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Are the Creative Individuals More Likely to Start a Business? A Behavioral Study Based on Experimental Data From College Students

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Abstract

The research focus of this paper revolved around the relationship between individual creativity and entrepreneurial intention. Based on the social cognitive theory and the trait activation theory, we conducted experimental analyses and questionnaires on 212 undergraduate students from Zhejiang Province. By comprehensively applying multiple regression analysis, hierarchical regression analysis and the SPSS-based Bootstrap method, we empirically analyzed the mechanism of action and boundary conditions of individual creativity on entrepreneurial intention. The empirical results indicated that individual creativity played a positive and promoting role on entrepreneurial intention. Opportunity recognition exerted a partial mediating effect in the mechanism of how creativity influenced entrepreneurial intention. Risk preference not only played a positive moderating role between opportunity recognition and entrepreneurial intention, but also further moderated the mediating effect of opportunity recognition. However, perceived entrepreneurial culture did not play a moderating role. The research results were not only beneficial for thoroughly exploring the influencing factors of entrepreneurial intention, but also further revealed the effective paths and contextual factors for the transformation from creativity to entrepreneurial intention.

Keywords

creativity, opportunity recognition, perceived entrepreneurial culture, risk preference, entrepreneurial intention

Introduction

During the job-selection process, the majority of people opt to become wage earners. Only a small proportion of the population demonstrates a strong willingness to start a business and achieve their career goals through self-employment (Liang & Wang, 2016). Then, what kind of people are more likely to choose to be their own bosses and start businesses during the job-hunting process? This is a topic of great interest to entrepreneurship researchers. Starting from the "trait theory," they try to find the so-called "entrepreneurial genes" and crack the "entrepreneurial code" by analyzing the common characteristics of those successful entrepreneurs. In this way, they can provide an accurate and clear direction for discovering and cultivating potential entrepreneurs (Shirokova et al., 2016).

In previous studies, researchers have found these entrepreneurial genes often include keywords such as innovation, responsibility and determination, altruism, risk-taking, and cooperation (Olanrewaju et al., 2020; Sitaridis & Kitsios, 2024; H. Zhao & Seibert, 2006). Against the backdrop of the new era of mass entrepreneurship and innovation, innovation ability has gradually become a common label among entrepreneurs. Creativity is the source of both innovation and

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Data Availability Statement included at the end of the article

entrepreneurship. The entrepreneur group is undoubtedly a representative of outstanding creativity. But does the reverse also hold true? Do individuals with stronger creativity have a greater preference for entrepreneurship? This is the first crucial issue that this paper will explore.

Entrepreneurial intention is a general description of the extent to which people have entrepreneurial-like traits, as well as entrepreneurial attitudes and abilities (Martins et al., 2023; Syed et al., 2020). It is also the best predictor of entrepreneurial behavior (Bogatyreva et al., 2019). Most existing studies investigate the influencing factors of entrepreneurial intention from aspects such as entrepreneurial traits, entrepreneurship education, self-efficacy, peer support, and the entrepreneurial environment (Indarti & Kristiansen, 2003; Martins et al., 2023; Zhang et al., 2015). Creativity is the ability to generate novel and useful ideas or solutions (Yuan et al., 2022). It is regarded as an indispensable and important quality of entrepreneurs (Fillis & Rentschler, 2010). However, for a long time these two research fields of creativity and entrepreneurial intention were almost isolated from each other (X. Y. Zhao et al., 2014). In recent years, some researchers have realized the close connection between creativity and entrepreneurship (Biraglia & Kadile, 2017; Ratten, 2023). Regrettably, in the current research on the relationship between creativity and entrepreneurship, there has been relatively limited exploration of the action paths and influencing mechanisms between these two. In particular, empirical research in this area is severely lacking. Exploring the mechanism and path through which individual creativity influences entrepreneurial intention is the second important issue we need to address.

Meanwhile, there is a lack of sufficient attention and discussion regarding the contextual factors that lead to the situation where, among people with similar levels of creativity, some choose to start their own businesses while the majority still opt to become employees. According to the social cognitive theory, individual activities are the result of the interaction among individual cognition, the environment and behavior (Bandura, 2023). Social cognition serves as the basis of individual behavior, and social behavior is the outcome of various judgments in the process of social cognition (Moeini et al., 2024). When individuals plan their careers, whether they have enough creativity matters. It can affect their ability to identify entrepreneurial opportunities from the environment quickly and accurately (Filser et al., 2023). This, in turn, influences the formation of their entrepreneurial intentions and the start of entrepreneurial activities.

Entrepreneurial culture refers to the degree to which an individual perceives that the environment values and advocates entrepreneurship. Whether the entrepreneurial culture encourages risk-taking and supports innovation will, to some extent, affect an individual's alertness and insight into entrepreneurial opportunities (Yazdanpanah et al., 2023). The perceived entrepreneurial culture affects individuals' behavior of constantly searching for entrepreneurial opportunities by leveraging existing competitive advantages. This can effectively promote the exploration of entrepreneurial opportunities and the realization of entrepreneurial goals (Li, 2018).

After identifying an entrepreneurial opportunity, whether it can be successfully transformed into entrepreneurial behavior is affected by other factors. An individual's risk perception and preference play a significant role here (Estelami, 2020). Entrepreneurship is characterized by high uncertainty and high-risk. Facing with the same opportunities, individuals with a high-risk preference are more likely to regard them as "once-in-a-lifetime" chances and put them into practice (Bergner et al., 2023). In contrast, those with a low-risk preference will weigh the pros and cons repeatedly. Eventually, they are very likely to put these opportunities aside because they cannot bear the potential risks. Exploring the contextual factors in the transformation from creativity to entrepreneurial intention is the third important issue this paper focuses on.

In summary, based on the social cognitive theory and the trait activation theory, this paper aimed to specifically explore the mechanism and path by which individual creativity influences entrepreneurial intention. In this regard, we introduced opportunity recognition as a mediating variable, and perceived entrepreneurial culture and individual risk preference as dual moderating variables. We then constructed a theoretical model encompassing creativity, perceived entrepreneurial culture, opportunity recognition, risk preference, and entrepreneurial intention. This enabled us to deeply explore the mechanism of action and boundary conditions of how creativity impacted entrepreneurial intention. We attempted to comprehensively apply a combination of experimental design and questionnaire survey methods to better understand the relationship between individual creativity and entrepreneurial intention both theoretically and empirically. The theoretical model of the research is shown in Figure 1 below.

The main content arrangements of this paper were as follows: By systematically reviewing relevant concepts and theories, sorted out the interrelationships among various variables and put forward hypotheses; then followed by the research design of the study; tested the research hypotheses one by one through empirical analysis. Finally, the conclusion, contribution, implication and limitations, were then demonstrated.

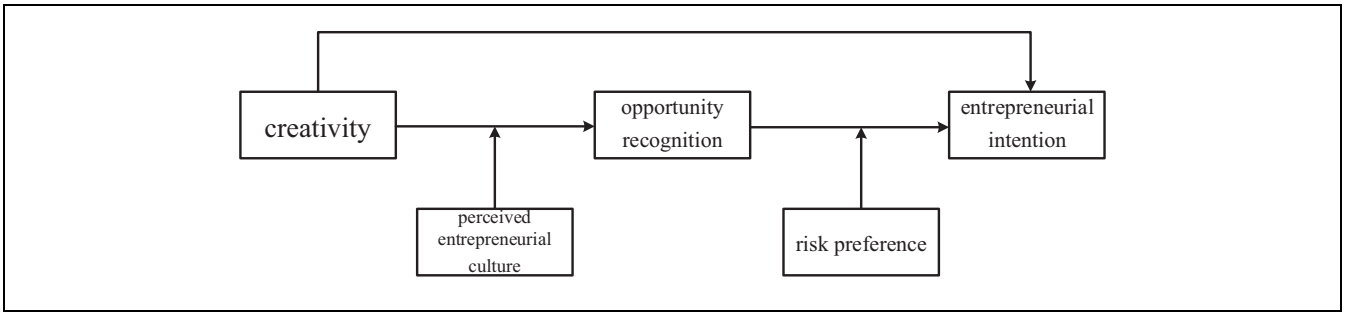

Figure 1. Theoretical model of the study.

Literature Review and Research Hypothesis

Creativity and Entrepreneurial Intention

Creativity is the ability of an individual to reallocate and combine the resources and information at hand, thus generating novel and useful ideas (Yuan et al., 2022). It is regarded as the fundamental driving force for individuals to carry out innovation and entrepreneurship activities (Sawyer & Henriksen, 2024). In the field of entrepreneurship, individual creativity is crucial. Entrepreneurs collect and combine existing entrepreneurial resources and opportunities to generate new and feasible ideas, which enables them to start new businesses (Amabile, 1988; Chua & Iyengar, 2008). Entrepreneurship is a complex combination of conscious and planned actions. Entrepreneurial intention measures an individual's thoughts and plans about whether to start a business now or in the near future (Martins et al., 2023). It is a concentration of innovation awareness and entrepreneurial ability, and also the best predictor of entrepreneurial behavior (Bogatyreva et al., 2019). Only individuals with a certain level of entrepreneurial intention are likely to put their entrepreneurial ideas into practice and actually engage in entrepreneurial activities in the future.

Long-term research on entrepreneurial behavior has shown that entrepreneurial activities often involve a large number of innovative ideas and creative processes. As the main actors of entrepreneurial activity, having strong creativity and an innovation spirit are common and prominent characteristic among entrepreneurs (Ratten, 2023). The factors influencing an individual's strong entrepreneurial intention mainly include personality traits, family background, entrepreneurial education, entrepreneurial environment, and other aspects (Litzky et al., 2020). Potential entrepreneurs as the main body of entrepreneurial activities, their personality and characteristics have the most direct and critical impact on entrepreneurial intention. Whether an individual has strong creativity can affect the generation and realization of the individual's entrepreneurial intention in many ways.

First of all, creativity is the ability to generate novel and practical ideas. These novel and practical ideas are essential prerequisites for formation innovative products and gaining entrepreneurial inspiration (Mickiewicz & Kaasa, 2022). In the literature of organizational behavior research, creativity is almost throughout the whole process of entrepreneurship realization. The process of entrepreneurial realization not only includes idea generation, but also idea application and implementation (X. Y. Zhao et al., 2014). Secondly, individuals with strong creativity are more likely to detect the potential connections and patterns between things. The entrepreneurial process involves continuously rearranging and combining existing resources and information to discover new ideas and opportunities. Meanwhile, individuals with strong creativity are more confident in themselves and possess a higher sense of entrepreneurial self-efficacy (Biraglia & Kadile, 2017). During the entrepreneurial process, they can better withstand risks and overcome difficulties. Related researchers also believe that individuals with high creativity are more capable of "breaking out" of the limitations of the original thinking framework (Zhou et al., 2017) and finding entirely new ways of thinking and solutions. This makes them more likely to be motivated to make the career choice of self-employment. Therefore, this paper proposes the following hypothesis:

H1: Creativity has a positive promoting effect on entrepreneurial intention.

The Mediating Role of Opportunity Recognition

Entrepreneurial opportunities are the foundation and prerequisite for entrepreneurial activities. They are crucial for the establishment of new businesses as well as the pursuit of new development by existing enterprises (Lewis et al., 2016). Opportunity recognition refers to the timely perception, discovery, and evaluation of entrepreneurial opportunities, and is an essential part of the entrepreneurial process. Entrepreneurial opportunity

recognition is a process in which individuals consciously collect, process, and identify entrepreneurial information, and is also a manifestation of an entrepreneur's excellent ability to process entrepreneurial information (Cruz et al., 2021). Craig and Lindsay (2002) divided the process of entrepreneurial opportunity recognition into three distinct phases: opportunity search, opportunity identification, and opportunity evaluation. Entrepreneurs conduct a systematic search for potential ideas in the organizational environment. They analyze whether these ideas have practical value and business opportunities. At the same time, they comprehensively evaluate the opportunities through various financial indicators. Based on these evaluations, they decide whether to attract funds and establish a business (Lewis et al, 2016).

According to the social cognitive theory, cognitive factors such as knowledge structures that individuals use to make assessments, judgments, and decisions play an important role in motivating entrepreneurial intention. Because individual cognitive factors help individuals to identify and seize opportunities (Alim et al., 2023). The level of creativity plays an important role in the process of individual entrepreneurial opportunity recognition. During the course of entrepreneurial activities, creative potential entrepreneurs are more likely to discover the obvious or subtle connections among things. By reorganizing existing resources and information, they can find new business opportunities (Biraglia & Kadile, 2017). Meanwhile, individuals with greater creativity possess stronger divergent thinking (Sawyer & Henriksen, 2024). The process of opportunity recognition is inherently a creative one. This divergent thinking helps potential entrepreneurs uncover new means, goals, and methods. As a result, they can conceive new products and services to meet consumers' needs, thus creating new business opportunities. Therefore, we believe that creativity is conducive to enhancing an individual's ability to identify entrepreneurial opportunities.

Meanwhile, a large number of domestic and international studies have confirmed that entrepreneurial opportunity recognition is closely related to an individual's entrepreneurial intention. Alvarez and Barney (2005) pointed out that the entrepreneurial process is one of identifying, discovering opportunities and creating appropriate value. Entrepreneurial opportunity recognition is a key step in forming entrepreneurial intention and completing the entrepreneurial process. Entrepreneurial opportunities are what truly drive the execution of a startup. Identifying these opportunities is the starting point of the entrepreneurial journey and the primary factor in shaping an entrepreneur's intention to embark on a business venture (Alim et al., 2023). Entrepreneurial opportunity recognition serves as an important link between individual creativity and entrepreneurial intention. It's a key factor in understanding both. Individuals with high creativity are more likely to form certain entrepreneurial ideas and make entrepreneurial decisions based on the external environment and stimuli. However, entrepreneurial ideas at this stage are relatively vague and uncertain. This is where opportunity recognition plays a crucial role. We infer that there may be some important mediating variables between individual creativity and entrepreneurial intention, and entrepreneurial opportunity recognition is likely to be a significant mediator through which creativity affects entrepreneurial intention.

Guclu et al. (2002) first divided the entrepreneurial process into two stages: idea generation and opportunity development. They also believed that the opportunity recognition stage was part of the idea generation phase. Through a number of case studies, they showed that entrepreneurial opportunity recognition was a crucial link in the generation of entrepreneurial ideas and played a key role between the entrepreneurial environment and entrepreneurial decision-making. Song et al. (2004) proposed a theoretical model of entrepreneurship research centered on opportunity recognition from the big picture of entrepreneurship research. This model outlined the analytical frameworks of opportunity identification research and entrepreneurship research, suggesting that opportunity recognition lies at the center of entrepreneurship research. Through the mediating variable of opportunity recognition, the natural characteristics of opportunities and the personal characteristics of the entrepreneurs influence the strategies and growth of new ventures. In summary, as a crucial part of entrepreneurship, entrepreneurial opportunity recognition can influence the formation and strengthening of entrepreneurial intention, and play an important role in the facilitation of individual creativity on entrepreneurial intention. Therefore, this paper proposes the following hypothesis:

H2: Opportunity recognition mediates the relationship between creativity and entrepreneurial intention.

The Moderating Role of Perceived Entrepreneurial Culture

In the study of factors influencing entrepreneurial intention, an increasing number of scholars have come to realize the role of entrepreneurial culture. Differences in the results of entrepreneurship research in different countries have led scholars to realize that entrepreneurial culture may be a fundamental and enduring influence determining whether an individual can ultimately become an entrepreneur (Zahra & George, 2002). Meanwhile, the Global Entrepreneurship Moniter (GEM) examined factors influencing business startups. It pointed out that

entrepreneurial culture encouraged social members to be independent, autonomous, innovative, adventurous and pursue individual striving. According to the trait activation theory, when there are situation-related cues linked to traits, individuals show their personality characteristics (Tett & Burnett, 2003). When the situation offers suitable cues for trait expression, the relationship between personality traits and trait-related behavioral intentions gets closer (Tett et al., 2021).

Overall, creativity, as an important personality trait, can increase the likelihood of individuals discovering entrepreneurial opportunities. However, this mechanism of action is influenced, to some extent, by the entrepreneurial culture perceived by entrepreneurs. For an individual, the entrepreneurial culture he perceived is an important variable in the entrepreneurial context that can have a significant impact on the individual (Hayton & Cacciotti, 2013). When an individual perceives an entrepreneurial culture that is positive, encourages innovation, and tolerates risks, he will have a sharper perspective and acquire more comprehensive entrepreneurial knowledge (Yazdanpanah et al., 2023). As a result, it is easier to accurately identify useful information from the complex market information and discover potential entrepreneurial opportunities in the market. Thus, the facilitating effect of creativity on entrepreneurial opportunities is further strengthened. For individuals with a low perception of entrepreneurial culture, even if they possess strong creativity, they lack the knowledge reserve and market sensitivity needed for entrepreneurship. As a result, the likelihood of spotting and recognizing opportunities in the market environment declines. Thus, the promoting effect of individual creativity on opportunity recognition is further weakened. Therefore, we propose the following hypothesis:

H3a: Perceived entrepreneurial culture positively moderates the relationship between creativity and opportunity recognition. When the level of perceived entrepreneurial culture is high, the facilitating effect of creativity on opportunity recognition is enhanced. Conversely, when the level of perceived entrepreneurial culture is low, the facilitating effect of creativity on opportunity recognition is further weakened.

Combining Hypotheses H2 and H3a, the research further infers that perceived entrepreneurial culture can moderates the mediating role of opportunity recognition. When the level of entrepreneurial culture perceived by an individual is high, individuals with strong opportunity recognition ability triggered by high creativity can clearly sense the support and emphasis of the environment on entrepreneurial activities during the process of innovative practices. In order to better meet the expectations of others and the environment for their own betterment, individuals will focus their time and energy on entrepreneurial practices, further enhancing their entrepreneurial intention. Conversely, when the level of entrepreneurial culture perceived by an individual is low, the individual fails to recognize the importance of conducting entrepreneurial activities during the innovation practice. Even if the individual can identify potential entrepreneurial opportunities in the environment, they may choose to abandon these opportunities due to the uncertain risks in the entrepreneurial process. As a result, the mediating role of opportunity recognition between individual creativity and entrepreneurship is further weakened. Therefore, we put forward the following hypotheses:

H3b: The mediating role of opportunity recognition between creativity and entrepreneurial intention depends on the perceived entrepreneurial culture. The mediating role of opportunity recognition between creativity and entrepreneurial intention is stronger when the level of perceived entrepreneurial culture is higher. Thus, perceived entrepreneurial culture plays a moderated mediating role.

The Moderating Role of Risk Preference

Risk preference refers to the psychological trait of an individual to actively assume or avoid risks in a specific decision-making situation. A higher risk preference can endow an individual with internal stimulation, enhance their strong desire for entrepreneurial activities, thus promote the occurrence of entrepreneurial behavior (Mullins & Forlani, 2005). The study of Raab et al. (2005) indicated that risk preference was a trait and element demonstrated by individuals during the entrepreneurial process. It reflects an individual's decision-making choices when facing risks and challenges, and is a crucial influencing factor for entrepreneurial behavior. Risk and uncertainties are common challenges that individuals encounter during the entrepreneurial process. Throughout the process of entrepreneurship, individuals with different risk preferences make predictions and judgments about the losses and gains of entrepreneurship. Loss prediction will reduce entrepreneurial activities, while gain prediction will increase the likelihood of entrepreneurship. Whether an individual undertakes entrepreneurial endeavor depends on the perceived balance between losses and gains (Baluku et al., 2021). Individuals with a high-risk preference are often willing to take on more risks in pursuit of high returns, while those with a low-risk preference tend to adopt conservative actions to avoid losses.

For entrepreneurs, if the degree of risk preference is too low, innovative entrepreneurial activities will not occur.

Existing research has showed that an entrepreneur's risk preference is crucial for both individual entrepreneurial passion and intention. It's a key factor that drives entrepreneurs to seize entrepreneurial opportunities promptly (Peng et al., 2023). The research by Gist and Mitchell (1992) found that risk preference affected an entrepreneur's self-efficacy. And this self-efficacy then impacted the individual's entrepreneurial process. The research further points out that individuals with high-risk preferences have a strong desire to change the status quo. They tend to adopt more innovative ideas or methods to solve problems. This promotes the progress of the entrepreneurial process and increases the likelihood of entrepreneurial success (Peng et al., 2023). On the other hand, risk-averse entrepreneurs are slow to react to valuable entrepreneurial opportunities. They can't quickly and accurately seize market opportunities (Colton et al., 2010). Even though both can identify entrepreneurial opportunities, individuals with low-risk preference tend to avoid risk and take a steady course. They adopt traditional and less error-prone methods or approaches to solve problems in order to reduce all kinds of uncertainties and losses that may be brought by entrepreneurial failures. On the contrary, individuals with high-risk preference believe that, despite certain risks in entrepreneurship, success is more likely to bring substantial wealth and profits. Therefore, to a large extent, the degree to which opportunity identification promotes an individual's entrepreneurial intention depends on the individual's level of risk preference. For individuals with a strong risk preference, it is easier to transform the identified entrepreneurial opportunities into entrepreneurial intention and practice. In summary, we propose the following hypothesis:

H4a: Risk preference positively moderates the relationship between opportunity recognition and entrepreneurial intention. When an individual has a high-risk preference, the facilitating effect of opportunity recognition on entrepreneurial intention is enhanced. When an individual has a low-risk preference, the facilitating effect of opportunity recognition on entrepreneurial intention is further weakened.

Similarly, we argue that the mediating role of opportunity recognition between creativity and entrepreneurial intention depends on the degree of an individual's risk preference. The mediating role of opportunity recognition between creativity and entrepreneurial intention is enhanced when risk preference is relatively high, while the mediating role of opportunity recognition between creativity and entrepreneurial intention is correspondingly weakened when the individual risk preference is low. Therefore, we propose the following hypothesis:

H4b: The mediating role of opportunity recognition between creativity and entrepreneurial intention depends on the degree of individual risk preference. Risk preference not only moderates the relationship between opportunity recognition and entrepreneurial intention, but also moderates the mediating role of opportunity recognition between these two, playing a moderated mediating role.

Research Design

Data Collection

The research subjects of this paper were some college students who had taken the "Innovation and Entrepreneurship Practice" course at the university where the author was located. We obtained the data required for the research through a combination of questionnaire surveys and experimental studies. We believed that, compared with other students, those taking this course possessed more knowledge related to entrepreneurship. They also had a clearer understanding of the relevant variables involved in this study. they had a stronger awareness and ability in innovation and entrepreneurship than average students. Therefore, we considered these student samples to be quite suitable for the implementation of this study. Before conducting the questionnaire survey and experimental research, the research team selected 40 college students for a pre-test. By analyzing the pre-test results of the entire research process, the group held several collective seminars. They repeatedly modified the questionnaire items and the specific implementation steps of the experiment. Eventually, the formal questionnaire and experimental operation procedures were finalized.

Before the questionnaire survey and experiment commenced, all participants were clearly informed of the main purpose of this study and the general process of the study. We informed the participants that the data collected from the questionnaire and the experiment would be kept strictly confidential, and no personal information would be disclosed. So, they only need to answer truthfully without any concern. Also, participation in this questionnaire survey and experiment was not related to the grades of the "Innovative Entrepreneurial Practices" course, and this research had obtained the permission and support of the IRB. A total of 300 college students participated in the formal experimental research. After elimination invalid questionnaires and experimental data, 212 valid data points were recovered, with a recovery rate of 70.67%. Regarding the sex distribution of the study participants, there were 85 male students (40.09%)

and 127 female students (59.91%). The distribution across grades was a relatively even. There were 53 freshmen, accounting for 25%, 57 sophomores, accounting for 26.89%, 62 juniors, accounting for 29.24%, and 40 seniors and above, accounting for 18.87%. In terms of specialty distribution, there were 65 students from science and engineering majors, accounting for 30.37%. In liberal arts majors (including 55 in economics and management and 71 in liberal arts and history), there were a total of 126 students, accounting for 58.88%. There were 23 students from other majors. With regards the home location of the participants, 76 students were from rural areas, accounting for 35.85%; 72 were from towns, accounting for 33.96%; and 64 were from cities, accounting for 30.19%.

Measures

To measure the five main variables in this study, we adopted different measurement methods according to the actual situation. When measuring the three variables of creativity, opportunity recognition, and risk preference, considering the issue of social desirability, there is often a certain deviation between the survey respondents' self-evaluations and the actual situation. As a result, it is difficult to obtain fair and accurate data. Therefore, we used experimental methods to obtain the data by drawing on Baumeister et al (2007), Duncker and Lees (1945), and Urbig et al. (2012). During the experiment, two experimenters were present in each classroom to control the environment and distribute guiding instructions. All experimental subjects were separated by a sufficient distance to ensure that they were able to complete all tests independently. Communication and discussion among them were not allowed during the operation. Regarding entrepreneurial culture and entrepreneurial intention, since the research subjects were all college students, it was difficult to realistically simulate the real-world situations through experiments. Therefore, we mainly used questionnaires to collect relevant data.

Experimental Design for Creativity. The experimental design for creativity measure comprised two dimensions: the divergent thinking test and problem-solving ability. For the divergent thinking test, we drew on the "title the story" approach (Baumeister et al., 2007), whereby subjects were read a meaningful story and asked to give as many titles as possible that fit the theme within 5 min. Participants' responses were scored individually based on the number of headings they gave, novelty, and thematic fit. We invited five PHD students from the group to score the headlines provided by the subjects, giving each headline a score of 1 to 3 points depending on its quality, which was summed to calculate the subjects' scores on the first dimension of creativity. Subsequently, we selected six classic insight problems to measure the problem-solving ability of the study participants (Duncker & Lees, 1945). All of the questions were chosen from the creativity problem bank of Indiana University (website: https://www.ncbi.nlm.nih.gov/). The subjects were required to complete these questions within the given 15 min. The insight problems are scored on a binary scale. A correct answer was marked as "1" point, and an incorrect answer was marked as "0" point. To avoid measurement errors, the data from subjects who had seen the questions or answers before were excluded. The total score of a subject's creativity was obtained by adding up the scores of the story titles and the insight problems.

Experimental Design for Opportunity Recognition. The recognition of entrepreneurial opportunities mainly includes two aspects: the identification of profitability and feasibility of opportunities (Miao, 2007). For college students, the ability to identify feasible entrepreneurial opportunities in their living environment is undoubtedly the most direct measure of their opportunity-identification capabilities. Based on this idea, we used open-ended questions. Subjects were required to answer the question "What business opportunities do you currently find on campus?" within 5 min. Considering the feasibility of business opportunities, the more and newer the business opportunities the subjects come up with, the better. We also asked five PHD students in the research group to score each of the subjects' answers. From these scores, we calculated the subjects' scores on opportunity recognition.

Experimental Design for Risk Preference. For measuring the subjects' risk preference, we drew on the experimental design concept of Urbig et al. (2012). We simulated a real-life scenario, and judged the subjects' risk preference by their choices among options with different risk types. This test was arranged just before the subjects were about to complete all the tests. Through guiding introductions, the subjects were informed that they could receive a 50-yuan remuneration for participating in this experiment. Subsequently, the subjects were presented with five options. They could use the remuneration as a "stake" to "aim for big gains with small investments" and participated in "gambling games" with five different risk levels. Each "gambling situation" had different investment and return settings. We carefully controlled the five options so that their mathematical expectations were equal. Subsequently, the subjects were invited to choose any one of them. Through their choices of different risk-level "gambling situations," the subjects showed their own risk preferences.

Table 1. Results of the Mediation Effect Test.

Variables	OR		EI			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
GD	0.214***	0.152**	0.482***	0.438***	0.376***	0.368***
S&T	−0.256***	−0.173	−0.201**	−0.142**	−0.073	−0.062
L&A	−0.091	−0.014	−0.138**	−0.083	−0.093*	−0.077
RR	−0.05	0.001	0.008	0.044	0.033	0.044
TS	−0.095	−0.032	−0.014	0.031	0.034	0.046
CT		0.383***		0.272***		0.096*
OR					0.498***	0.461***
Adjusted R^2	.089	.219	.261	.325	.484	.489
DW tests	1.91	1.941	1.764	1.846	2.006	2.025
F-value	5.113***	10.846***	15.88***	17.928***	33.966***	29.788***

Note. GD = gender; S&T = Science and Technology; L&A = Liberal Arts; RR = rural; TS = township; CT = creativity; OR = opportunity recognition; EI = entrepreneurial intention.
*$p < .1$. **$p < .05$. ***$p < .001$.

Questionnaires. The measuring of entrepreneurial intention mainly drew on Thompson's (2009) questionnaire, selecting seven items including "I think I will start my own business in the future." Regarding the perceived entrepreneurial culture, for the special group of college students, we integrated three factors: the entrepreneurial culture of the subjects' hometowns, the entrepreneurial experiences of their main family members, and the entrepreneurial atmosphere of their schools. A total of five items were set up. Both the items for entrepreneurial intention and entrepreneurial culture adopt a 5-point Likert scale. In addition, three variables, namely gender, major, and place of family location, were designed as control variables in the questionnaire.

Reliability Analysis

There were three experiments in this paper. For the two experiments measuring creativity and opportunity recognition, after the subjects completed all the tests, five experts from the research group scored them. We excluded the sample data with significant scoring deviations to ensure a high degree of internal consistency among the experts' scores. Risk preference was measured in one-time experiment, making it difficult to evaluate the internal consistency using the reliability coefficient. For the questionnaire results of entrepreneurial intention and perceived entrepreneurial culture, we calculated using Cronbach's Alpha coefficient. The obtained reliability coefficients were 0.841 and 0.722 respectively, which were higher than the generally recognized standard of 0.7, indicating good reliability levels.

Results

Mediating Effect Test

Based on previous research, we selected three variables, namely the gender, major, and family location of the subjects as the control variables of the model, and conducted a multiple regression analysis on the relationships among the core variables of the model. In terms of handling the control variables, gender was represented by a dummy variable. Regarding majors, we combined liberal arts and humanities majors with economics and management majors into the liberal arts category. The majors of the subjects were divided into three categories: science and engineering, liberal arts, and others, and two dummy variables were selected for representation. As for the family location, there were three categories: rural areas, towns, and cities, and we also chose two dummy variables to represent them.

This study employed multiple regression analysis using SPSS 22 software to test the model hypotheses, with the regression results presented in Table 1. Drawing on the testing procedure for mediating effects proposed by Baron and Kenny (1986), we tested the mediating role of the model. The results of the multiple regression analysis were shown in the table below. As can be seen from Model 4 in Table 1, the regression coefficient β for creativity on entrepreneurial intention was .272, with a significance level $p < .001$, indicating a significant positive effect of creativity on entrepreneurial intention, thus validating Hypothesis H1.

Secondly, we tested whether the independent variable, creativity, had a significant positive effect on the

Table 2. Moderating Effect Test Results.

Variables	OR			EI		
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
GD	0.214**	0.169**	0.163**	0.458***	0.346***	0.338***
S&T	−0.256***	−0.167**	−0.167**	−0.184**	−0.039	−0.042
L&A	−0.091	0.014	0.019	−0.127*	−0.075	−0.083
RR	−0.05	0.046	0.046	−0.012	0.019	0.017
TS	−0.095	0.026	−0.021	−0.049	0.003	0.007
CT		0.345***	0.349***			
PE		0.219**	0.215**			
OR					0.431***	0.44***
RP					0.171**	0.181**
CT*PE			0.374			
OR*RP						0.099**
Adjusted R^2	.089	.26	.259	.23	.435	.426
DW tests	1.910	1.98	1.983	1.871	2.138	2.114
F-value	5.113***	11.569***	10.269***	13.61***	24.172***	20.608***

Note. GD = gender; S&T = Science and Technology; L&A = Liberal Arts; RR = rural; TS = township; CT = creativity; RP = perceived entrepreneurial culture; OR = opportunity recognition; RP = risk preference; EI = entrepreneurial intention.
*$p < .1$. **$p < .05$. ***$p < .001$.

mediator variable, opportunity recognition. As can be seen from Model 2, creativity also had a significant positive effect on opportunity recognition, with an effect coefficient of 0.383 ($p < .001$). Comparing the results of Models 4 and 6, creativity had a significant positive effect on entrepreneurial intention, with a coefficient of 0.272 ($p < .001$) before the introduction of opportunity recognition. After the introduction of opportunity recognition, the positive effect of opportunity recognition on entrepreneurial intention was also significant ($\beta = .461$, $p < .001$), while the positive effect of creativity on entrepreneurial intention had been weakened. The coefficient of the effect had been reduced from 0.272 to 0.096, and the level of significance had also been reduced, which indicated that opportunity recognition played a partial mediating role in the effect of creativity on entrepreneurial intention. This in turn suggested that opportunity recognition played a partially mediating role in the effect of creativity on entrepreneurial intention, thus verifying H2.

Analysis of Moderating Effects

To verify the moderating effect of the two variables in the model, namely the moderating roles of perceived entrepreneurial culture and risk preference, we conducted sequential tests using multilevel regression analysis. First, we tested the moderating effect of perceived entrepreneurial culture. The two variables of creativity and perceived entrepreneurial culture were centered first, and the product terms of the two variables were calculated. A hierarchical regression analysis was conducted by designating opportunity recognition as the dependent variable, the control variables in the first level of the regression model, the two independent variables of creativity and perceived entrepreneurial culture in the second level, as well as the product term in the third level. The results of applying the same methodology to test risk preference were shown in Table 2. As can be seen from the results of Model 9, the product term of creativity and perceived entrepreneurial culture did not play a significant role in opportunity recognition ($\beta = .374$, $p > .1$), and thus H3a did not hold. From the results of Model 12, it can be seen that the positive effect of the product term of opportunity recognition and risk preference on entrepreneurial intention was significant ($\beta = .099$, $p < .01$), which indicated that the positive facilitating effect of opportunity recognition on entrepreneurial intention was enhanced when the individual's risk preference was strong, and risk preference played a moderating role in the relationship between opportunity recognition and entrepreneurial intention. Figure 2 showed that when the level of risk preference was high, entrepreneurial intention increased more, and when the level of risk preference was low, the increase was small. It can be intuitively seen that risk preference strengthened the positive effect of opportunity recognition on entrepreneurial intention. Thus, overall, H4a was supported.

Analysis of Moderated Mediation Effect

Further analysis was conducted using the Bootstrap method within the SPSS PROCESS macro to test for moderated mediation effect of the model. This method

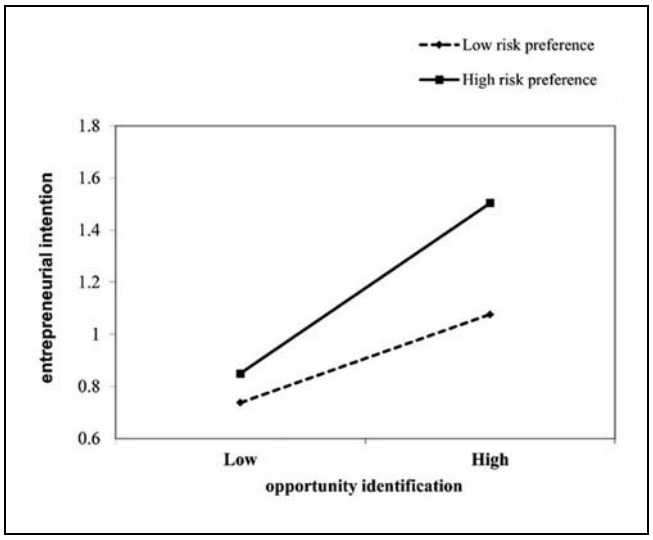

Figure 2. Moderation effect of risk preference.

does not require the assumption that the indirect effect of the sample follows a normal distribution, and simulation studies have shown that this method is more effective than traditional methods. We utilized unstandardized coefficients and the Bootstrap method, set the sample size to 5,000, and selected a 95% confidence interval (95% CI). If the 95% CI does not contain 0, it indicates that the indirect effect is significant. We incorporated the main variables and control variables into the macro, set the Bootstrap random sampling to 5,000 times, and the running results were presented in Table 3. Results showed that when the level of risk preference was high, the conditional indirect effect of creativity on entrepreneurial intention via opportunity recognition was 0.139 with a 95% CI [0.046, 0.303], did not include 0 versus 0.112 with a [−0.068, 0.067] (including 0), when the level of risk preference was low. Additionally, the moderated mediation index was also significant (Index = 0.011), with a [0.027, 0.123], Thus, H4b was supported. The results were presented in Table 3.

Conclusion and Discussion

The Main Conclusions

From the perspective of individuals' perception and identification of entrepreneurial opportunities, we supplemented and refined the literature regarding creativity and entrepreneurial intention. In this paper, we established a moderated mediation model, through which we specifically explored the relationship between individual creativity and entrepreneurial intention. By comprehensively applying the social cognitive theory and the trait activation theory, we introduced opportunity recognition as a mediating variable to connect individual creativity with entrepreneurial intention. Meanwhile, we introduced perceived entrepreneurial culture and risk preference as situational factors. Through this, we constructed a moderated mediation model. Empirical analysis based on a sample of 212 college students from Zhejiang Province showed that individual creativity played a positive role in promoting entrepreneurial intention. Opportunity recognition partially mediated the relationship between creativity and entrepreneurial intention. Meanwhile, risk preference not only positively moderated the relationship between opportunity recognition and entrepreneurial intention, but also moderated the mediating role of opportunity recognition between creativity and entrepreneurial intention. However, perceived entrepreneurial culture did not play a moderating role.

Theoretical Contributions

This study enriched the findings related to the exploration of the relationship between creativity and entrepreneurial intention through an empirical research approach. Through both behavioral studies and questionnaire surveys of university students, this study further confirmed that individual creativity played a positive contributing role on entrepreneurial intention, which was consistent with the findings of previous studies by Biraglia and Kadile (2017) and Kusmintarti et al. (2017).

Table 3. Bootstrap Test Results of Moderated Mediation Effect.

	Indirect effect					Moderated mediation effect			
Dependent variable	Opportunity recognition	Effect	*SE*	95%LL CI	95%UL CI	Index	*SE*	95%LL CI	95%UL CI
Entrepreneurial intention	Low	0.112	0.025	−0.068	0.067	0.011	0.018	0.027	0.123
	High	0.139	0.029	0.046	0.303				

Note. N = 5,000, Confidence interval 95%.

This paper comprehensively applied social cognitive theory and trait activation theory. Taking individual creativity as the starting point of the research, it revealed the significant relationship between creativity and entrepreneurial intention, thus enriching the research findings on the relationship between creativity and entrepreneurship.

This study also enriched the research results related to the mechanism of individual creativity influencing entrepreneurial behavior. Currently, the factors influencing individual entrepreneurial intention were mainly focused on individual demographic characteristics, such as psychological capital, self-efficacy, and the Big Five personality (Martins et al., 2023; Zhang et al., 2015). Meanwhile, entrepreneurship education as well as social entrepreneurship policies and environments had also received widespread attention as important factors influencing the formation of individual entrepreneurial intention (Cho & Lee, 2018; Yao et al., 2016). Different with previous studies, from the perspective of social cognition, this research introduced the ability of opportunity recognition to analyze the influencing mechanism of individual creativity on entrepreneurial intention. It effectively built a bridge for the transformation from individual creativity to entrepreneurial intention.

Meanwhile, this study further enriched the research on situational factors that influenced how individual creativity impacted entrepreneurial intention. The effect of creativity on entrepreneurial intention was not consistent. The research by Bignetti et al. (2021) found that creativity did not play direct effect on entrepreneurial intention. Therefore, it was necessary to study the boundary conditions that affect the exertion of creativity in action. Based on the important insights from existing studies, this study explored, and from both "external" and "internal" perspectives, in what situations individuals with stronger creativity were more inclined to choose entrepreneurial behavior. This deepened our understanding of the boundary conditions for the effectiveness of creativity.

Practical Implications

According to our research, individual creativity played a positive and facilitative role in entrepreneurial intention. Therefore, in the process of entrepreneurship education for college students, cultivating creativity should be placed in a particularly important position. Creativity is not entirely innate; instead, it can be gradually enhanced through nurturing and shaping in the postnatal period. The globally renowned internet giant Alibaba attaches great importance to the innovation and creativity of its employees. Ma Yun, the founder of the company, required everyone who joined the company, regardless of their body size or height, to learn to do a handstand against the wall within 3 months. Doing a handstand against the wall was a way to boost creativity, as it required employees to view problems from a different perspective.

Meanwhile, apart from striving to enhance the creativity of potential entrepreneurs and develop the creative thinking of college students, in the process of conducting entrepreneurship education, attention should also be paid to the identification and seizure of entrepreneurial opportunities. Essentially, entrepreneurial activities are a process in which entrepreneurs seek, identify, develop, and create such opportunities. Therefore, entrepreneurial opportunities serve as the prerequisite and foundation for carrying out entrepreneurial activities, and also crucial factors that prompts individuals to generate entrepreneurial intentions. When conducting entrepreneurship education for college students, teaching them how to identify and create entrepreneurial opportunities should be an essential part of the curriculum. By starting from entrepreneurial opportunities, college students can gain a clearer understanding of how to initiate entrepreneurial activities.

Finally, our study confirms that an individual's risk preference plays a positive moderating role. It not only moderates the relationship between opportunity recognition and entrepreneurial intention, but also further moderates the mediating role of opportunity recognition. The entrepreneurial process is fraught with risks and uncertainties. When faced with the same entrepreneurial opportunity, individuals with a lower risk preference tend to hesitate and weigh the pros and cons repeatedly. Eventually, they may give up due to the potential risks and losses associated with entrepreneurial failure. In the process of entrepreneurship education, how to scientifically and reasonably recognize and identify risks should be regarded as an important learning content. It is essential to fundamentally improve college students' ability to identify and assess risks, so that they can better manage risks in the process of entrepreneurship, and actively carry out entrepreneurial activities under controllable risk conditions.

Limitations and Future Research

In this paper, by introducing opportunity recognition as a mediating variable, and perceived entrepreneurial culture and risk preference as dual moderating variables, a moderated mediation model was constructed. Through the comprehensive application of experimental research and questionnaire survey methods, the research findings of this paper provide a strong understanding for exploring the relationship and mechanism between individual creativity and entrepreneurial intention. Although the results of the empirical tests basically support our

research hypotheses, it is undeniable that our research design still has some limitations, which can be optimized and improved in future studies.

First of all, in the research of this paper, all the samples participating in our study were students who take the course of "Innovation and Entrepreneurship Practice" in the researcher's university. We believed that college students taking this course had relatively more entrepreneurship-related knowledge reserves compared to others, and were also more likely to form certain entrepreneurial intentions. However, in terms of the source of the sample, the research samples lack a certain degree of extensiveness and diversity, which poses certain limitations to the research. Therefore, in the future, we will expand the selection of research subjects. Instead of only sampling from college students, we can also select research samples from graduated alumni through alumni resources, increasing the extensiveness and diversity of the research subjects, thereby strengthening the reliability and validity of the research results.

Secondly, we comprehensively utilized experimental research and questionnaire survey to obtain the data required for the research. Through multiple regression analysis, hierarchical regression analysis and the SPSS-based Bootstrap method, we conducted empirical analyses on the data obtained from the experimental research and questionnaire surveys. When conducting the questionnaire surveys, the measurement of each variable was obtained in the form of students' self-reports, which may lead to certain self-aggrandizement issues. In the future, we can combine objective questionnaires, or use teacher-student paired samples for the survey to further enhance the reliability and validity of the research.

Finally, this study reveals that opportunity recognition plays a partial mediating role between creativity and entrepreneurial intention, indicating that there are other significant variables between them. It has been found that entrepreneurial self-efficacy, work prosperity, and psychological capital are all important mechanisms that effectively connect individual cognition and entrepreneurial behavior. Whether they constitute crucial mechanisms in the transformation from creativity to entrepreneurial intention awaits further exploration and in-depth study in future research.

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Ethical Considerations

The ethics for this study was approved by the Zhejiang University of Technology Academic Committee. Written informed consent was obtained from all participants. The guidelines outlined in the Declaration of Helsinki were followed.

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Declaration of Conflicting Interests

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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