship and innovation” program. This program encourages individuals to start their own businesses and stimulate the entrepreneurial spirit and innovative genes of the nation. Sustainable entrepreneurship is a new form of entrepreneurship that plays an important role in addressing the employment problems of college students, promoting sustainable social and economic development, and alleviating China’s environmental problems. Based on the platform of the *China College Students’ “Internet Plus” Innovation and Entrepreneurship Competition (CSIPC)* organized by the Ministry of Education of People’s Republic of China, we investigated the specific paths of personality trait influence on sustainable entrepreneurial intention of college students with entrepreneurial alertness and opportunity recognition as mediating variables. We conducted an empirical analysis based on 316 data collected from CSIPC participants. Results of data analysis show that personality traits had a significantly effect on sustainable entrepreneurial intention of college students, and entrepreneurial alertness and opportunity recognition played a mediating role between personality traits and sustainable entrepreneurial intention of college students. This study contributes to research on sustainable entrepreneurship and the practices of colleges to foster sustainable entrepreneurs.

Keywords: sustainable entrepreneurship; Internet Plus; innovation and entrepreneurship competition; personality traits; college students

1. Introduction

With the transformation process of the market economy and the challenging job market, entrepreneurship has gradually become another choice for job seekers, and therefore has been playing an increasingly important role in economic society. Promoting entrepreneurial activities not only heightens employment and income options but also promotes vertical mobility, equality, and justice in society. In addition, China’s energy production and consumption of coal-based pattern and rapid development of the economy causes environmental problems that cannot be ignored [1].

Sustainable entrepreneurship, which is the new form of entrepreneurial opportunity, not only pursue economic but also non-economic value [2]. It can not only result in employment opportunities for college students and promote economic and social development, but it can also solve the environmental problems caused by rapid economic development. Sustainable entrepreneurship is beneficial to the protection of the ecological environment and the sustainable development of the economy and society in China.

According to data from a research report on the employability of graduates in 2017, 6.3% of college students started a business in 2017 in China, with that number being far lower than that of developed countries such as the United States, which is 20–30%. The success rate of college students' entrepreneurship in China is also lower than the 30% success rate in developed countries. In general, college students in China have a low rate of entrepreneurship and low success rate. However, the strength of entrepreneurial intention affects entrepreneurial activity, which is the basis and premise of entrepreneurial behavior and the best predictor of entrepreneurial behavior [3].

Young college students with highly advanced knowledge and creativity are the main entrepreneurs. In recent years, the number of college graduates in China has continued to increase, thereby adding pressure on employment. Therefore, encouraging and guiding students to start a business could contribute to solving the problem of current employment pressure. At the same time, it can promote a favorable and rapid development of the national economy. The entrepreneurial intention of college students determines the degree of positive nationwide entrepreneurial activity to a certain extent. It is crucial to study the mechanism that affects the entrepreneurial intention of college students to promote their entrepreneurial behavior in order to formulate targeted entrepreneurship policies and to foster sustainable entrepreneurs.

At present, studies on the factors affecting traditional entrepreneurial intention concentrate mainly on the following aspects: (1) the personality characteristics and individual backgrounds of entrepreneurs from the perspective of personal traits [4]; (2) the construction of the entrepreneurial model based on cognitive theory to explain the phenomenon of entrepreneurship, with typical examples focusing on the model of planned behavior (TPB) and the entrepreneurial event model (SEE) [5,6]; and (3) research from the perspective of entrepreneurial environment focusing mainly on the concept and components of the entrepreneurial environment and the construction of the research framework of the entrepreneurial environment [7,8]. Few studies on sustainable entrepreneurship have been conducted. Patzelt and Shepherd suggest that the recognition of opportunities for sustainable development depends on interdependencies between individuals' entrepreneurial knowledge and their knowledge of the natural/communal environment, perceived personal threat, and altruism and the recognition of sustainable development opportunities is perhaps more complex than the recognition of nonsustainable opportunities motivated solely by economic gain for the entrepreneur [9]. Schaltegger and Wagner studied sustainable entrepreneurship and sustainable innovation of enterprises, which is of certain guiding significance for identifying enterprises with the sustainable entrepreneurial ability [10]. Belz and Binder developed a model based on four case studies and found the triple bottom line of ecological, social and economic goals is integrated sequentially, not simultaneously [11].

Research on personality traits and entrepreneurial intention also has several problems. First, most studies are aimed mostly at the general population or college students. Foreign scholars Espiritu-Olmos et al. studied a sample of 1210 public university students and found that the effect of personality traits on entrepreneurial intention is greater than that of work values, whereas Zhao and Du found that new generation college students' personality traits have a significant effect on entrepreneurial intention [12,13]. Second, studies are based mostly on self-identification as a moderator variable. Wang et al. studied the role of self-identification between personality traits and entrepreneurial intention [14]. Zhou found that personality traits of post-1990s college students were correlated positively with entrepreneurial self-efficacy and entrepreneurial intention with self-identification as the moderating variable [15]. Third, research on personality traits and entrepreneurial intention do not investigate entrepreneurial alertness and opportunity recognition simultaneously as mediating variables. Most importantly, determining how to promote sustainable entrepreneurship in college students and what the influencing factors are remain unclear.

To address these research gaps, this study attempts to explain the influence of personality traits on the sustainable entrepreneurial intention of college students and specific effects of personality traits on the sustainable entrepreneurial intention of college students. In this study, we utilize China College Students' "Internet Plus" Innovation and Entrepreneurship Competition (CSIPC)

as a research platform and college students (CSIPC' participants) as of our survey object. We also added entrepreneurial alertness and opportunity recognition into the model of personality traits and sustainable entrepreneurial with their intention as mediating variables. Enriching the theory that personality traits influence college students' sustainable entrepreneurial intention is of utmost importance. At the same time, this study will provide a reference to find talents with strong entrepreneurial intention and suggest entrepreneurship education for universities to better guide students to start their own business and foster sustainable entrepreneurs.

2. Theoretical Foundation

2.1. Personality Traits

The term "personality trait" is originally a field of research in psychology. However, with the continuous in-depth studies on entrepreneurial activities and the integration of different disciplines, "personality trait" has been included in the research scope of entrepreneurial activities.

In 1949, Raymond Bernard Cattell proposed 16 independent root qualities of personality traits with factor analysis and compiled the Sixteen Personality Factor Questionnaire (16PF). He believed each person has these 16 traits, but the performance of different individuals varied [16]. Cosat and McCrae formulated the big five model upon further classification of the 16 characteristics. After improvements, the model has become a widely recognized description form of personality traits. The big five model includes extraversion, neuroticism, openness, agreeableness, and conscientiousness [17].

Research on personality traits focuses on its behavioral and psychological aspects. For instance, Solaja et al. studied a sample from 112 academic staff of Olabisi Onabanjo University and found that personality traits and communication styles have a combined effect on organizational productivity [18]. Korzaan and Boswell incorporated the Big Five personality traits into a theoretical model that explained and predicted individual behavioral intentions [19]. In China, Yao et al. conducted an empirical study on frontline employees in the bus industry and found that personality traits of employees are related to work performance, and that working attitude plays a moderating role in this relationship [20]. In psychology, Pollock et al. investigated associations between pathological personality traits and emotion regulation difficulties, and suggested the important connections between pathological personality traits and emotion regulation difficulties [21]. Kotov et al. studied the personality traits linked with negative emotions such as anxiety and depression and found that common psychological disorders are related closely to personality traits. This discovery is beneficial to psychiatric research and clinical practice [22]. Through the investigation of the personality traits of 1163 college students using emotional adjustment strategies and subjective well-being, Li et al. determined that a possible mechanism for the stable intrinsic psychological structure of temperament personality traits affected subjective well-being [23].

In addition, personality traits of entrepreneurs had already been studied widely. Schumpeter incorporated concepts similar to innovativeness achievement orientation, dominance, and other personality factors of the entrepreneur into theories of economic development [24]. Farrukh et al. used the Big Five Model to study the personality traits of entrepreneurs as the antecedent of entrepreneurial intention [25]. Correa and Guajardo studied entrepreneurs' personality traits to analyze the nine causes of entrepreneurial failure [26].

2.2. Entrepreneurial Alertness

Entrepreneurial alertness was first proposed by Kirzner, who believed that entrepreneurial alertness is the ability to identify easily opportunities that others ignore [27]. After modification, entrepreneurial alertness is defined as entrepreneurs' keen perception of opportunities different from others and the tendency to make bold assumptions about the future [28]. Miao believes entrepreneurial alertness is a mental pattern and psychological schemata that causes entrepreneurs to observe information more keenly and to process and judge information based on this perception [29].

Research on entrepreneurial alertness is based mainly on its relationship with entrepreneurial opportunity recognition. The results obtained by Chinese and foreign scholars show that entrepreneurship awareness has a significant effect on entrepreneurial opportunity recognition and provides a more accurate explanation of the differences between entrepreneurs and non-entrepreneurs in the opportunity recognition. Mahmoud and Alizadeh conducted a survey on 279 entrepreneurs and found that entrepreneurial alertness, an entrepreneur's personal qualities, social networks, basic knowledge, and inference ability have a significant correlation with entrepreneurial opportunity recognition. This study is beneficial to the discovery of potential entrepreneurs with strong opportunity recognition ability [30].

Norria and Zakaria studied Malaysian local entrepreneurs and found that entrepreneurial alertness and entrepreneurs' creativity are positive determinants of entrepreneurial opportunity recognition. They also found the absence of a significant relationship between social network and entrepreneurial opportunity recognition and that prior knowledge does not regulate the relationship between social networks, entrepreneurial alertness and creativity, and entrepreneurial opportunity recognition [31].

Wang and Liu conducted experiments with 114 college students without pioneering experience and 94 entrepreneurial college students to explore the effects of college students' entrepreneurial alertness and knowledge on entrepreneurial opportunity recognition. They found that the entrepreneurial alertness of entrepreneurial college students was stronger than the non-entrepreneurial students and that their knowledge had a significant influence on entrepreneurial opportunity recognition; meanwhile, the entrepreneurial alertness of non-entrepreneurial college students had a significantly positive influence on entrepreneurial opportunity recognition [32].

2.3. Opportunity Recognition

No uniform definition of the opportunity exists, but two main points of view can be found. The first point of view is that of opportunity discovery, which states that opportunity has objective existence. In short, an individual can find opportunities as long as they can be identified [33]. The second viewpoint is the opportunity creation theory, which states that opportunities need to be created by individuals [34]. Hills and Lumpkin believed that opportunity recognition is a process of discovering market demand, satisfying market demand as soon as possible, and, based on that, creatively expanding new service areas to adapt to the emerging demand [35].

Research on opportunity recognition has been carried mainly in the following aspects. The first aspect is the relationship between opportunity recognition and entrepreneurial alertness, which has been described in detail in Section 2.1. The second aspect is the relationship between prior knowledge and opportunity recognition. Ali et al. ascribed entrepreneurial alertness and the cognitive characteristics of entrepreneurial education as mediating variables to explore the effect of prior knowledge on opportunity recognition. They found that prior knowledge has a significant influence on entrepreneurial alertness, entrepreneurial education, and opportunity recognition [36]. Zhou conducted an empirical study on micro enterprises and found that in micro enterprises entrepreneurs' family social capital, previous entrepreneurial experience and training experience have a significant positive effect on entrepreneurial opportunity recognition. The third aspect is the other factors of opportunity recognition [37]. Nikraftar and Hosseini collected data from 220 senior tourism business members in Iran and proposed that social network was the most important predictor among all other of antecedents of entrepreneurial opportunity recognition [38]. In the study of the effects of the mechanism of the relationship between relationship network and entrepreneurial opportunity recognition, Chen found that relationship networks can not only predict entrepreneurial opportunity recognition directly, but also entrepreneurial opportunity recognition through cognitive, experiential learning, and practical learning [39].

2.4. Sustainable Entrepreneurial Intention

As a new research topic derived from the relationship between entrepreneurship and sustainable development, the definition of sustainable entrepreneurship has not been unified. Widely accepted definitions include the following: (1) the process of discovering, evaluating, and developing business opportunities arising from the sustainability of market failure [40]; (2) the process of identifying and developing opportunities in which sustainable entrepreneurs turn their future products and services into reality and ultimately create new values that take into account the demands of economic, psychological, social, and environmental interests [41]. Sustainable entrepreneurship focuses not only on economic interests but also on non-economic values. Non-economic value includes social [42] and environmental value [43], whereas economic benefits are not only the economic benefits obtained by entrepreneurs, but also the interests of other people and society [2].

Intention refers to an individual's subjective thinking produced by the individual's views or thoughts and is an objective predictor of behavior. Entrepreneurial intention is an important direction of entrepreneurial behavior and is the most direct precondition variable and precursor of entrepreneurial behavior [15]. The concept of entrepreneurial intention was first introduced by Bird in 1988, in which he claimed that entrepreneurial intention is the mindset to guide individual focus and even commit to creating a new company or even new values in the existing company to obtain the corresponding satisfaction. Jiang and Liu divided entrepreneurial intention into two types: passive and active. The passive type is when individuals are forced to start their own businesses because they are dissatisfied with the employment situation or cannot be employed. The active type refers to the entrepreneurial activity that the individual believes to have the opportunity to create profits and take initiative [44]. Entrepreneurial intention as used in this paper is the active type. Sustainable entrepreneurship intention, as the name implies, refers to the intention of sustainable entrepreneurship; that is, the entrepreneurs' intention to achieve multiple interests through entrepreneurial activities.

At present, research on traditional entrepreneurial intention consists mainly of three aspects: the entrepreneurial environment, entrepreneurial education, and entrepreneurial behavior performance. In terms of the entrepreneurial environment, Duan and Du considered entrepreneurial environment to be one of the important factors affecting college students' entrepreneurial intention, and that improvement of entrepreneurial environment contributed to the promotion of college students' entrepreneurial intention [45]. Wang et al. analyzed the relationship between entrepreneurial environment and college students' entrepreneurial intention, and found that, in the five dimensions of entrepreneurial environment, college students' entrepreneurial capital support, business skills, social and economic, and policies and regulations support have a significant positive influence on entrepreneurial intention [46]. In terms of entrepreneurship education, Bae et al. studied the relationship between entrepreneurship education and entrepreneurial intention through empirical research and determined that entrepreneurship education has a significant positive effect on entrepreneurial intention, and its influence on entrepreneurial intention is more significant than business education [47]. Moses et al. examined the relationship between entrepreneurship education and entrepreneurial intentions as well as the moderating role of passion based on a literature review [48]. In entrepreneurial behavior, Abi et al. studied the relationship between employees' work performance and entrepreneurial intention in a certain education department. Results indicated that the five dimensions of entrepreneurial intention have a significant effect on job performance [49].

Research on sustainable entrepreneurship focuses on three aspects. The first aspect is sustainable entrepreneurs. Kai and Wüstenhagen believed that, in the early stages of the sustainability transition, the industry's new entrants are more likely to pursue sustainable development opportunities while they explore the effects of sustainable entrepreneurship on the transformation of society and environment to sustainable development [50]. The second aspect is sustainable entrepreneurship. Scholars believed the organization for sustainable entrepreneurship is not only non-profit organizations, but also profit-making enterprises that promote its own competitiveness through sustainable entrepreneurship. Both new green organizations and mature enterprises have initiated internal entrepreneurship for

the environmental purposes [51]. Meek et al. found that the contribution of profit and nonprofit organizations to sustainable entrepreneurship in different countries differed and that, at the different growth stages, the enterprises' orientation of sustainable entrepreneurship is not the same [52]. The third aspect is sustainable entrepreneurship in the system of sustainable entrepreneurship. Meek et al. conducted an empirical study and determined that sustainable development orientation and environmental guidance in a region will promote the formation of important social norms of sustainable entrepreneurship [52]. Shepherd and Patzelt have shown that sustainable entrepreneurs can affect decisions on environmentally friendly systems and other aspects of the system, and ultimately help achieve sustainable entrepreneurship [2].

3. Conceptual Model and Hypotheses Development

3.1. Personality Traits and Sustainable Entrepreneurial Intention

In the study on traditional entrepreneurial intention, its relationship with personality traits is an important research content. Many scholars have proved the existence of a correlation between personality traits and entrepreneurial intention. Wang et al. studied the contribution of self-efficacy to the relationship between personality traits and entrepreneurial intention and found that openness and negative emotion had a direct effect on entrepreneurial intention in agricultural students [14]. Dehkordi et al. studied the effects of personality traits and emotional intelligence on entrepreneurial intention and identified the personality traits and emotional intelligence factors that have significant influence. Their study further categorized entrepreneurial intention and determined that, among the personality traits, demand for success had the most significant influence on entrepreneurial intention [53].

Fan and Wang conducted a survey of domestic college students and confirmed that extroversion and conscientiousness had significant influence on entrepreneurial intention [54]. By combining and summarizing existing literature, we find that, although scholars have different distinctions in terms of personality traits, the influence of personality traits on entrepreneurial intention is unquestionable. In our study, we extended traditional entrepreneurial intention to sustainable entrepreneurial intention and explore the effects of personality traits on sustainable entrepreneurial intention. Most of the previous studies suggest that the three dimensions (extraversion, agreeableness, and neuroticism) of personality are closely correlated to entrepreneurship. The influence of other dimensions on entrepreneurship is not very significant. Meanwhile, in the pre-survey, we test five dimensions of personality traits, including extraversion, agreeableness, neuroticism, openness and conscientiousness, and most of the participants responded that mostly these three—extraversion, agreeableness, and neuroticism—have a significant influence on entrepreneurship. Hence, according to the data analysis results of the pre-survey, there is no significant influence between openness, conscientiousness and entrepreneurship, so this study only focused on examining these three dimensions of personality traits: extraversion, agreeableness, and neuroticism. In the following study, we will investigate the relationship between these dimensions and entrepreneurial intentions. Extraversion is defined as the tendency to like people; preference to belong in large groups; desire for excitement and stimulation; and tendency to be assertive, active, and talkative. Agreeableness is the tendency to be altruistic, cooperative, and trusting. Neuroticism is the tendency to experience negative emotions, such as fear, sadness, embarrassment, anger, guilt, and disgust [55]. Based on the above analysis, we hypothesize that:

H1a. *Extraversion has a significantly positive effect on sustainable entrepreneurial intention.*

H1b. *Agreeableness has a significantly positive effect on sustainable entrepreneurial intention.*

H1c. *Neuroticism has a significantly negative effect on sustainable entrepreneurial intention.*

3.2. Personality Traits and Entrepreneurial Alertness

Hisrich suggested that individuals will develop their own ideas through constant stimulation from the external environment, which will enhance their ability to avoid the irrelevant stimulus. Their vigilance against unrelated messages will help the individual to find a favorable opportunity quickly and accurately in the external environment [56]. Graham and Lachman (2014) suggested that high neuroticism can lead to anxiety, negatively affect performance, and even affect the level of individual inference ability. By contrast, highly open individuals have a higher intelligence level and cognitive ability, which have a positive effect on individual reasoning ability [57]. The value of the opportunity itself may bring value, and its future development will affect an individual's judgment of the opportunity. At the same time, an individual's personality traits, alertness to the presence of an opportunity, and the attitude toward risk will affect his/her judgment of the opportunity. Huang studied the relationship between entrepreneurial personality traits, entrepreneurial alertness, and opportunity recognition, and determined that personality traits have a certain effect on entrepreneurial alertness [58]. Based on the research achievements from related literature, we find that one's personality traits can affect one's ability to easily identify opportunities that others ignore, and consequently influence one's entrepreneurial alertness. Hence, we hypothesize the following:

H2a. *Extraversion has a significant positive effect on entrepreneurial alertness.*

H2b. *Agreeableness has a significant positive effect on entrepreneurial alertness.*

H2c. *Neuroticism has a significant negative effect on entrepreneurial alertness.*

3.3. Personality Traits and Opportunity Recognition

The relationship between personality traits and opportunity recognition of entrepreneurs has been widely studied. At present, domestic and foreign studies have shown that extroversion and neuroticism in personality traits have a significant effect on individual emotion. Studies generally believe that extroversion is associated strongly with positive emotions, whereas neuroticism has a greater effect on negative emotions. From the perspective of personality traits, Tian and Zhang studied the effects of several factors, such as risk orientation, innovation orientedness, success demand, self-efficacy, and other dimensions of personality traits entrepreneurial opportunity recognition. They found that innovation orientedness and success demand affect entrepreneurial opportunity recognition methods. However, the results obtained from the Chinese sample is not similar to that of the United States [59]. Through an empirical analysis of 86 questionnaires, Liang et al. found that three dimensions—namely, neuroticism, openness, and conscientiousness—in the Big Five Model are correlated positively with entrepreneurial orientation in the study of the relationship between personality traits and entrepreneurial orientation of an entrepreneurial team [60]. A large number of studies have shown that extraversion has a positive effect on individual work performance. The more extroverted entrepreneurs are, the more receptive to new knowledge and more they are able to cope with changes and adapt to new environments they become, making it easier for them to identify opportunities around them.

In summary, personality traits affect entrepreneurial behaviors and work performance, and the different dimensions of personality traits have different influences. Therefore, the relationship between personality traits and opportunity recognition exist. Hence, we hypothesize the following:

H3a. *Extraversion has a significantly positive effect on opportunity recognition;*

H3b. *Agreeableness has a significantly positive effect on opportunity recognition;*

H3c. *Neuroticism has a significantly negative effect on opportunity recognition.*

3.4. Entrepreneurial Alertness and Opportunity Recognition and Sustainable Entrepreneurial Intention

At present, several studies have been conducted on entrepreneurial alertness and opportunity recognition on traditional entrepreneurial intention in China and abroad. However, research on sustainable entrepreneurial intention is also unavailable.

Hu and Ye explored whether entrepreneurial self-efficacy and entrepreneurial alertness predicted the entrepreneurial intention of a sample of 364 Chinese sports major students and determined that both entrepreneurial alertness and entrepreneurial self-efficacy were key cognitive predictors of participants' sustainable entrepreneurial intention [61].

Lim et al. used Ajzen's theory of planned behavior to predict entrepreneurial intention among 160 students in Malaysia; the results of the study confirmed the importance of the state of entrepreneurial alertness to entrepreneurial intention [49]. Shane and Venkataraman believed entrepreneurial opportunity is one of the key elements in implementing entrepreneurship. How to identify and understand entrepreneurial opportunities is a key issue in the field of entrepreneurship research [62]. At present, many scholars have realized that opportunity recognition is an important issue in the field of entrepreneurship research because the process of entrepreneurship starts from the entrepreneurial opportunity recognition. Moreover, the entrepreneurship process is a series of processes of identifying, grasping, and utilizing entrepreneurship opportunities. In addition, in TPB, entrepreneurial behavior is both conscious and planned. Entrepreneurship seeks to obtain entrepreneurs' focus, time, energy, and ultimate behavior towards specific goals, and promote the realization of the goal; the entrepreneurial idea is based on entrepreneurial intention [63]. Entrepreneurial intention is also the best predictor of entrepreneurial behavior. Only when entrepreneurial intention reaches a certain level will entrepreneurs produce entrepreneurial behaviors [28,33].

However, entrepreneurial intention does not mean an entrepreneurial activity is carried out immediately, but rather that entrepreneurs who have strong entrepreneurial intention will start a business at a certain time in the future. Song contended that entrepreneurial opportunity recognition plays a mediating role between the social network and entrepreneurial intention. Therefore, entrepreneurial opportunity recognition may have a positive effect on entrepreneurial intention [64]. Rui et al. drew from a field survey of 735 Chinese undergraduates and the study provided evidence for the argument that entrepreneurial alertness has a full mediation effect on the relationship between proactive personality and entrepreneurial intention, and suggested that entrepreneurial alertness has a positive impact on entrepreneurial intention [65].

Opportunity recognition is the beginning of the entrepreneurial process and compels individuals to start a business. Thus, we believe opportunity recognition can influence entrepreneurial intention. Individuals who are more discerning towards information can obtain the most valuable information advantageous in starting a business. Hence, this study extends traditional entrepreneurial intention to sustainable entrepreneurial intention. Therefore, we hypothesize the following:

H4. *Entrepreneurial alertness has a significantly positive effect on sustainable entrepreneurial intention.*

H5. *Opportunity recognition has a significantly positive effect on sustainable entrepreneurial intention.*

3.5. Mediating Role of Entrepreneurial Alertness and Opportunity Recognition

Opportunity recognition is the beginning of entrepreneurial behaviors, and entrepreneurial intention is the best predictor of entrepreneurial behaviors. Entrepreneurial alertness has a significant effect on opportunity recognition, which in turn affects entrepreneurial intention. Entrepreneur personality traits will affect entrepreneurs' identity and judgment on the opportunity, as well as their choices and judgment towards surrounding information. In other words, entrepreneur personality traits affect entrepreneurial alertness. Hence, we hypothesize the following:

H6. *Entrepreneurial alertness plays a mediating role between personality traits and sustainable entrepreneurial intentions.*

H7. *Opportunity recognition plays a mediating role between personality traits and sustainable entrepreneurial intentions.*

Based on the assumptions above, this paper constructs a mechanism model of personality traits influencing sustainable entrepreneurial intention, as shown in Figure 1.

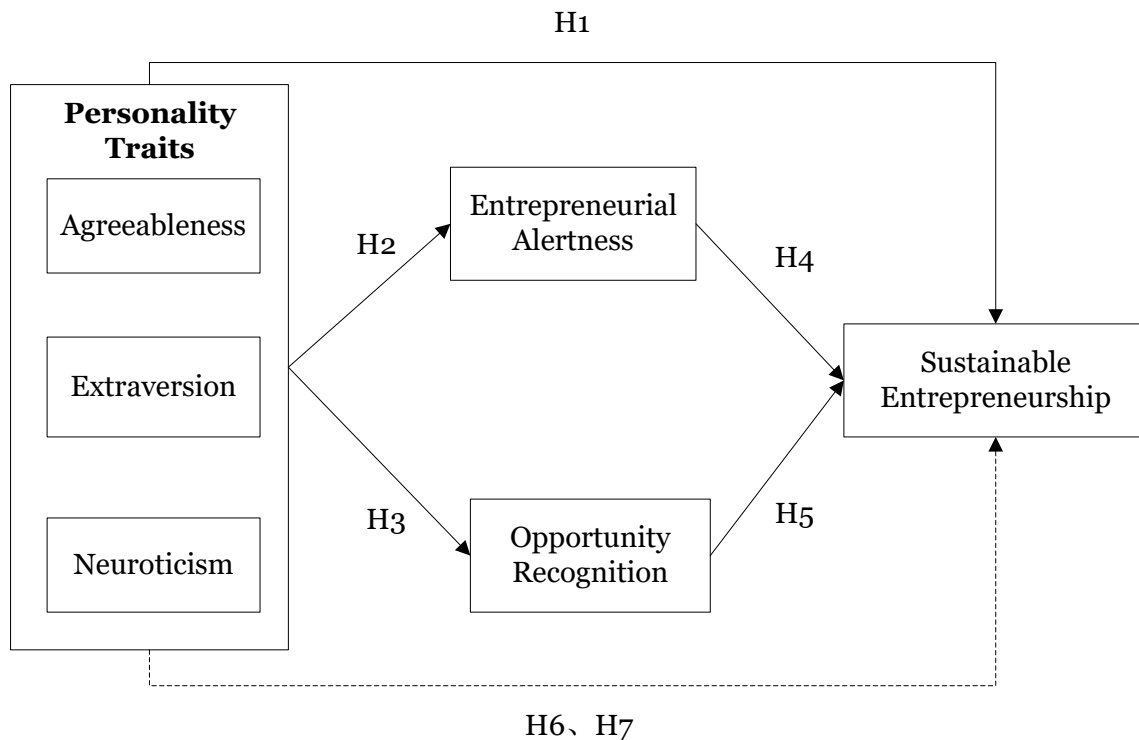


Figure 1. Theoretical model and hypothesis.

4. Research Method

4.1. Research Scale

The variable measurement items included in this research model were adopted from questionnaires from local and foreign papers. These items were adjusted properly according to the particularity of the model. The model contains four variables: personality traits, entrepreneurial alertness, opportunity recognition and sustainable entrepreneurial intention. The questionnaire used a 7-point Likert scale, indicating that the attitude of respondents gradually changed from “strongly disagree” to “strongly agree”. To ensure the validity of the questionnaire, all variables in this study were collected from the same questionnaire. Personality traits were drawn from Saucier G’s Big Five Personality Traits [66] and were measured based on three dimensions: agreeableness, extraversion, and neuroticism, each with three test items in the questionnaire. Entrepreneurial alertness was referred to in Miao Qing’s research and included seven measurement items [29]. Opportunity recognition is a reference to Huang’s research and included five measurement items [67]. The sustainable entrepreneurial intention was drawn from Brenner’s research, which included five measurement items [68]. The detailed measurement problems and reference sources of various variables are shown in Table 1.

Table 1. Scale development.

Variable	Item	Source
Personality Traits	Agreeableness I try to be polite and courteous to everyone I meet. After being treated rudely, I try to forgive them and forget about it. I believe human nature is good.	[66]
	Extraversion I like to have a lot of friends around. I can easily laugh. I like chatting with others very much.	
	Neuroticism When faced with great pressure, sometimes I feel like I am going to collapse. I often feel nervous and unsure. A lot of times, when things do not go well, I feel discouraged and want to give up.	
Entrepreneurial Alertness	I will gain new business information through my social network. I will obtain new business information by participating in the seminar. I can always get inspiration from other people's advice. I can find useful information that others have not found or overlooked. I can see the potential relationship beneath the surface of uncorrelated information. I can notice something unusual. I have an instinct for spotting potential business opportunities.	[29]
Opportunity Recognition	The entrepreneurial opportunities I identified are very unique. The sustainable products or services I have identified as sustainable entrepreneurial opportunities can be recognized socially. The products or services I have identified are not widely available in the market. The sustainable product or service offered by an entrepreneurial opportunity can lead to higher social benefits. A sustainable product or service provided by an entrepreneurial opportunity can provide a more sustainable development.	[67]
Sustainable Entrepreneurial Intention	I think I will choose to start a business focusing more on social or environmental problems primarily as new business opportunities in the future. If I have the opportunity and the freedom to make a decision, I will choose to start a business that contributes to social, ecological and economic developments in our society. I will still choose to start my own business on eco-products when I encounter practical difficulties. Compared with having a stable job, I am more willing to start a business on sustainable innovations. I think I have the possibility of starting a social entrepreneurship in the next five years.	[68]

4.2. Data Collection

This study conducted a pilot survey in a college level entrepreneurship competition in Hefei, Anhui Province to improve vague or distorted wordings. The questionnaire was modified according to the quality of the recovered data and the respondents' suggestions on the questionnaire. Finally, the modified questionnaire was used to collect data on a large scale. To make the research more targeted, data were collected from the participants of CSIPC. The Ministry of Education of the People's Republic of China organizes CSIPC to push innovation and foster young entrepreneurs. The competition has been held for the past three consecutive years and its popularity continues to grow rapidly. According to news from XinhuaNet, over 1.5 million students from 2241 universities and colleges took part in 2017. This competition aims to deepen education reform, stimulate college students' creativity, and train college students to become the leading force in the business. To lead entrepreneurship with innovation means to create more employment opportunities through entrepreneurship, and promote college graduates to have higher quality entrepreneurship and employment. In the 2018 CSIPC Anhui Division, there were over 24,000 teams submitted their business proposals of innovation and entrepreneurship and over 100,000 college students participated CSIPC Anhui Division as contestants. The teams were divided into initially a start-up group, start-up group, growth group and an entrepreneurship group. We noticed an interesting phenomenon: among the proposals of entrepreneurship group, approximately 15% were actually not for pure commercial profit, but focusing more on social benefits such as new energy, environment protection, green agriculture, rural precise poverty alleviation and promotion of rural sustainable development, water and lake pollution control, and public health related issues (such as the health promotions for elderly people with chronic/geriatrics and children

with autism). These proposals were actually sustainable entrepreneurship for social fairness and development, not like the normal ones focusing on pure economic gain. Thus, we screen out all the sustainable entrepreneurs according to the data as all the proposals, team's information, contestant's information, etc. All of the participants we selected are potential sustainable entrepreneurs who submitted business proposals associated with sustainable entrepreneurship, not normal ones. In addition, each CSIPC participant has an identification number (CSIPC ID), and we obtained the ID number from the organizers. A computer program randomly selected 450 CSIPC participants from all sustainable entrepreneurs as the candidates of the participants of our study. A total of 450 questionnaires were distributed to these respondents by the organizers of CSIPC on the day of the competition and were returned before the end of the competition (Appendix A). The questionnaire filling is also voluntary. Out of the 450 questionnaires retrieved, 377 returned completed questionnaires, resulting in a response rate of 83.78%. Among the 377 returned questionnaires, 61 were found to be incomplete and thus were discarded. The questionnaires with the same values for all responses indicate that the participants have not read each question carefully and provided answers; hence, these responses were excluded. Overall, only 316 valid data points could be used for analysis. Females accounted for 56.33% of the total valid questionnaires, which is slightly higher than males. Although the proportion was basically similar, it suggests that females occupy an increasingly important position in the national economy and entrepreneurial activities.

4.3. Analysis Method

Collected data were analyzed using partial least-squares regression. Data analysis included measurement validation and hypothesis testing. Validation assessed the reliability of the measures, while hypothesis testing analyzed the hypotheses being proposed. Structural equation modeling (SEM) of partial least squares (PLS) was used to evaluate the rationality of the measurement model and the rationality of the structural model simultaneously. Previous studies have shown that PLS-SEM can identify problems in models and use smaller samples to analyze complex models [69]. Therefore, this study used Smart PLS for analysis. The Smart PLS can better handle non-normal distribution data and small sample data, formative measurement model and single measurement index. Analysis of structural equation models based on the covariance matrices, such as Amos, Lisrel and Mplus, could lead to the problems of parameter estimation error caused by serious non-normal distribution of data, and the problem of the model fitting caused by sample size. Moreover, the sample size of this study is not very big, and this type of sample data is more suitable to use PLS rather than structural equation analysis.

The software used for data processing, analysis, and testing was SPSS20 and Smart PLS 2.0. The data analysis software SPSS20 was used for statistical analysis of the data. The sample was analyzed preliminarily through descriptive statistical analysis and exploratory factor analysis. Smartpls2.0 is the least square regression analysis tool that can verify the construction model established in this paper and verify the hypothesis path.

5. Results

5.1. Descriptive Statistical Analysis

First, the descriptive statistics of the sample data were used to analyze the basic information of the sample data, the percentage of each measurement dimension, the mean, standard deviation and so on. Through a simplified descriptive index, we had a rough idea of the basic information, structure and a distribution of the large and complex original data. In this paper, MS Excel (version, Manufacturer, City, US State abbrev. if applicable, Country) and SPSS20 (version, Manufacturer, City, US State abbrev. if applicable, Country) were used to conduct preliminary processing and descriptive statistical analysis of the recovered data. The statistical results are shown in Table 2. The mean value of the measurement reflects the fluctuation of the collected data, ranging from 4.63 to 5.16, with relatively

small fluctuation and more concentrated data. The factor loading of each measured item is higher than 0.7, indicating the correlation between the test item and the measurement variable is very high, and the items are reasonable.

Table 2. Descriptive statistics of the measurement.

Variable	Item Statistics			
	Item	Mean	Std. Deviation	Loading
Agreeableness	HF1	5.08	1.41	0.8464
	HF2	4.86	1.30	0.8487
	HF3	5.00	1.43	0.7993
Extraversion	HD1	4.99	1.38	0.88
	HD2	5.16	1.45	0.8822
	HD3	5.16	1.39	0.8616
Neuroticism	HJ1	4.51	1.54	0.8344
	HJ2	4.37	1.51	0.8389
	HJ3	4.28	1.57	0.7239
Entrepreneurial Alertness	FI1	4.94	1.41	0.7419
	FI2	4.93	1.34	0.7754
	FI3	4.80	1.41	0.7922
	FI4	4.70	1.28	0.8127
	FI5	4.66	1.31	0.803
	FI6	4.73	1.33	0.7608
	FI7	4.59	1.38	0.7542
Opportunity Recognition	FJ1	4.75	1.34	0.7988
	FJ2	4.63	1.34	0.828
	FJ3	4.63	1.42	0.8602
	FJ4	4.67	1.35	0.7939
	FJ5	4.64	1.36	0.7871
Sustainable Entrepreneurial Intention	HI1	4.68	1.50	0.8399
	HI2	4.82	1.39	0.8192
	HI3	4.71	1.40	0.8595
	HI4	4.68	1.45	0.8212
	HI5	4.65	1.36	0.7936

5.2. Reliability and Validity Test

The reliability and validity of the measured variables and the following parameters were tested to ensure reliability and validity of the questionnaire, the degree of fit of the model, and the effectiveness of the hypothesis test. The reliability of the variables, internal consistency of the variables, and discriminated validity and convergence of the model were tested. The quality of these parameters can reflect the quality of the measurement model. Cronbach's Alpha coefficient reflects the reliability of each item in the questionnaire in the reliability test, and the higher the coefficient, the better the reliability of the scale. The Cronbach's Alpha coefficient of all variables in this questionnaire is above the recommended standard of 0.70, ranging from 0.7223 to 0.8908, thereby indicating the scale selected is highly reliable [70]. Similarly, the boundary value of the combined reliability CR, which reflects the internal consistency of the variable, is 0.70 and the test is met, indicating that the sample data collected for the measurement model is consistent with the required internal consistency [71]. In terms of validity test, average variance extraction ratio (AVE) of each measure shows it is more than 0.5, indicating that the observed variables can well explain the measurement dimension [72]. The square root of the AVE ratio of each measurement dimensions is greater than the correlation coefficient of these dimensions and other dimensions, which shows that the discrimination of the measurement model is very good.

The above analysis shows that the measurement items of the questionnaire in this paper meet the requirements in the actual measurement and that the evaluation results of the measurement model are valid and reasonable. The reliability and validity test results of the samples are shown in Table 3.

Table 3. Measurement model results.

	CR	Alpha	AVE	SEI	EA	EX	AG	OR	NE
SEI	0.9153	0.8842	0.6839	0.8269					
EA	0.9145	0.8908	0.6046	0.6405	0.7775				
EX	0.9071	0.8464	0.765	0.5158	0.5244	0.8746			
AG	0.8706	0.7777	0.6918	0.5055	0.5068	0.6027	0.8317		
OR	0.9075	0.8725	0.6627	0.5502	0.7254	0.4915	0.4458	0.8140	
NE	0.8423	0.7223	0.6413	0.2989	0.1941	0.2253	0.2779	0.2564	0.8008

Note 1: EI stands for sustainable entrepreneurial intention. EA stands for entrepreneurial alertness. EX stands for extraversion. AG stands for agreeableness. OR stands for opportunity recognition. NE stands for neuroticism. Note 2: Bold numbers on the diagonal are the square root of the variance shared between the constructs and their measures. Off-diagonal elements are correlations among constructs. For discriminate validity, diagonal elements should be larger than off-diagonal elements. AVE = average variance extracted.

5.3. Hypothesis Testing

Four models were established to examine the mediating role of variables. Model 1 included personality traits and sustainable entrepreneurial intention. Model 2 added entrepreneurial alertness based on Model 1 to test the mediating role of entrepreneurial alertness. Model 3 added opportunity recognition based on Model 1 to test the mediating role of opportunity recognition. Based on Model 1, Model 4 added the entrepreneurial alertness and opportunity recognition to test the mediating role of entrepreneurial alertness and opportunity recognition on personality traits and sustainable entrepreneurial intention. The results of the test are shown in Figure 2.

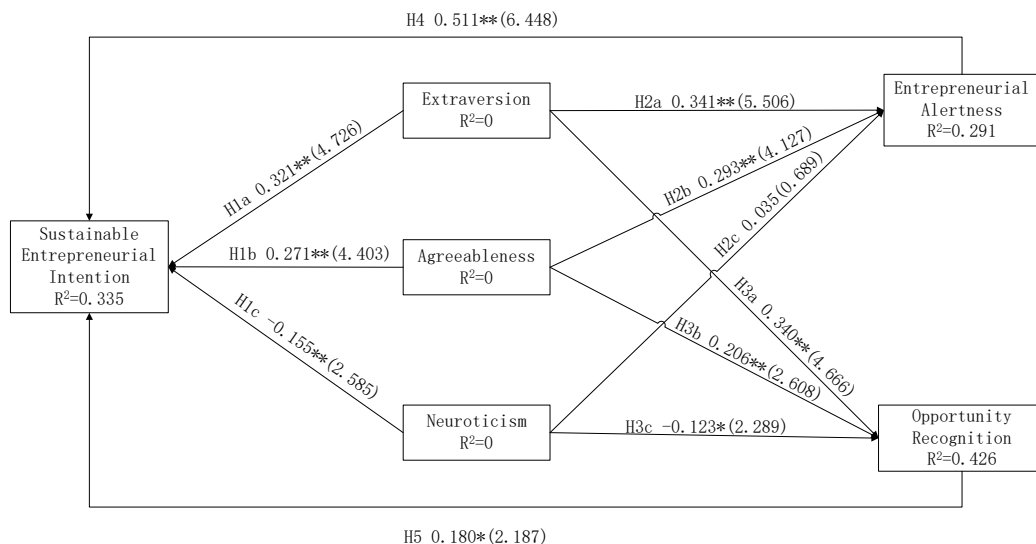


Figure 2. Model results. Note: * indicates significant at $p < 0.5$, ** indicates significant at $p < 0.01$.

In Model 1, personality traits significantly affect the sustainable entrepreneurial intention, thereby supporting the hypotheses H1a ($\beta = 0.321$, $T = 4.726 > 2.58$), H1b ($\beta = 0.271$, $T = 4.403 > 2.58$), and H1c ($\beta = -0.155$, $T = 2.585 > 2.58$).

In Model 4, personality traits significantly affect entrepreneurial alertness and opportunity recognition, thereby supporting hypotheses H2a ($\beta = 0.341$, $T = 5.506$), H2b ($\beta = 0.293$, $T = 4.127$), H3a ($\beta = 0.340$, $T = 4.666$), H3b ($\beta = 0.206$, $T = 2.608$), H3c ($\beta = -0.123$, $T = 2.289$), H4 ($\beta = 0.511$, $T = 6.448$), and H5 ($\beta = 0.180$, $T = 2.187$).

In Model 2, entrepreneurial alertness plays a partial mediating role between personality traits and sustainable entrepreneurial intention, partially supporting hypothesis H6. In contrast to Model 1, the regression coefficient between extraversion and sustainable entrepreneurial intention decreased from 0.321 to 0.161 after adding entrepreneurial alertness, and the T value decreased from 4.726 to 2.144. The results show entrepreneurial alertness plays a mediating role between extraversion and sustainable entrepreneurial intention. Similarly, the mediating effect of entrepreneurial alertness between extroversion and sustainable entrepreneurial intention is established. However, the mediating role of entrepreneurial alertness between neuroticism and sustainable entrepreneurial intention is not valid. After adding entrepreneurial alertness as a mediating variable, the effect of personality traits on sustainable entrepreneurial intention is established. Hence, entrepreneurial alertness plays a partial mediating role between personality traits and sustainable entrepreneurship intention.

In Model 3, opportunity recognition plays a partial mediating role between personality traits and sustainable entrepreneurial intention, and partially supports hypothesis H7. In contrast to Model 1, the regression coefficient between extraversion and sustainable entrepreneurial intention decreased from 0.321 to 0.208 after adding opportunity recognition. The T value decreased from 4.726 to 2.815, indicating that opportunity recognition plays a mediating role between extraversion and sustainable entrepreneurial intention. Similarly, the mediating role of opportunity recognition among agreeableness, neuroticism, and sustainable entrepreneurial intention is established. After adding opportunity recognition as mediating variable, the effect of personality traits on sustainable entrepreneurial intention remained. Therefore, opportunity recognition plays a partial mediating role between personality traits and sustainable entrepreneurial intention.

The hypothesis test results are shown in Table 4.

Table 4. Hypothesis test analysis results.

Assumption	β	T Value	Support or Not
H1a. Extraversion has a significant positive effect on sustainable entrepreneurial intention.	0.321 **	4.726	Yes
H1b. Agreeableness has a significant positive effect on sustainable entrepreneurial intention.	0.271 **	4.403	Yes
H1c. Neuroticism has a significant negative effect on sustainable entrepreneurial intention.	-0.155 **	2.585	Yes
H2a. Extraversion has a significant positive effect on entrepreneurial alertness.	0.341 **	5.506	Yes
H2b. Agreeableness has a significant positive effect on entrepreneurial alertness.	0.293 **	4.127	Yes
H2c. Neuroticism has a significant negative effect on entrepreneurial alertness.	0.035	0.689	No
H3a. Extraversion has a significant positive effect on opportunity recognition.	0.340 **	4.666	Yes
H3b. Agreeableness has a significant positive effect on opportunity recognition.	0.206 **	2.608	Yes
H3c. Neuroticism has a significant negative effect on opportunity recognition.	-0.123*	2.289	Yes
H4. Entrepreneurial alertness has a significant positive effect on sustainable entrepreneurial intention.	0.511 **	6.448	Yes
H5. Opportunity recognition has a significant positive effect on sustainable entrepreneurial intention.	0.180 *	2.187	Yes
H6. Entrepreneurial alertness plays a mediating role between personality traits and sustainable entrepreneurial intentions.	-	-	Yes
H7. Opportunity recognition plays a mediating role between personality traits and sustainable entrepreneurial intentions.	-	-	Yes

Note: * indicates significant at $p < 0.5$, ** indicates significant at $p < 0.01$.

6. Discussion

The study uses entrepreneurial alertness and opportunity recognition as mediating roles between personality traits and sustainable entrepreneurial intention in order to know how to foster sustainable entrepreneurs. The empirical results showed that twelve hypotheses in the model were supported.

Extraversion and agreeableness of college students have a significant positive effect on sustainable entrepreneurial intention, whereas neuroticism has a significant negative effect on sustainable entrepreneurial intention. College students who are more extroverted and have a higher level of agreeableness have stronger ability to accept external information. They are more understanding of the overall environment of entrepreneurship, which makes it easier for them to create ideas on entrepreneurship. However, higher neuroticism can interfere with college students' information processing ability and may affect their sustainable entrepreneurial intention. The empirical study of Fan and Wang on domestic college students determined that extraversion has a significant effect on traditional entrepreneurial intention [54]. Zhao and Du studied the relationship between entrepreneurs' personality traits and entrepreneurship intention on students and determined neuroticism to have a negative and reversed influence on entrepreneurial intention [13]. No significant relationship was observed between agreeableness and entrepreneurial intention. However, in this study, the results showed agreeableness has a significant positive effect on sustainable entrepreneurial intention because the research objects are college students with sustainable entrepreneurial orientation or entrepreneurial behavior who had participated in an entrepreneurial competition. Their personalities are different from other college students, and they have stronger entrepreneurial intentions as well. College students with stronger agreeableness get along with people more easily and thus have a more suitable character needed for sustainable entrepreneurship and are easier to produce ideas on sustainable entrepreneurship. In addition, the respondents we chose are contestants who submit sustainable business proposals. They have a higher level of agreeableness and are better at considering other people's feelings. In other words, their altruism becomes greater toward others. When their altruism becomes greater, they will consider the sustainable and harmonious problems of economic and environmental development of the whole society, and generate sustainable entrepreneurial intentions.

Entrepreneurial alertness and opportunity recognition play mediating roles between personality traits and sustainable entrepreneurial intention. This study uses the PLS structure equation to compare Models 1, 2, 3, and 4 to examine the mediating effect. In Model 1, which only sets the personality traits and sustainable entrepreneurial intention, personality traits have a significant positive effect on sustainable entrepreneurial intention, whereas in Model 2, 3, and 4, personality traits can affect sustainable entrepreneurial intention through entrepreneurial alertness and opportunity recognition's partial mediating role.

Personality traits have different effects on entrepreneurial alertness and opportunity recognition. The β values of agreeableness and extraversion's effect on entrepreneurial alertness are significantly greater than the β value of opportunity recognition, while the β value of neuroticism on entrepreneurial alertness is significantly smaller than the β value of opportunity recognition. These findings can be attributed to college students having stronger agreeableness and extraversion being more likely to have a sharp recognition of entrepreneurial opportunities, while entrepreneurs with stronger neuroticism are more likely to absorb and accept the surrounding information to find business opportunities. The college students who have a higher level of agreeableness are more likely to become greater altruism, and, according to Patzelt's research, they are stronger in opportunity recognition [9]. Huang found that extraversion has a significant positive effect on entrepreneurial alertness and opportunity recognition, while neuroticism has a significant negative effect on opportunity recognition and no significant influence on entrepreneurial alertness [58].

7. Implications

7.1. Theoretical Contribution

In this paper, entrepreneurial alertness and opportunity recognition are used as mediating variables to study the specific mechanism of the effects of personality traits on college students' sustainable entrepreneurial intention. In addition, this study has several important contributions for research.

This study expands traditional entrepreneurial intentions to sustainable entrepreneurial intentions, and applies the research perspectives of traditional entrepreneurial intentions into sustainable entrepreneurial intentions.

This study differs from previous studies on personality traits because the respondents are college students who have a certain tendency toward sustainable entrepreneurship. Therefore, the study is more targeted and has certain theoretical contributions to enhance research on sustainable entrepreneurship and study between personality traits and sustainable entrepreneurial intention.

This study simultaneously sets entrepreneurial alertness and opportunity recognition as mediating variables for personality traits and sustainable entrepreneurial intention and perfects the study gap in previous studies that separate entrepreneurial alertness and opportunity recognition into two different studies. Hence, the current study not only enriches the research of sustainable entrepreneurial intention, but also contributes to enriching the research perspective of personality traits' influence on traditional entrepreneurial intention.

This paper studied the influence of entrepreneurial alertness and opportunity recognition for sustainable entrepreneurial intention simultaneously and examined sustainable entrepreneurial intention from multiple perspectives. Hence, the paper contributes further to enriching research on sustainable entrepreneurial intention and the perspective of influencing factors of sustainable entrepreneurial intention.

It provides a theoretical basis for the future research on sustainable entrepreneurial intention, and enriches the research perspectives of sustainable entrepreneurship.

7.2. Practical Implication

Our study found that the relationship between personality traits and college students' sustainable entrepreneurial intention is close. Sustainable entrepreneurship can not only generate economic benefits but also promote sustainable development of the environment. The correct understanding of the action mechanism of personality traits and college students' sustainable entrepreneurial intention as well as the mediating role of entrepreneurial alertness and opportunity recognition in this relationship are of great practical significance for improving college students' sustainable entrepreneurial intention and promoting sustainable development of economic, social and ecological environment protection.

- (1) For college students: The results show that extroversion and agreeableness have a significant positive effect on opportunity recognition and entrepreneurial alertness, while neuroticism has a significant negative effect on opportunity recognition. In work and life, active and outgoing college students who have a stronger ability to accept new things and can cultivate better interpersonal relationships perform better when identifying opportunities and shielding useless information. The college students who are more neurotic may be too sensitive to the surrounding environment; consequently, they cannot effectively avoid the interruption of ineffective information. Neuroticism reflects individual emotions, and those with low emotional stability tend to produce fear, anger and a pessimistic mood which will affect the individual's satisfaction to job and life. Thus, the universities should redesign the course systems of college student entrepreneurship and initiatives, and train college students who want to start a business on how to control their emotions in daily life and work. This will be helpful for latent entrepreneurs to know how to keep a positive and optimistic personality. Positive personality

traits will be beneficial to their opportunity recognition and entrepreneurial alertness in order to launch entrepreneurial activities.

- (2) For colleges: First, students with strong sustainable entrepreneurial intentions should be identified. The personality traits of different college students are distinct, and different personality traits mean different degrees of entrepreneurial intention. Therefore, before encouraging and training college students to become entrepreneurs, universities should first identify which students have higher sustainable entrepreneurial intention according to personality traits. It is necessary to carry out specialized training and entrepreneurship education for these kinds of students in order to improve students' entrepreneurial efficiency and improve the possibility of entrepreneurs' success. Colleges should teach students in accordance with their aptitude, adopt targeted and differential education to cultivate their potential entrepreneurship and offer sufficient support to college students who have entrepreneurial ideas. As to college students with lower sustainable entrepreneurial intention, college should focus on cultivating students' entrepreneurial alertness and the ability to recognize opportunities. Effective and reasonable entrepreneurship education will upgrade the entrepreneurial college students' ability to screen the surrounding information, help them avoid being disturbed by a large number of useless information, and find their own favorable information from a significant amount of information. In the process of entrepreneurship, the entrepreneurial environment and business opportunities are changing rapidly. College students should focus constantly on the changes in business opportunities, find useful information in time, maintain a high level of alertness and grasp and use opportunities. In addition, when undertaking entrepreneurship education, universities should focus on providing guidance on sustainable entrepreneurship to college students. Sustainable entrepreneurship is a new type of entrepreneurship that adapts to the current society. Therefore, universities should promote sustainable entrepreneurship to college students, elucidate the advantages of sustainable entrepreneurship, and provide active guidance and knowledge to help college students carry out sustainable entrepreneurship.
- (3) For relevant government departments: Sustainable entrepreneurship is a new form of entrepreneurship. Many benefits are available when undertaking sustainable entrepreneurship. Thus, relevant government departments should focus on sustainable entrepreneurship in order to solve the problems on economy, environment, and entrepreneurship. Relevant departments should further make related policies to encourage and guide college students in starting a sustainable business. Hence, colleges students, colleges and relevant government departments should discover, foster, and help sustainable entrepreneurs by enhancing sustainable entrepreneurship education and training their positive, healthy personalities and psychology.

8. Limitation and Possible Directions for the Future

This study investigated the influence of personality traits on college students' sustainable entrepreneurial intention as mediated by entrepreneurial alertness and opportunity recognition. Although some research success was obtained, inevitably, the study was influenced by internal and external factors in the study process because of the limited personal abilities and deficiencies. First, the paper lacked a wide sample. A total of 377 questionnaires were retrieved, with 316 effective questionnaires, but the number of samples was not large enough. In addition, over half of the samples were students who majored in management, which could affect the results of the study. Another limitation is the type of data used in the study. The data were cross-sectioned and personality traits, entrepreneurial alertness, and opportunity recognition were all changed with time and environment. This study did not consider the dynamics of the data, which will have a certain effect on the results. In addition, because of the lack of previous empirical research on sustainable entrepreneurship, the scale used in this paper was obtained from the traditional entrepreneurial intention, and therefore the measurement of sustainable entrepreneurial intention may not be accurate. Then, the dimension of opportunity recognition is not accurate enough. This paper examined them as a unified whole

and did not discuss the effects of the various natures of opportunity recognition on entrepreneurial intention. Huang divided opportunity recognition into feasibility identification and profitability identification [67]. Only three dimensions of personality traits are discussed in this study. Finally, the Common Method Bias of the study has to be considered.

In future studies, more extensive and sufficient samples should be collected. Time series data should also be collected to improve the reliability of the results. Multiple pieces of data should be compared horizontally and vertically to compensate for the lack of cross-section data at a certain time, which would make the results more effective and credible. In addition, future studies should develop a scale suitable for sustainable entrepreneurial intention, and sustainable entrepreneurship intention should be measured more accurately. Finally, the research variables should be subdivided further and more accurate multiple dimensions should be used to study the research variables. An example would be dividing the opportunity recognition into feasibility identification and profitability recognition. We also intend to explore the relationship between the other two dimensions of personality traits and entrepreneurial intentions. As for the Common Method Bias, program control and statistical control should be applied. In the program, the samples should be collected from different sources, and the order of items in the scale and the expression of the item should be adjusted. In the statistical control, a Harman single factor test can be used in future studies. Although common method bias could not be necessarily a serious issue in this study, our collection of data is from a single source. Hence, a more objective observation is needed in the future study.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix

Sustainable Entrepreneurship of College Students Survey

Dear Student,

Thank you participating in our survey and filling out this questionnaire. The purpose of this study is to determine your participation information on the current entrepreneurial curriculums and activities in universities and to understand the factors and how these affect your sustainable entrepreneurship. This survey is intended for academic research and not for any commercial purpose. The survey will be conducted anonymously and the data that will be collected will not include any private information. Your opinions are of great value to our research. Thank you for your cooperation.

Background Information

Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
Specialization	_____
Father's Educational Background	<input type="checkbox"/> Elementary School <input type="checkbox"/> Middle School <input type="checkbox"/> High School <input type="checkbox"/> College <input type="checkbox"/> Graduate Degree (Ph.D. included)
Mother's Educational Background	<input type="checkbox"/> Elementary School <input type="checkbox"/> Middle School <input type="checkbox"/> High School <input type="checkbox"/> College <input type="checkbox"/> Graduate Degree (Ph.D. included)
Do any of the family members have business experience?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you have any sustainable entrepreneurship education?	<input type="checkbox"/> Never <input type="checkbox"/> Have little sustainable entrepreneurship education <input type="checkbox"/> Have participated in some sustainable entrepreneurial courses, lectures or competitions <input type="checkbox"/> Have received a lot of sustainable entrepreneurship education
Based on your understanding, what kind of support does your school provide to graduate sustainable entrepreneurs (multiple choices allowed)	<input type="checkbox"/> Sustainable entrepreneurship guidance and service <input type="checkbox"/> Sustainable entrepreneurship courses <input type="checkbox"/> Incubation facility <input type="checkbox"/> Start-up capital <input type="checkbox"/> Sustainable entrepreneurial office facilities <input type="checkbox"/> Go to the enterprise for business practice <input type="checkbox"/> Reward business activities <input type="checkbox"/> I don't know what kind of support the school provides <input type="checkbox"/> The school does not provide support
If you are interested in the results of this survey, please write down your email address here:	

College Students' Sustainable Entrepreneurial Intention Survey

Directions
<p>The following questions pertain to your participation and views on sustainable entrepreneurship-related course activities. Please read each item carefully and tick the box that best matches your opinion.</p> <p>The number after each question indicates the following: 1—Strongly Disagree 2—strongly disagree 3—Strongly Disagree 4—Strongly Disagree 5—Strongly Agree 6—Strongly Agree 7—Strongly Agree</p>

1FI1	I will gain new business information through my social network.	1	2	3	4	5	6	7
2FI2	I will obtain new business information by participating in the seminar.	1	2	3	4	5	6	7
3FI3	I can always get inspiration from other people's advice.	1	2	3	4	5	6	7
4FI4	I can find useful information that others have not found or have overlooked.	1	2	3	4	5	6	7
5FI5	I can see the potential relationship between the surface uncorrelated information.	1	2	3	4	5	6	7
6FI6	I am capable of noticing something unusual.	1	2	3	4	5	6	7
7FI7	I have an instinct for spotting potential business opportunities.	1	2	3	4	5	6	7
8FJ1	The entrepreneurial opportunities I have identified are very unique.	1	2	3	4	5	6	7
9FJ2	The sustainable products or services I have identified as sustainable entrepreneurial opportunities can be recognized socially.	1	2	3	4	5	6	7
10FJ3	The products or services I have identified are not widely available in the market.	1	2	3	4	5	6	7
11FJ4	The sustainable product or service offered by an entrepreneurial opportunity can lead to higher social benefits.	1	2	3	4	5	6	7
12FJ5	A sustainable product or service provided by an entrepreneurial opportunity can provide a more sustainable development.	1	2	3	4	5	6	7
13HI1	I think I will choose to start a business focusing more on social or environmental problems primarily as new business opportunities in the future.	1	2	3	4	5	6	7
14HI2	If I have the opportunity and the freedom to make a decision, I will choose to start a business that contributes to social, ecological and economic developments in our society.	1	2	3	4	5	6	7
15HI3	I will still choose to start my own business on eco-products when I encounter practical difficulties.	1	2	3	4	5	6	7
16HI4	Compared with having a stable job, I am more willing to start a business on sustainable innovations.	1	2	3	4	5	6	7
17HI5	I think I have the possibility of starting a social entrepreneurship in the next five years.	1	2	3	4	5	6	7
18HD1	I like to have a lot of friends around.	1	2	3	4	5	6	7
19HD2	I can laugh easily.	1	2	3	4	5	6	7
20HD3	I like chatting with others very much.	1	2	3	4	5	6	7
21HF1	I try to be polite and courteous to everyone I meet.	1	2	3	4	5	6	7
22HF2	After being treated rudely, I try to forgive them and forget about it.	1	2	3	4	5	6	7
23HF3	I like chatting with others very much	1	2	3	4	5	6	7
24HJ1	When faced with great pressure, sometimes I feel like I am going to collapse.	1	2	3	4	5	6	7
25HJ2	I often feel nervous and unsure.	1	2	3	4	5	6	7
26HJ3	A lot of times when things do not go well, I feel discouraged and want to give up.	1	2	3	4	5	6	7

References

- Peng, S. China Coal Resource Exploitation and Environmental Protection. *Sci. Technol. Rev.* **2009**, *27*, 3.
- Shepherd, D.A.; Patzelt, H. The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial Action Linking "What Is to Be Sustained" With "What Is to Be Developed". *Entrep. Theory Pract.* **2011**, *35*, 137–163. [[CrossRef](#)]
- Ozaralli, N.; Rivenburgh, N.K. Entrepreneurial intention: Antecedents to entrepreneurial behavior in the U.S.A. and Turkey. *J. Glob. Entrep. Res.* **2016**, *6*, 3. [[CrossRef](#)]
- Obschonka, M.; Silbereisen, R.K.; Schmitt-Rodermund, E. Entrepreneurial intention as developmental outcome. *J. Vocat. Behav.* **2010**, *77*, 63–72. [[CrossRef](#)]
- Karimi, S.; Biemans, H.J.; Lans, T.; Chizari, M.; Mulder, M. The Impact of Entrepreneurship Education: A Study of Iranian Students' Entrepreneurial Intentions and Opportunity Identification. *J. Small Bus. Manag.* **2016**, *54*, 187–209. [[CrossRef](#)]
- Ali, B.; Shah, N.; Anwar, S. Investigating Entrepreneurial Intention through Entrepreneurial Event Model (EEM) Among Graduate and Master Students in Public Sector Universities of Thailand. *Asia Pacific* **2016**, *34*, 37–53.

7. Aleidi, A.; Chandran, D. Does Institutional Environment Promote Women's IT Entrepreneurial Intention in Saudi Arabia? Technological and Institutional Perspectives. In Proceedings of the 21st PACIFIC-ASIA Conference on Information Systems, Langkawi Island, Malaysia, 16–20 July 2017.
8. Ye, B.J.; Fang, X.T. Entrepreneurial Environment on College Students' Entrepreneurial Intention: Moderated Mediating Effect. *J. Psychol. Sci.* **2017**, *6*, 25.
9. Patzelt, H.; Shepherd, D.A. Recognizing Opportunities for Sustainable Development. *Entrep. Theory Pract.* **2011**, *35*, 631–652. [[CrossRef](#)]
10. Schaltegger, S.; Wagner, M. Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Soc. Environ. Account. J.* **2011**, *20*, 222–237. [[CrossRef](#)]
11. Belz, F.M.; Binder, J.K. Sustainable Entrepreneurship: A Convergent Process Model. *Bus. Strategy Environ.* **2017**, *26*, 1–17. [[CrossRef](#)]
12. Espiritu-Olmos, R.; Sastre-Castillo, M.A. Personality traits versus work values: Comparing psychological theories on entrepreneurial intention. *J. Bus. Res.* **2015**, *68*, 1595–1598. [[CrossRef](#)]
13. Zhao, B.; Du, W. Study on the relationship between personality traits, entrepreneurial environment perception and entrepreneurial intention. *Manag. Admin.* **2016**, *1*, 147–150.
14. Wang, J.H.; Chang, C.C.; Yao, S.N.; Liang, C. The contribution of self-efficacy to the relationship between personality traits and entrepreneurial intention. *Higher Educ.* **2016**, *72*, 209–224. [[CrossRef](#)]
15. Zhou, J. *The Relationship Study between the Personality Traits and Entrepreneurial Intention of Post-90s Students—The Moderating Variable with Self-Identity*; University of Science and Technology of China: Hefei, China, 2014.
16. Chen, W.; An, N.; Zhu, G. Study on the utility of entrepreneurial learning based on the relationship between personality traits and entrepreneurial intention. *Sci. Technol. Manag. Res.* **2017**, *37*, 167–173.
17. McCrae, R.R.; John, O.P. An Introduction to the Five-Factor Model and Its Applications. *J. Personal.* **1992**, *60*, 175–215. [[CrossRef](#)]
18. Solaja, M.; Idowu, E.; James, E. Exploring the relationship between leadership communication style, personality trait and organizational productivity. *Serb. J. Manag.* **2016**, *11*, 99–117. [[CrossRef](#)]
19. Korzaan, M.L.; Boswell, K.T. The Influence of Personality Traits and Information Privacy Concerns on Behavioral Intentions. *Data Process. Better Bus. Educ.* **2016**, *48*, 15–24.
20. Yao, R.; Chen, H.; Miao, Q. An Empirical Analysis of Influences of Personality Traits on Job Performance for Frontline Staff in Public Transportation Industry: With Work Attitude Acting as a Moderator. *Acta Psychol. Sin.* **2013**, *45*, 1163–1178.
21. Pollock, N.C.; McCabe, G.A.; Southard, A.C.; Zeigler-Hill, V. Pathological personality traits and emotion regulation difficulties. *Personal. Individ. Differ.* **2016**, *95*, 168–177. [[CrossRef](#)]
22. Kotov, R.; Gamez, W.; Schmidt, F.; Watson, D. Linking “big” personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychol. Bull.* **2010**, *136*, 768–821. [[CrossRef](#)] [[PubMed](#)]
23. Li, Z.; Wang, L. Personality traits and subjective well-being: Mediating effects of emotional regulation. *Psychol. Sci.* **2010**, *33*, 165–167.
24. Schumpeter, J. *Theorie der Wirtschaftlichen Entwicklung*; Springer: New York, NY, USA, 1997; pp. 5–59.
25. Farrukh, M.; Khan, A.A.; Shahid Khan, M.; Ravan Ramzani, S.; Soladoye, B.S.A. Entrepreneurial intentions: The role of family factors, personality traits and self-efficacy. *World J. Entrep. Manag. Sustain. Dev.* **2017**, *13*, 303–317. [[CrossRef](#)]
26. Correa, A.; Guajardo, S. Causes of Failure, Entrepreneur's Personality and Entrepreneurial Orientation. In *Academy of Management Annual Meeting Proceedings*; Academy of Management: Briarcliff Manor, NY, USA, 2017; Volume 2017, p. 17858.
27. Kirzner, I.M. *Perception, Opportunity, and Profit*; University of Chicago Press: Chicago, IL, USA, 1979.
28. Kirzner, I.M. Must Capitalism Yield to Socialism? *Econ. Affairs* **2010**, *5*, 35–37. [[CrossRef](#)]
29. Miao, Q. *Research on the Corporate Entrepreneurial Opportunity Recognition and Decision-Making Mechanism Based on Regulatory Focus*; Zhejiang University: Hangzhou, China, 2006.
30. Mahmoud, S.; Alizadeh, S.M.K. Factors Affecting the Trend of Opportunities Recognition among Top Entrepreneurs. Master's Thesis, University of Nairobi, Nairobi, Kenya, 2009.
31. Norria, Z. Entrepreneurial Opportunity Recognition among Bumiputera SMEs Entrepreneurs in Malaysia: The Influential Factors of Social Network, Entrepreneurial Alertness and Creativity. Ph.D. Thesis, Universiti Utara Malaysia, Changlun, Malaysia, 2016.

32. Wang, P.; Lu, Q. The Influence of the University Students' Entrepreneurial Alertness, Prior Knowledge and Entrepreneurial Experiences on Entrepreneurial Opportunity Recognition. *Psychol. Sci.* **2015**, *1*, 160–165.
33. Kirzner, I.M. *Competition and Entrepreneurship*; Liberty Fund: University Park, IL, USA, 1973.
34. Schumpeter, J.A.; Opie, R.; Hansen, A.H. The theory of economic development. *J. Polit. Econ.* **1934**, *1*, 170–172.
35. Hills, G.E.; Lumpkin, G.T. Opportunity recognition research: Implications for entrepreneurship education. In Proceedings of the International Entrepreneurship Conference, Monterey Bay, CA, USA, 25–27 June 1997.
36. Ali, H.; Reza, Z.M.; Effat, B. Examining the relationship between prior knowledge and entrepreneurial opportunity recognition with mediating role of entrepreneurial alertness and entrepreneurial learning. *J. Entrep. Dev.* **2015**, *7*, 613–633.
37. Zhou, L. Family Social Capital, Prior Experience and Entrepreneurial Opportunity Identification: Evidence from Micro-Enterprises. *Sci. Technol. Prog. Policy* **2014**, *31*, 87–91.
38. Nikraftar, T.; Hosseini, E. Factors affecting entrepreneurial opportunities recognition in tourism small and medium sized enterprises. *Tour. Rev.* **2016**, *71*, 6–17. [[CrossRef](#)]
39. Chen, W. Relationship network and entrepreneurial opportunity identification: The multiple mediating effects of entrepreneurial learning. *Stud. Sci. Sci.* **2016**, *34*, 1391–1396.
40. Dean, T.J.; McMullen, J.S. Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *J. Bus. Ventur.* **2007**, *22*, 50–76. [[CrossRef](#)]
41. Cohen, B.; Winn, M.I. Market imperfection, opportunity and sustainable entrepreneurship. *J. Bus. Ventur.* **2007**, *22*, 29–49. [[CrossRef](#)]
42. Austin, J.; Stevenson, H.; Wei-Skillern, J. Social and commercial entrepreneurship: Same, different, or both? Empreendedorismo social y comercial: ¿Iguales, diferentes o ambos? Empreendedorismo social e comercial: Iguais, diferentes ou ambos? *Rausp Revista De Administração Da Universidade De São Paulo* **2012**, *47*, 370–384.
43. Esty, D.C.; Charnovitz, S. Green Rules to Drive Innovation. *Harv. Bus. Rev.* **2012**, *90*, 120.
44. Jiang, C.; Liu, Y. Do College Students' Entrepreneurship are Passive: A Discussion from the Perspective of Starting Salary. *Educ. Econ.* **2015**, *5*, 28–33.
45. Duan, L.; Du, Y. Influence of Entrepreneurial Environment on Entrepreneurial Intention of College Students: Re-examining GEM Model. *Technol. Econ.* **2012**, *10*, 010.
46. Wang, Y.; Feng, W.; Wang, Y. Research on entrepreneurial environment and entrepreneurial intention of college students—Based on the five latitude model Angle of Gnyawali & Fogel. *Educ. Explor.* **2013**, *1*, 150–151.
47. Bae, T.J.; Qian, S.; Miao, C.; Fiet, J.O. The Relationship Between Entrepreneurship Education and Entrepreneurial Intentions: A Meta-Analytic Review. *Entrep. Theory Pract.* **2014**, *38*, 217–254. [[CrossRef](#)]
48. Moses, C.; Olokundun, A.M.; Akinbode, M.; Agboola, M.G.; Inelo, F. Entrepreneurship education and entrepreneurial intentions: The moderating role of passion. *Soc. Sci.* **2016**, *11*, 645–653.
49. Lim, W.L.; Yusof, M.; Nor, L.M. The impact of entrepreneurial alertness on entrepreneurial intention among university students in Malaysia: Theory of planned behaviour. *J. Eng. Appl. Sci.* **2017**, *12*, 1409–1418.
50. Kai, H.; Wüstenhagen, R. Greening Goliaths versus emerging Davids—Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship. *J. Bus. Ventur.* **2010**, *25*, 481–492.
51. Dixon, S.E.A.; Clifford, A. Ecopreneurship—A new approach to managing the triple bottom line. *J. Organ. Chang. Manag.* **2007**, *20*, 326–345. [[CrossRef](#)]
52. Meek, W.R.; Pacheco, D.F.; York, J.G. The impact of social norms on entrepreneurial action: Evidence from the environmental entrepreneurship context. *J. Bus. Ventur.* **2010**, *25*, 493–509. [[CrossRef](#)]
53. Dehkordi, A.M.; Sasani, A.; Fathi, M.R.; Khanmohammadi, E. Investigating the Effect of Emotional Intelligence and Personality Traits on Entrepreneurial Intention Using the Fuzzy DEMATEL Method. *Int. J. Bus. Soc. Sci.* **2012**, *3*, 286–296.
54. Fan, W.; Wang, C. The Study of Entrepreneurial Intention and Its Determinants. *Psychol. Sci.* **2004**, *27*, 1087–1090.
55. Major, D.A.; Turner, J.E.; Fletcher, T.D. Linking proactive personality and the Big Five to motivation to learn and development activity. *J. Appl. Psychol.* **2006**, *91*, 927–935. [[CrossRef](#)] [[PubMed](#)]
56. Hisrich, R.D. Entrepreneurship/intrapreneurship. *Soc. Sci. Electron. Publ.* **2009**, *45*, 209–222. [[CrossRef](#)]
57. Graham, E.K.; Lachman, M.E. Personality Traits, Facets and Cognitive Performance: Age Differences in Their Relations. *Personal. Individ. Differ.* **2014**, *59*, 89–95. [[CrossRef](#)] [[PubMed](#)]

58. Huang, C. *An Empirical Study on the Relationship between Entrepreneurial Personality Traits, Entrepreneurial Alertness and Entrepreneurial Opportunity Identification*; Anhui University of Finance and Economics: Bengbu, China, 2016.
59. Tian, B.; Zhang, B. The Effects of Entrepreneurial Personality Traits on Opportunity Identification: Evidence from China. *Hum. Resour. Dev. China* **2014**, *3*, 56–62.
60. Liang, Q.; Meng, Y.; Liu, J.; Yuan, B. The Relationship among Personality Traits, Working Values and Entrepreneurial Performance: The Mediating Role of Entrepreneurial Orientation. *Sci. Sci. Manag. S. T.* **2012**, *33*, 171–180.
61. Hu, R.; Ye, Y. Do Entrepreneurial Alertness and Self-efficacy Predict Chinese Sports Major Students' Entrepreneurial Intention? *Soc. Behav. Personal.* **2017**, *45*, 1187–1196. [[CrossRef](#)]
62. Shane, S.; Venkataraman, S. The Promise of Entrepreneurship as a Field of Research. *Acad. Manag. Rev.* **2000**, *25*, 217–226. [[CrossRef](#)]
63. Bird, B. Implementing Entrepreneurial Ideas: The Case for Intention. *Acad. Manag. Rev.* **1988**, *13*, 442–453. [[CrossRef](#)]
64. Song, Q. Construction of theoretical model of college students' entrepreneurial intention—The mediating role of entrepreneurial opportunity identification. *Educ. Forum* **2016**, *2*, 36–37.
65. Hu, R.; Wang, L.; Zhang, W.; Bin, P. Creativity, Proactive Personality, and Entrepreneurial Intention: The Role of Entrepreneurial Alertness. *Front. Psychol.* **2018**, *9*, 951. [[CrossRef](#)] [[PubMed](#)]
66. Saucier, G. Mini-Markers: A Brief Version of Goldberg's Unipolar Big-Five Markers. *J. Personal. Assess.* **1994**, *63*, 506–516. [[CrossRef](#)] [[PubMed](#)]
67. Huang, J. *Study on the Impact of Environmental Characteristics and Entrepreneurial Network on Entrepreneurial Opportunity Identification*; Jilin University: Changchun, China, 2010.
68. Brenner, O.C.; Pringle, C.D.; Greenhaus, J.H. Perceived fulfillment of organizational employment versus entrepreneurship: Work values and career intentions of business college graduates. *J. Small Bus. Manag.* **1991**, *29*, 62.
69. Lu, I.R.; Kwan, E.; Thomas, D.R.; Cedzynski, M. Two new methods for estimating structural equation models: An illustration and a comparison with two established methods. *Int. J. Res. Market.* **2011**, *28*, 258–268. [[CrossRef](#)]
70. Nunnally, J.C.; Bernstein, I.H. *Psychometric Theory*; McGraw-Hill: New York, NY, USA, 1978.
71. Bagozzi, R.P. Causal Models in Marketing. *J. Market.* **1980**, *44*, 126.
72. Fornell, C.; Larcker, D.F. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *J. Market. Res.* **1981**, *18*, 39–50. [[CrossRef](#)]



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