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Critical factors identification and prediction of tourism and hospitality students' entrepreneurial intention

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ABSTRACT

In accordance with the increasing attention in entrepreneurship among tourism and hospitality students, this study aims to discover whether entrepreneurial education may influence the entrepreneurial intention of students. A total of 668 tourism and hospitality students were used to test our Hypothesis. The findings support the positive impact of education on entrepreneurial intentions. In addition, empirical training is the leading factor in the formation of entrepreneurial intention, while theoretical enhancement is an important moderating factor. Furthermore, it was confirmed that social worth and risk-taking can strengthen the formation of entrepreneurial intention.

1. Introduction

Cultivating college students' entrepreneurial intention not only has become a key link in social development and social innovation but also contributes to the economic development of a country or region by promoting innovation and creating employment opportunities (Getz & Carlsen, 2005; Ndou, Mele, & Del Vecchio, 2018). In other words, entrepreneurship provides an excellent means to promote economic growth and creates jobs (Rauch & Hulsink, 2015). For example, "Job-hunting guide for college students in 2018" shows that in 2019, the proportion of China's more than 90,000 graduates who chose to start a business accounted for 4.78% (Youth entrepreneurship website, 2019), and up to 96.6% of college entrepreneurs are founded by companies that are profitable in Ningbo, China (Ningbo Statistics Bureau, 2018). From the foundational education perspective, college students have higher human capital and great entrepreneurial potential and possibility (Rauch & Rijdsdijk, 2013). Therefore, how to succeed in developing human capital from the university to business has become a critical issue when confronting global competition (Scarpetta et al., 2012). Particularly, the tourism and hospitality industry has catalogued as highly competition but also contributes to regional economic development, as the industry includes catering, sightseeing, transportation, shopping and other aspects (Fong, Wong, & Hong, 2018). Promoting tourism and hospitality students' entrepreneurial intention can help students transform their entrepreneurial consciousness into entrepreneurial behavior, and therefore lead to more jobs and the driving effect on the economy (Altinay, Madanoglu, Daniele, & Lashley, 2012). Therefore, entrepreneurial intentions are perceived as one of the most reliable presage of entrepreneurial behavior (Carsrud & Brannback, 2011; Tsai, Chang, & Peng, 2016). Exploring how to improve the tourism and hospitality students' entrepreneurial intention is crucial for current and future tourism and hospitality industry development (Tsai et al., 2016).

Gurel, Altinay and Daniele (2010) argue that education plays a critical role in cultivating the entrepreneurial intention of

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students. Although tourism and hospitality education has made great progress, it is considered career-oriented and action-oriented remains an unsolved issue (Gurel et al., 2010). How to develop students' critical thinking, entrepreneurial intention and comprehensive abilities for their future careers is a necessary question (Echtner, 1995). Moreover, Ayikoru, Tribe, and Airey (2009) also argued the shortcomings of traditional tourism and hospitality education in developing students' ability to understand, evaluate and analyze social phenomena. Echtner (1995) asserted tourism education could not fully tap students' human capital and create a suitable learning environment for cultivating entrepreneurship. However, how tourism and hospitality education impact on entrepreneurial intention remains unsolved. Previous studies have shown that education can improve students' entrepreneurial ability (Hayton, George, & Zahra, 2002; Morrison, 2000), entrepreneurial skills and behavior (Loasby, 1998). In the last ten years, tourism and hospitality education has experienced a rapid development stage (Hsu, Xiao, & Chen, 2017; Zhang & Xiong, 2017). It's worth noting that theoretical enhancement and empirical training are two essential parts of education learning process. Therefore, this paper raises the first unsolved research question: Does empirical training enhance the entrepreneurial intention of tourism and hospitality students.

The second question we attempt to answer is this: How does empirical training education affect the entrepreneurial intention of tourism and hospitality students. Personal ability and psychological factors are the two critical factors. Grabowski and Kittelwiegner (2017) asserted that creativity helped to discover new entrepreneurial opportunities. Additionally, opportunity recognition means entrepreneurs can put new ideas into action (Dimov, 2007), being one of the preconditions for entrepreneurial intention. More importantly, individual creative thinking and psychological capital are likely to be well realized through education training (Jin, 2017; Luthans, Avey, & Patera, 2008). Education training can provide the individual with a positive psychological evaluation state and stimulate the student's creative thinking (Wiegand & Geller, 2005), which encourages them to actively discover and explore new business opportunities; ultimately entrepreneurial motivation will be formed.

Theoretical enhancement, one of educational attributes, can improve students' individual ability, psychological quality and opportunity identification ability (Corbett, 2007). Additionally, Dai, Maksimov, Gilbert, and Fernhaber (2014) believed that risk-taking appeared to be an important factor that encouraged students becoming an entrepreneur, and as closely related to entrepreneurial intention. More importantly, in recent years, social worth has been regarded as a significant quality for entrepreneurs in addition to enterprise performance (Bacq & Alt, 2018). Especially in the tourism and hospitality industry, social worth can reflect the spiritual needs of individuals who want to positively influence the society and others, which is closely related to entrepreneurship (Bacq & Alt, 2018). Therefore, students with high social values have a higher level of entrepreneurial intention.

Although few research has provided direct evidence for the education-student entrepreneurial intention path mechanism (Gurel et al., 2010), certain directed reasoning and theoretical perspectives enhance our understanding of education in this study. Therefore, the specific objectives of this study are as follow: (1) answer the issue of *how* empirical training education can enhance students' entrepreneurial intention by cultivating their personal ability (creativity), psychological state (psychological capital) and business acumen (opportunity recognition). (2) Identifying *whether* theoretical enhancement, a critical attribute of education can strengthen entrepreneurial intention of tourism and hospitality students. (3) Risk-taking and social worth are introduced to further explore *whether* students' risk-taking ability and the values of self-realization can accelerate the formation of entrepreneurial decision-making. (4) Explore *what* combination of factors can hasten college students' decision to start a business? A systematic analysis will be conducted.

To answer these breakthrough research issue above, a more complicated research model of education-entrepreneurial intention is constructed in Fig. 1. The research methods combining SEM and fsQCA are utilized to adress that issue. This study contributes to the relevant theories and research on entrepreneurship education (Liu, Xu, Zhao, & Yong, 2019), entrepreneurship psychology (Hussain,

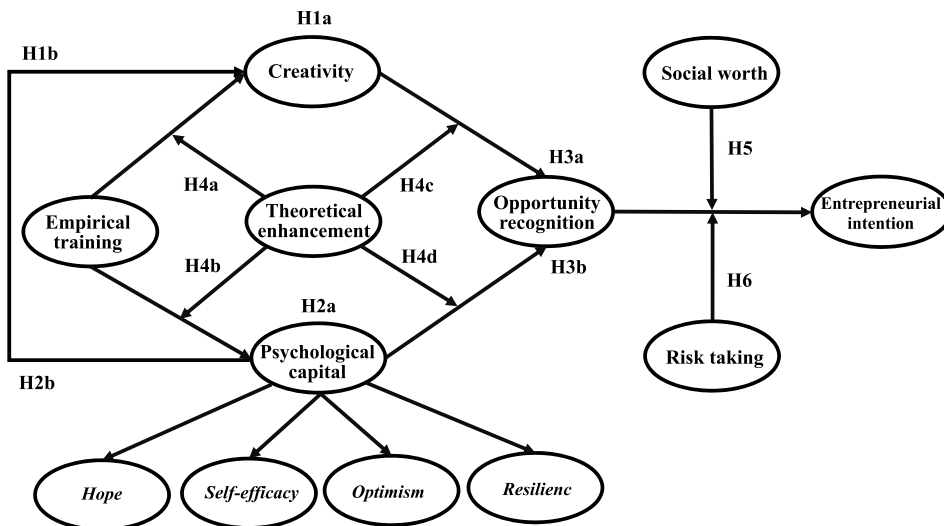


Fig. 1. Research framework and proposed Hypothesis.

Rigoni, & Orij, 2018) and entrepreneurship (Acs, Estrin, Mickiewicz, & Szerb, 2018).

2. Hypothesis

2.1. Social learning theory

Entrepreneurial experience and knowledge are based on entrepreneurial learning (McKeon, Johnston, & Henry, 2004). Entrepreneurial learning eventually becomes a practitioner's entrepreneurial behavior, which is a result of education (Bird, Schjoedt, & Baum, 2012). More importantly, social learning theory (Bandura, 1986; Bandura & Walters, 1977) provides a basis for how education affects entrepreneurial intention.

The theory emphasizes the influence of individual attitude, behavior, emotions and environmental factors and their interaction on human behavior, and the role of learning and self-regulation in triggering human behavior (Bandura & Walters, 1977). Particularly, people's complex intention and behaviour are mainly acquired, including direct knowledge and indirect knowledge (Bandura, 1986). Social learning theory emphasizes the role of entrepreneur socialization, and education provides the learning place and learning knowledge (Fellnhöfer, 2017). In this study, this theory explains how education cultivating (learning) influences students' entrepreneurial intention through creativity (capacity), psychological capital (emotions) and opportunity recognition (perception of specific task characteristics). This process is affected by the moderators of social worth (attitude) and risk-taking (environmental factors).

2.2. The mediating role of creativity

Creativity reflects an individual's ability to generate new ideas and discover and create new things, which is a key characteristic of entrepreneurship. Nadim and Singh (2011) state that entrepreneurs are people who act on their creative ideas. Thus, creativity is one of the important diathesis of entrepreneurs to identify opportunities to create value and use new opportunities to achieve self-worth (Yu Cheng, Sei Chan, & Mahmood, 2009). Allen (2009) asserted that the ability and opportunity to turn ideas and inventions into economic were considered a core factor of entrepreneurship. Creativity is likely to lead to more effective entrepreneurial opportunities for individuals (Rahim, Ismail, Thurasamy, & Abd, 2018). More importantly, social learning theory supports that education provides learning paths that inspire entrepreneurial talent (Bandura, 1986). Li and Liu (2016)'s research confirms that education can positively affect students' creativity by enhancing the creative atmosphere. Fayolle, Gailly, and Lassas-Clerc (2006) asserted that the primary targets of empirical training education were to cultivate students' thinking ability and enhance their creativity, which helped students to understand and pursue opportunities and develop opportunities (Mitchell et al., 2007). Therefore, this study asserts that empirical training education can enhance the creativity of tourism and hospitality students and help students to discover and identify entrepreneurial opportunities.

Hypothesis 1a. Creativity mediates the relationship between empirical training and opportunity recognition.

Individuals with positive psychology show better creativity than their counterparts (Wu & Chen, 2018). Positive psychology theory indicates that psychological capital will affect the intention or capacity of individuals to become involved in the creative process of identifying problems, collecting and reporting data and generating ideas, affecting the realization of creativity (Bouzari & Karatepe, 2017). In other words, positive emotion can broaden individual concern and cognition, which increases the possibility of creative activities (Fredrickson, 2001). Although no direct evidence shows that the positive psychology state of tourism and hospitality students leads to creative thinking, the previous literature has noted that the psychological capital of employees can actively promote their creativity (Rego, Sousa, Marques, & Cunha, 2012). Besides, strong psychological force is needed behind opportunity recognition skills (Ardichvili, Cardozo, & Ray, 2003). Individuals with strong psychological capital are easy to generate enthusiasm for their career, and generate positive opportunity identification. But this process requires creativity to guide the identification of opportunities, because creativity helps individuals to seize new opportunities (Eckhardt & Shane, 2003). Entrepreneurial researchers recognize the significance of identifying opportunities in the creative process (Baron, 2006; Dimov, 2007; Rahim et al., 2018). This study asserts that tourism and hospitality students with positive psychological capital have more exploration spirit and creative thinking. Therefore, the assumption is as follows:

Hypothesis 1b. Creativity mediates the relationship between psychological capital and opportunity recognition.

2.3. The mediating role of psychological capital

Social learning theory believes that self-regulation is an internal strengthening process of the individual, and a sense of competence and a positive sense of confidence create positive intentions (Bandura, 1986). Psychological capital is such an indicator affecting individual judgment and behavior. The four attributes of psychological capital are self-efficacy, optimism, hope and resilience (Ephrem, Namatovu, & Basalirwa, 2019), which help to enhance the ability to identify opportunities. (1) Self-efficacy: People have confidence in acting and fulfilling difficult, challenging tasks. These people will pursue business opportunities because of difficulties and risks and are able to seize the opportunity (Pajic, Ulceluse, Kismihók, Mol, & Den, 2018). (2) Optimism: Optimists make positive judgments about the future. These people always need to maintain a positive view of future opportunities and will not cede present and future opportunities (Fredrickson, 2001). (3) Hope: A hopeful person is determined in the pursuit of his goals,

actively seeks a means of self-developing and has foresight and expectation to seize the opportunity (Kerret, Orkibi, & Ronen, 2016). (4) Resilience: When individuals are troubled by problems and adversity, they can persist and even surmount difficulties to achieve success (Luthans, Youssef, & Avolio, 2007). Resilient people are persistent in their pursuit of new knowledge and experiences, which increases the likelihood of finding and seizing opportunities. Positive psychology theory holds that individual psychological emotion can be influenced by education (Kristjánsson & Kristján, 2012). Luthans, Avey and Pater (2008) also proved that individual psychological capital could be intervened and developed through empirical training. This study asserts that students with positive psychological capital will confront future opportunities with a positive attitude, confidence and persistence, which contributes to identifying opportunity. Therefore, the following Hypothesis is made:

Hypothesis 2a. Psychological capital mediates the relationship between empirical training and opportunity recognition.

Psychological capital is of special significance for entrepreneurial perspective decision and behavior (Baron, 2006; Ephrem et al., 2019), which can be shaped through empirical training (Murrell, Salsman, & Meeks, 2004). Macaskill and Denovan (2013) proved that college students who had been trained through skill module education would generate stronger psychological capital to accept more challenge. Psychological capital is manifested as positive emotions such as hope and confidence, in this way, individuals with such characteristics can actively find creative means (Shalley & Gilson, 2004) and obtain creativity (Gallagher, Marques, & Lopez, 2017). Positive psychology provides sufficient confidence for personal development, which helps people find creative means to solve problems and stimulate greater creativity when confronting difficulties (Youssef & Luthans, 2007). Previous studies have shown that people with high levels of psychological capital are willing to accumulate new experiences and are more willing to create new means of doing things in difficult situations (Tugade, Fredrickson, & Barrett, 2010), which unintentionally inspires them to turn their creative potential into actual creativity (Turner & Gianiodis, 2018). This study asserts that empirical training education can shape college students' cognition and judgment of their entrepreneurship through courses and training, enhance their positive assessment psychology of the future, and stimulate their creative thinking and action, which ultimately enhance their creativity. The specific Hypothesis is as follows:

Hypothesis 2b. Psychological capital mediates the relationship between Empirical training and Creativity.

2.4. The mediating role of opportunity recognition

Ability has proven to be a critical predictor of entrepreneurial intention (Noguera, Alvarez, & Urbano, 2013). In particular, in the tourism and hospitality industry, market competition is more intense, and innovation can lead to opportunity, because creativity itself is the dominant factor leading to the formation of entrepreneurial intention (Nadim & Singh, 2011; Tan, 2001). Therefore, the creativity of entrepreneurs in this field is particularly important. Creative thinkers are effective at identifying and seizing new opportunities and actively seek and pursue new opportunities (Asante & Affum-Osei, 2019). Creativity differs from general ability in its novelty and originality and has the particularity of searching for opportunities (Allen, 2009). In highly competitive industries such as tourism and hospitality, the sensitivity to exploring new opportunities can boost the confidence of travel and hospitality students in starting their own businesses. Tsai, Chang and Peng's (2016) research also confirmed that perceived opportunity positively affected entrepreneurial intention. It appears a reasonable deduction that travel and hospitality students with high levels of creativity are better able to identify and explore new opportunities, which, in turn, increase the entrepreneurial intention.

Hypothesis 3a. Opportunity recognition mediates the relationship between Creativity and Entrepreneurial intentions.

Entrepreneurship opportunity recognition is one of the critical issues and the most important tasks for entrepreneurs (Asante & Affum-Osei, 2019; Nabi & Liñán, 2013). From the perspective of the entrepreneurial process, an entrepreneur must be able to identify and exploit new opportunities and see opportunities to create value (Yu Cheng et al., 2009). Especially in tourism and hospitality, seizing opportunities means gaining competitive advantages among the fierce market competition. Therefore, college students with the characteristics of opportunity identification can have a clear judgment of the future market positioning and competitive strategy, and their intentions to start a business may be stronger (Fredrickson, 2001; Ploum, Blok, Lans, & Omta, 2019). Moreover, cognitive ability is often affected by positive psychology; Social learning theory emphasizes that the individual's feeling of victory and confidence when facing a task will affect their action intention (Bird et al., 2012), and individuals with a positive mental attitude can confront challenges with more positive and constructive emotions. In other words, if tourism and hospitality students are able to confront the competitive pressure of future entrepreneurship in this field, which helps to seize entrepreneurial and development opportunities, they are more likely to start a business. Therefore, the following Hypothesis is made:

Hypothesis 3b. Opportunity recognition mediates the relationship between Psychological capital and Entrepreneurial intentions.

2.5. The moderating role of theoretical enhancement

Theoretical education courses can guide students to effectively convert practical experience into creativity (Litchfield, Ford, & Gentry, 2014). It is advantageous to empirical training effectiveness, as a result of the theoretical knowledge of the individual creative thinking guidance. Educational research emphasizes the interaction between prior knowledge and theoretical knowledge (Li & Liu, 2016). Theoretical learning is systematic knowledge learning and provides great help in improving students' analysis, prediction and solution abilities; thus, it is an effective means to inspire individual creative thinking (Kerret et al., 2016; Kristjánsson & Kristján, 2012). Practical experience will influence the development of students' creativity through the reinforcement of theory and

curriculum studies (Li & Liu, 2016). This study concludes that theoretical enhancement education for knowledge and experience accumulation inspires tourism and hospitality students with new ideas, which strengthens the cultivation of students' creativity through empirical training education.

Hypothesis 4a. High Theoretical enhancement rather than low moderates a more positive relationship between students' Empirical training and their Creativity.

Knowledge accumulation is the promoter of entrepreneurial intention, which has a direct impact on entrepreneurial decision-making (Bonesso, Gerli, Pizzi, & Cortellazzo, 2018). Theoretical enhancement and empirical training education can not only promote individual competence but can also build students' positive psychological capital to a certain extent. Saeed et al.'s (2015) found that education had the greatest impact on students' entrepreneurial confidence. In other words, education can encourage students to develop a positive entrepreneurial attitude. Although few literature studies detail the different effects of education attributes on students' entrepreneurial psychological capital (Kristjánsson & Kristján, 2012), this study asserts that, in the tourism and hospitality industry with strong practicality, on the one hand, empirical training can directly strengthen the professional skills of tourism and hospitality students and directly affect their positive psychological capital (Liu, Horng, Chou, & Huang, 2017). On the other hand, theoretical enhancement education can help students accumulate solid professional knowledge and a theoretical basis and strengthen their positive attitude towards future work and entrepreneurial decisions.

Hypothesis 4b. High Theoretical enhancement rather than low enhancement moderates a more positive relationship between students' Empirical training and their Psychological capital.

Theoretical enhancement can strengthen student professional knowledge accumulation and the development of creative thinking. In particular, the industrial trait of the tourism and hospitality industry and the unique professional courses require students to translate their personal ability into the needs of the industry. Eckhardt and Shane (2003) noticed that some people were more likely to seize opportunities than others because they were more creative. Moreover, theoretical enhancement education can strengthen the process of using creative thinking to perceive new ideas and seek new opportunities through new ideas (Dimov, 2007). Furthermore, creative thinking is a requirement for opportunity recognition (Mitchell et al., 2007); theoretical enhancement education can accelerate the creative thinking training of college students in tourism and hospitality, improve the ability to identify opportunities in the future, and accelerate the transformation of creative thinking into opportunity recognition (Shane, 2000). Therefore, this paper makes the following assertion:

Hypothesis 4c. High Theoretical enhancement rather than low moderates a more positive relationship between students' Creativity and their Opportunity recognition.

The formation of entrepreneurial intention not only requires individuals to have a form of prior knowledge but also requires them to have cognitive ability, which enables them to cherish and utilize knowledge (Herman & Stefanescu, 2017; Tsai et al., 2016). Individuals' knowledge accumulation can affect their ability to identify entrepreneurial opportunities, and an existing knowledge base is an important part of opportunity recognition (Corbett, 2007). Li and Liu (2016) research revealed the relationship between opportunity identification and the learning process. Solid knowledge accumulation can enhance the ability of students to evaluate entrepreneurship predictions and provide them confidence in their entrepreneurial decisions (Gurel et al., 2010). Consequently, with professional skill and knowledge, these students are able to seize entrepreneurial opportunities (Ward, 2004). Therefore, we should realize that students can acquire and transfer information and knowledge through theoretical enhancement education (Allinson & Hayes, 1996), which promotes the formation of positive psychological capital and entrepreneurial opportunities. This study can conclude that tourism and hospitality students with positive psychological capital will enhance their ability to identify opportunities, and theoretical enhancement education can supplement and accumulate professional knowledge; this strengthens students' ability to opportunity recognition.

Hypothesis 4d. High Theoretical enhancement instead of low moderates a more positive relationship between students' Psychological capital and their Opportunity recognition.

2.6. The moderating role of social worth

Social worth is considered to be an important characteristic of entrepreneurs (Grühn, Rebuca, Diehl, Lumley, & Labouvievie, 2008). Specifically, social worth is a psychological process reflecting the realization of self-worth and the attention of others (Gärling, Fujii, Gärling, & Jakobsson, 2003). Nga and Shamuganathan (2010) asserted that social worth was the most important determinant of entrepreneurial consciousness, because the value of others to others was the basic motivation of humans (Ryan & Deci, 2000). When individuals feel that others appreciate their intentions, they feel that their future work is meaningful and necessary (Wrzesniewski, Dutton, & Debebe, 2003). Thus, individuals are more likely to become exactly like that if they feel valued by potential beneficiaries. The tourism and hospitality industry is a service industry, and entrepreneurs with high social worth can enjoy the positive emotions generated by serving others (Grant & Gino, 2010). In other words, individuals with high social worth are more likely to realize value through entrepreneurship after identifying opportunities (Bacq & Alt, 2018). This study concludes that opportunity identification can enhance the entrepreneurial intention of tourism and hospitality students who have social worth traits; this accelerates the process of turning identified business opportunities into business intentions.

Hypothesis 5. Social worth moderates a positive relationship between students' Opportunity recognition and their Entrepreneurial intentions such that the relationship is strengthened when Social worth is higher rather than lower.

2.7. The moderating role of risk-taking

Entrepreneurship is actually a pioneering activity with risks, and there is no denying that the success or failure of entrepreneurship is difficult to grasp and determine at the beginning (Rauch & Rijdsdijk, 2013; Turner & Gianiodis, 2018; Ward, 2004). Risk-taking is a psychological characteristic that describes the general tendency of decision makers to take or avoid risks (Sitkin & Pablo, 1992). Individuals who take risks are more entrepreneurial and more willing to participate in entrepreneurial activities, such as launching a new enterprise (Thomas, 2001). Therefore, when entrepreneurship is full of risks and uncertainties, risk-taking is considered an important predictor of entrepreneurial intention (Nabi & Liñán, 2013). The previous literature also suggests that risk-taking may influence future decision-making behaviors, such as entrepreneurial decision-making (Bryant & Dunford, 2008). Although the tourism and hospitality industry is one of the popular fields undergoing rapid development in the world, market uncertainty in the sector remains significant, with high input and potentially high risk. Therefore, it is important for students to evaluate and control future risks in the process from identifying business opportunities to making entrepreneurial decisions. This study asserts that tourism and hospitality students with a high level of risk-taking can accelerate the transformation of opportunity identification into entrepreneurial intention.

Hypothesis 6. High risk-taking rather than low risk-taking moderates a more positive relationship between students' opportunity recognition and their entrepreneurial intentions.

3. Measure

3.1. Sampling

This study explores the relationship between education and entrepreneurial intention in the tourism and hospitality industry. For a better sample selection, clear reasons must be clarified. Our research focused on exploring whether education could influence entrepreneurial intentions. Thus, students from sophomores to seniors in colleges and universities were investigated. In addition, according to the suggestion of Li and Liu (2016), the samples were collected from the tourism and hospitality management colleges of five universities and the tourism and hospitality-related departments in southern China for the following reasons. First, Southeast China has a long history of commerce, and the region is now economically developed with a strong entrepreneurial atmosphere. Second, Southeastern and Southern coastal areas open to the outside world early, especially private economy developed. Third, innovation and entrepreneurship competitions have been held many times, and various policies have been issued to support college students in starting their own businesses. Finally, the research site covered both universities and colleges, which showed different levels of tourism and hospitality management education. Thus, the research area is a typical representative of China's location.

After determining the sample selection, this study followed several steps below for data collection. First, eight structures were identified through literature review, including empirical training, theoretical enhancement, creativity, psychological capital, opportunity recognition, social worth, risk-taking and entrepreneurial intention. Second, based on the original scale, two professors and three research assistants used back translation to check the validity of the content (Douglas & Craig, 2007). Third, five research assistants were employed to conduct a field survey. Before the students interviewed and completed the questionnaire, the precautions of this questionnaire were explained, and students were told to complete each one by one. Fourth, the data were collected from September to November 2018. A total of 1,000 questionnaires were distributed, and 806 questionnaires were returned, which reflects a completion rate of 80.6%. Fifth, the invalid questionnaires were excluded, leaving 668 questionnaires (rate of 66.8%) for future analysis. Table 1 summarized description information regarding the samples.

To prevent interference of the common method bias on the results of this study, in addition to controlling the measurement items and the data acquisition methods during the research process, Harman's single-factor test by SPSS 21.0 was utilized to examine the issue. The results showed that the first factor extracted only explained 42.03% of the variance, which was less than the 38.77% threshold (Podsakoff & Organ, 2016); this indicated that there was no serious common method bias effect between variables.

Table 1
Background and demographic information of sample(N = 668).

Items	Frequency	Percent	Items	Frequency	Percent
Gender			Region		
Male	156	23.4%	City	200	29.9%
Female	512	76.6%	County town	143	21.4%
College levels			Rural areas	325	48.7%
Senior	232	34.7%	Work experience		
Junior	241	36.1%	Yes	534	79.9%
Sophomore	195	29.2%	No	134	20.9%
Family entrepreneurial background					
If at least one of the student's parents is an entrepreneur				123	18.4%
Otherwise				545	81.5%

3.2. Measures

This study used a Likert seven-level scale to measure each structure; this ranged from “strongly disagree”(1) to “strongly agree”(7). Moreover, 8 variables were referenced to the following scale. First, based on the study by Li and Liu (2016), we used six items to measure *Empirical training* and used four items to measure *Theoretical enhancement*, which reflect the two critical attributes of education. Second, *Creativity* contained four items, which referenced the research by Rego, Sousa, Pina e Cunha, Correia, and Saur-Amara (2007), which measured the level of students' creation and innovation. Third, this study used 14 items to measure *Psychological capital* using methodology developed by Chen and Lim (2012). The scales for Psychological capital included Hope, Self-efficacy, Optimism and Resilience, measuring the degree to which students have a positive mentation. Fourth, *Opportunity recognition* was measured using the three-item scale of Shane, Nicolaou, Cherkas, and Spector (2010). Fifth, in accordance with the measures developed by Bacq and Alt (2018), five items were used to measure *Social worth*. Sixth, from Chen, Greene and Crick's (1998) research, *risk-taking* was measured by a four-item scale to respond to students' ability to identify and assume risks. Additionally, to measure *Entrepreneurial intention*, this study adapted four items to measure the degree of student's intention to start a business. Table 2 presents all the measurement items, mean and standard deviation (S.D.).

Table 2 showed that the Cronbach's alpha for each construct was greater than .831, showing the high internal consistency (Zhang, Li, Liu, & Ruan, 2019). Moreover, the value of each factor loading above .665, which confirmed an indication of construct validity (Fornell & Larcker, 1981). Additionally, this study provided average variance extracted (AVE) and composite reliability (CR) to measure the construct validity. All the constructs' AVE were ranged from .612 to .782 (above .50) and CR values were ranged from .829 to .935 (above .70) (Fornell & Larcker, 1981). Therefore, the construct showed and high convergence validity and reliability. Furthermore, the square root of the AVE of each construct was greater than its highest correlation with any other construct, which supported a discriminant validity (Hosany & Gilbert, 2009).

Means, standard deviations and correlations of each construct were summarized in Table 3. There were high correlations between constructs, and variance inflation factor (VIF) was applied to examine collinearity. The results showed that the value of VIF less than 3.63, which confirmed multicollinearity was not a main issue in this study (O'Brien, 2007).

3.3. Confirmatory factor analyses

Confirmatory factor analysis (CFA) was used to further examine the construct validity and several indexes of the overall model fit was applied. This study measured the first and second order structures separately (Marsh & Hocevar, 1988). The first-order model (including the variables of empirical training, theoretical enhancement, creativity, opportunity recognition, social worth risk-taking and entrepreneurial intention) fit the data well ($\chi^2 = 1205.335$, $p < .001$; $\chi^2/df = 3.386$; CFI = .939; IFI = .939; TLI = .930; NFI = .916; RFI = .904; AGFI = .859; and RMSEA = .060). Additionally, the second-order model including psychological capital also provided a good fit ($\chi^2 = 1205.335$, $p < .001$; $\chi^2/df = 3.386$; CFI = .939; IFI = .939; TLI = .930; NFI = .916; RFI = .904; AGFI = .859; and RMSEA = .060). Thus, the CFA assessment indicated that the first and second factor structure models were well suited for further data analysis.

4. Results

4.1. Hypothetical test

This study used Structural Equation Modelling (SEM) in AMOS 20.0 to examine the mediating and moderating effects. SEM is a multivariate statistical analysis and multiple variables in this study can be analyzed simultaneously (Tho, 2018). Further, it integrates two statistical methods: factor analysis and path analysis. SEM can deal with both latent variables and indicators concurrently and analyze the direct effect, indirect effect and over model fit simultaneously (Liu, 2018). Besides, the model allows measurement errors in independent and dependent variables, while traditional analysis is difficult to solve. Additionally, the bootstrapping and resampling method with the Monte Carlo approach, bias-corrected 95% confidence intervals and 2,000 estimations were utilized (Liu, 2018). As Fig. 2 shows, the proposed model presented a good fit ($\chi^2 = 1258.256$, $p < .001$; $\chi^2/df = 3.185$; CFI = .943; IFI = .943; TLI = .937; NFI = .919; RFI = .911; AGFI = .869; and RMSEA = .057). Next, the Hypothesis will be tested.

First, *Hypothesis 1a* predicted that empirical training affected opportunity recognition through creativity. The results showed that empirical training was positively associated with creativity ($\beta = .186$; $p < .001$), and creativity was associated with opportunity recognition ($\beta = .608$; $p < .001$). Moreover, the indirect effects of creativity on the relationship between empirical training and opportunity recognition were significant ($\beta = .132$; $p < .001$), which supported hypothesis 1a. Hypothesis 1b proposed that creativity also mediated the relationship between psychological capital and opportunity recognition. Additionally, creativity had a positive effect on opportunity recognition ($\beta = .562$; $p < .001$). Furthermore, the average indirect effects of creativity on the relationship between psychological capital and opportunity recognition remained significant ($\beta = .292$; $p < .001$). Thus, hypothesis 1b continued to be supported.

Second, *Hypothesis 2a* and *2b* were examined with a mediator role of psychological capital. Empirical training had a positive effect on psychological capital ($\beta = .520$; $p < .001$), and psychological capital affected opportunity recognition significantly ($\beta = .239$; $p < .001$). Furthermore, the results presented that the mediator of psychological capital had a positive effect on the relationship between empirical training and opportunity recognition ($\beta = .145$; $p < .001$). As we asserted, psychological capital also mediated partially the relationship between empirical training and creativity ($\beta = .342$; $p < .001$). Therefore, hypothesis 2a and 2b

Table 2
Descriptive statistics and confirmatory factor analysis(N = 668).

Constructs and factors	Mean	S.D.	Factor Loading	CR	AVE
Empirical training (Cronbach's alpha = .913)				.914	.641
Our majors often conduct experiment practice and field study arrangements.	4.847	1.144	.665		
The quantity and level of support of the campus training base are sufficient.	4.720	1.141	.804		
Our majors focus on creativity and cases to expand the use of course content	4.855	1.135	.830		
Our majors have a complete training process and regulatory requirements.	4.837	1.110	.852		
The training guidance of our majors focuses on system thinking and application.	4.948	1.106	.863		
Our majors invite industries' experienced teachers to assist in the training course.	4.999	1.131	.772		
Theoretical enhancement (Cronbach's alpha = .868)				.871	.629
Our major courses are full of creativity and catch the trends of travel and hospitality.	4.873	1.079	.765		
Our major courses focus on the well-designed exercise of creative thinking or methods.	4.880	1.104	.869		
Our major use creative case scenario simulation and other methods in the tourism and hospitality industry.	5.094	1.195	.721		
Our major courses can create an attractive atmosphere in the classroom to stimulate student interest.	4.753	1.168	.809		
Creativity (Cronbach's alpha = .831)				.829	.619
I often come up with new and practical ideas.	4.597	.963	.794		
I often suggest new ways to increase quality.	4.606	1.017	.759		
I often develop adequate plans and schedules for the implementation of new ideas.	4.563	.966	.806		
Psychological capital					
Hope (Cronbach's alpha = .896)				.899	.689
I have a lot of learning methods.	4.536	1.027	.823		
I see myself as being pretty successful in my study.	4.418	1.157	.825		
I can think of many ways to reach my current study goals.	4.540	1.057	.871		
At this time, I am meeting the study search goals that I have set for myself.	4.751	1.117	.800		
Self-efficacy (Cronbach's alpha = .900)				.903	.700
I feel confident analyzing a long-term problem to find a solution.	4.695	1.109	.787		
In my future study, I am confident that I can do better.	5.049	1.047	.842		
In my future study, I feel confident about helping to set targets/goals in my area of studies.	4.882	1.049	.893		
I feel confident presenting help to my classmates in the future.	4.783	1.099	.820		
Optimism (Cronbach's alpha = .848)				.850	.654
When things are uncertain for me in my job search, I usually expect the best.	4.699	1.203	.801		
I always look on the bright side of things regarding my life.	4.772	1.179	.845		
I approach my life with the attitude that something positive will always turn out no matter how difficult it might be.	5.037	1.171	.779		
Resilience (Cronbach's alpha = .838)				.847	.654
When I have a setback in my studies, I can recover quickly from it.	4.775	1.134	.829		
In the process of learning, I usually manage difficulties one way or another.	4.689	1.068	.896		
I can get through difficult times in my study search because I have experienced difficulty before.	4.801	1.049	.683		
Opportunity recognition (Cronbach's alpha = .868)				.848	.650
I frequently identify opportunities to start-up new businesses.	4.108	1.079	.797		
I frequently identify ideas that can be converted into new products or services.	4.198	1.098	.813		
I generally have ideas that may materialize into profitable enterprises.	4.314	1.191	.808		
Social worth (Cronbach's alpha = .907)				.909	.666
I felt valued as a person by the people I helped.	5.332	1.083	.718		
I felt appreciated as an individual by the people I helped.	5.022	1.018	.833		
I felt that I made a positive difference in the lives of the people that I helped.	5.079	1.051	.847		
I felt close to the people I helped.	4.883	1.107	.849		
I felt strong trust from the people I helped.	5.051	1.098	.826		
Risk taking (Cronbach's alpha = .865)				.924	.752
When making decisions, I will take calculated risks.	5.308	1.102	.843		
I will make decisions under uncertainty and risk.	4.940	1.057	.874		
I can take responsibility for ideas and decisions.	5.377	1.061	.882		
I will continue to work under pressure and conflict.	5.052	1.030	.869		
Entrepreneurial intention (Cronbach's alpha = .934)				.935	.782
What extent I have considered setting up my own business.	4.388	1.344	.866		
What extent I have been preparing to set up my own business.	4.338	1.267	.901		
How likely it is that I am going to try hard to set up my own business.	4.338	1.284	.934		
How soon I am likely to set up my own business.	4.388	1.233	.833		

were fully supported.

Third, this study examined the mediating effects of opportunity recognition, which pertained to Hypotheses 3a and 3b. The path coefficient of opportunity recognition to entrepreneurial intention was positive and significant ($\beta = .563$; $p < .001$). There was a standardized indirect effect of creativity on entrepreneurial intention through opportunity recognition ($\beta = .343$; $p < .001$). Additionally, the indirect effect of opportunity recognition on the relationships between psychological capital and entrepreneurial intention was significant ($\beta = .327$; $p < .001$), which fully supported hypotheses 3a and 3b. Furthermore, bootstrapping was applied in this study to examine the significance of the mediating effects. Table 4 summarizes the results of bootstrapping, which shows that all ranges of mediating effects did not contain the value of zero. Therefore, hypotheses 1 to 3 were fully supported.

The path that education affects students' entrepreneurial intentions will also be affected by moderator factors; this was tested with

Table 3
Means, Standard Deviations, Correlations and discriminant validity.

Variables	Mean	S.D.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	VIF
1. Empirical training	4.867	.942	.800											
2. Theoretical enhancement	4.900	.963	.701	.793										1.49
3. Creativity	4.587	.849	.416	.345	.787									2.12
<i>Psychological capital</i>														
4. Hope	4.560	.952	.404	.411	.534	.830								3.28
5. Self-efficacy	4.852	.944	.432	.466	.554	.719	.836							3.04
6. Optimism	4.835	1.036	.419	.433	.396	.580	.577	.809						1.91
7. Resilience	4.754	.942	.448	.411	.510	.792	.755	.611	.809					3.63
8. Opportunity recognition	4.208	.999	.368	.341	.652	.555	.480	.430	.498	.806				2.34
9. Social worth	5.074	.915	.413	.489	.456	.581	.575	.565	.598	.365	.816			2.06
10. Risk taking	5.172	.896	.411	.460	.472	.519	.619	.475	.593	.375	.564	.867		1.95
11. Entrepreneurial intention	4.364	1.171	.222	.240	.323	.360	.343	.330	.349	.517	.298	.266	.884	1.41

*P < .05; **P < .01; ***P < .001. Correlation values above .222 are significant at *p < .001. Square root of average variance extraction are shown on the diagonal in bold.

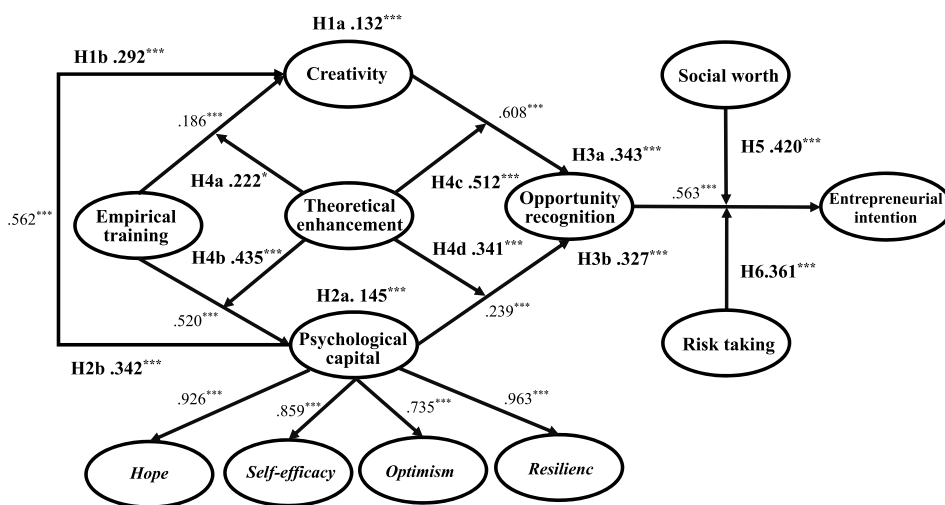


Fig. 2. Research framework results for proposed Hypothesis.

Table 4
Mediation effect test.

Hypothesis path	Standard error	Estimates	Bias-corrected 95% CI		Percentile 95% CI		Results
			Lower	Upper	Lower	Upper	
H1a: Empirical training → Creativity → Opportunity recognition	.039	.132***	.060	.209	.062	.212	Support
H1b: Psychological capital → Creativity → Opportunity recognition	.036	.292***	.231	.376	.223	.368	Support
H2a: Empirical training → Psychological capital → Opportunity recognition	.034	.145***	.085	.221	.080	.214	Support
H2b: Empirical training → Psychological capital → Creativity	.040	.342***	.269	.429	.267	.427	Support
H3a: Creativity → Opportunity recognition → Entrepreneurial intention	.037	.343***	.271	.414	.272	.414	Support
H3b: Psychological capital → Entrepreneurial intention	.035	.327***	.265	.403	.256	.395	Support

N = 668. *P < .05; **P < .01; ***P < .001.

SEM. The results are summarized in Table 5. First, Hypothesis 4 proposed that theoretical enhancement moderated the relationship between empirical training, creativity, psychological capital and opportunity recognition. The results showed that the coefficient of the interaction term empirical training * theoretical enhancement was positive and significant for creativity ($\beta = .222$; $p < .05$). Moreover, a simple slope was applied to further confirm the moderating effects. Fig. 3 shows that as the slope of the theoretical enhancement increased, the positive relationship between empirical training and creativity would be enhanced. Therefore, hypothesis 4a was supported.

Second, a similar procedure was followed to examine Hypothesis 4b. Theoretical enhancement also positively moderated the relationship between empirical training and psychological capital ($\beta = .435$; $p < .001$). Next, the interactive diagram was drawn in

Table 5
Moderating effect test.

Hypothesis path	Standardized path coefficients	Standard error	Results
H4a	Empirical training→Creativity	.303**	Support
	Theoretical enhancement→Creativity	-.057	
	Empirical training * Theoretical enhancement→Creativity	.222*	
H4b	Empirical training→Psychological capital	.071	Support
	Theoretical enhancement→Psychological capital	.037	
	Empirical training * Theoretical enhancement→Psychological capital	.435***	
H4c	Creativity→Opportunity recognition	.393***	Support
	Theoretical enhancement→Opportunity recognition	-.232***	
	Creativity * Theoretical enhancement→Opportunity recognition	.512***	
H4d	Psychological capital→Opportunity recognition	.407***	Support
	Theoretical enhancement→Opportunity recognition	-.143**	
	Psychological capital * Theoretical enhancement→Opportunity recognition	.341***	
H5	Opportunity recognition→Entrepreneurial intention	.207***	Support
	Social worth→Entrepreneurial intention	-.107*	
	Opportunity recognition * Social worth→Entrepreneurial intention	.420***	
H6	Opportunity recognition→Entrepreneurial intention	.270***	Support
	Risk taking→Entrepreneurial intention	-.125**	
	Opportunity recognition * Risk taking→Entrepreneurial intention	.361***	

N = 668; *P < .05; **P < .01; ***P < .001.

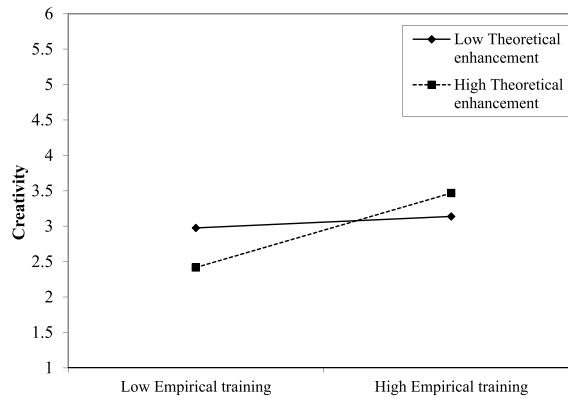


Fig. 3. Interaction of Empirical training and Theoretical enhancement on creativity.

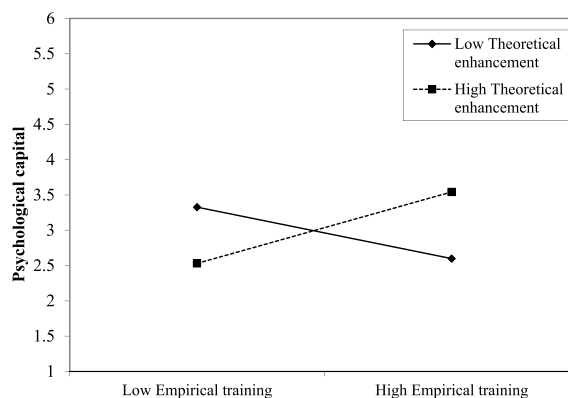


Fig. 4. Interaction of Empirical training and Theoretical enhancement on Psychological capital.

Fig. 4, which demonstrated that, as the theoretical enhancement increased, empirical training could strongly enhance the impact on psychological capital. Thus, hypothesis 4b was supported.

Third, as shown in Figs. 5 and 6, the coefficient of interaction term creativity * theoretical enhancement was positive and significant for opportunity recognition ($\beta = .512$; $p < .001$), and the moderating role of theoretical enhancement affected the relationship between psychological capital and opportunity recognition significantly ($\beta = .341$; $p < .001$). Additionally, the simple slope indicated that the slope of the theoretical enhancement was steeper, the relationship between creativity and opportunity

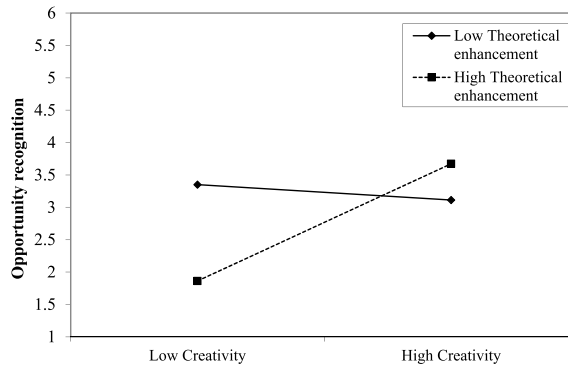


Fig. 5. Interaction of creativity and Theoretical enhancement on Opportunity recognition.

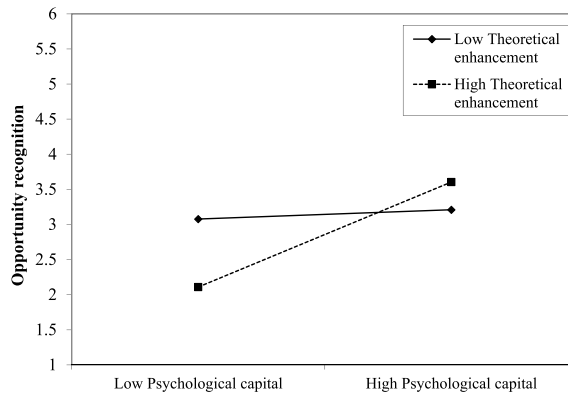


Fig. 6. Interaction of Psychological capital and Theoretical enhancement on Opportunity recognition.

recognition was strengthened more, and psychological capital enhanced opportunity recognition more. Thus, hypotheses 4c and 4d were supported.

Fourth, Hypothesis 5 predicted that the moderator of social worth had a positive effect on the relationship between opportunity recognition and entrepreneurial intention. The results confirmed that the interaction effect of opportunity recognition and social worth was significant for entrepreneurial intention ($\beta = .420$; $p < .001$). Consistent with our assumptions, the moderating effect of risk-taking had a positive effect on the relationship between opportunity recognition and entrepreneurial intention ($\beta = .361$; $p < .001$). As illustrated in Figs. 7 and 8, opportunity recognition had a positive relationship with entrepreneurial intention at a high level of social worth and risk-taking rather than a low level, which further confirmed that hypotheses 5 and 6 were supported.

4.2. Robustness checks

This study was conducted in accordance with a similar procedures to examine the robustness of proposed model results. SEM

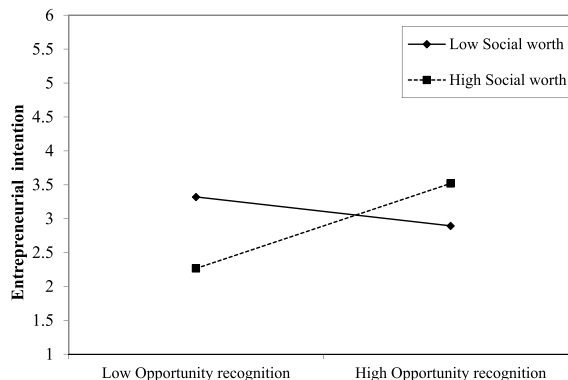


Fig. 7. Interaction of Opportunity recognition and Social worth on Entrepreneurial intention.

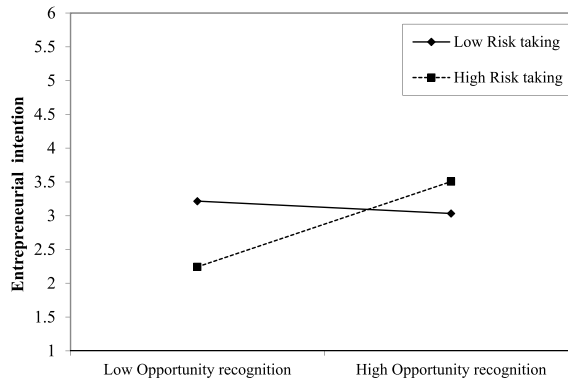


Fig. 8. Interaction of Opportunity recognition and Risk taking on Entrepreneurial intention.

continued to be applied to the analysis of the mediating and moderating effects. We tested an alternative model shown in Fig. 9, which removed the path of “creativity” to “psychological capital”. The model fit the data well; however, the overall results as poor as the proposed model ($\chi^2 = 1408.175, p < .001; \chi^2/df = 3.556; CFI = .933; IFI = .933; TLI = .927; NFI = .910; RFI = .901; AGFI = .859; \text{ and } RMSEA = .062$). As illustration in Fig. 7, all the paths were positive and significant. In indirect effect analysis, the mediators of creativity ($\beta = .331; p < .001$) and psychological capital ($\beta = .194; p < .001$) had a positive effect on the relationship between empirical training and opportunity recognition. Therefore, Hypothesis 1a and 2a were fully supported.

Furthermore, opportunity recognition positively mediated the relationship between creativity and entrepreneurial intention ($\beta = .328; p < .001$), and the effects of psychological capital on entrepreneurial intention ($\beta = .177; p < .001$), which confirmed Hypothesis 3a and 3b. A similar method were used to examine the moderators of theoretical enhancement, social worth and risk-taking. Finally, the alternative model provided the same results of moderating effects as proposed model. In other words, the results confirmed that the results of the hypothesis model were robust.

4.3. Reanalysis of the data using fsQCA

Fuzzy-set qualitative comparative analysis (fsQCA) was used to provide more holistic insight into the students' entrepreneurial intention. The method calculates the causal formulations that lead to the results of the model (combination of predictors). In this study, fsQCA is used as a bridge between qualitative analysis and quantitative analysis to maximize their advantages and minimize their disadvantages (Gannon, Taheri, & Olya, 2019). It provides the combination of multiple factors which cannot be taken into account by a single method of SEM (Woodside, 2017). Moreover, the prefactors that affect the entrepreneurial intentions of students have been identified through SEM testing. Furthermore, the fsQCA method was introduced by Ragin (2000), who identified what kind of causal combination could achieve the final results of entrepreneurial intention. Previous studies have used this method in combination with structural equation models to explore causal issues (Tho, 2018).

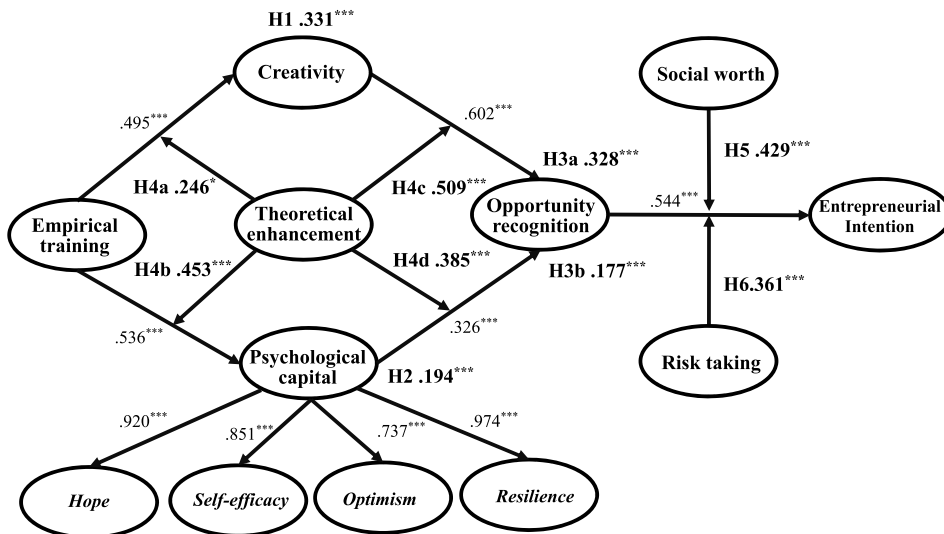


Fig. 9. Alternative research model results.

Table 6
fsQCA results of Entrepreneurial intention (Consistency threshold: 0.90).

Causal conditions	Model				
	M1	M2	M3	M4	M5
Empirical training	●		●	⊙	●
Theoretical enhancement	●	●		⊙	●
Creativity	●	●	●	●	⊙
Hope	●	●	●	●	⊙
Self-efficacy	●	●	●	●	●
Optimism	●	●	●	⊙	●
Resilience	●	●	●	●	●
Opportunity recognition		●	●	⊙	⊙
Social worth	●	●	●	●	●
Risk taking	●	●	●	●	●
Raw coverage	0.766064	0.722039	0.719519	0.321530	0.424423
Unique coverage	0.037070	0.008870	0.006729	0.004511	0.010786
Consistency	0.905702	0.930471	0.930729	0.972485	0.927882

solution coverage:0.798093; solution consistency:0.899511; consistency cutoff: 0.921154.

Note: Black circles represent the presence of a causal condition; white circles: the absence or negation of a causal condition. Blank cells: irrelevant conditions.

4.3.1. Calibration

Causal conditions included empirical training, theoretical enhancement, creativity, hope, self-efficacy, optimism, resilience, opportunity recognition, social worth and risk-taking, and outcome of entrepreneurial intention. Moreover, because all the items were measured using a seven point Likert scale, we calibrated using fuzzy set scores (Elbaz, Haddoud, & Shehawy, 2018). In accordance with Woodside's (2013) suggestion, this study used three thresholds for the calibration, which included the full membership threshold (95%), the crossover (50%) and the full nonmembership threshold (5%).

4.3.2. Fuzzy-set QCA results

A consistency threshold of 0.90 was used in this study (Pahl-Wostl & Knieper, 2014), and Table 6 presents five alternative solutions. Moreover, the consistency scores of both and the total consistency were above 0.80, which reflected a better solution (Skarmear, Leonidou, & Saridakis, 2014). Five models described the conditions of the entrepreneurial intention of students. Importantly, self-efficacy, resilience, social worth and risk-taking were necessary conditions for the formation of students' entrepreneurial intention, and these factors are all obtained through education. Although no single condition leads directly to the result, the combination of conditions can achieve the outcome of entrepreneurial intention. In particular, models 1 to 3 had high raw consistency and raw coverage. Solution 1 combined empirical training*theoretical enhancement* creativity*hope *self-efficacy*optimism resilience*social worth*risk-taking, which showed a consistency score of 0.905702, and 76.6% of the solutions were shared by the students (raw coverage). Similarly, solution 2 also provided a high solution combined with theoretical enhancement*creativity*hope* self-efficacy*optimism*resilience* opportunity recognition*social worth*risk-taking; this exhibited a consistency score of 0.930471 and was shared by 72.2% of the students included in this study. Moreover, solution 3 showed that empirical training*creativity* hope*self-efficacy*optimism* resilience*opportunity recognition*social worth*risk-taking presented an effective solution. There was a consistency score of 0.930729 and was shared by 72.0% of the students.

Additionally, two other combinations continued to be applied to explain the formation of students' entrepreneurial intentions: (1) The combination of ~empirical training*~theoretical enhancement*creativity*hope*self-efficacy*~optimism* resilience*~opportunity recognition*social worth*risk-taking was shared by 32.2% of the students. (2) The combination of empirical training*theoretical enhancement*~creativity*~hope*self-efficacy*optimism*resilience*~opportunity recognition*social worth*risk-taking was shared by 42.4% of students. In total, solutions explained that 79.8% of the likelihood could achieve a high entrepreneurial intention with students.

5. Conclusion and discussion

To answer the controversial issue of whether education can promote the entrepreneurial intention of students in tourism and hospitality, this study further explores the role of education in college students' entrepreneurial intention by constructing a more complex mediating and moderating model of educational entrepreneurial intention. In other words, the breakthrough empirical evidence for the existing tourism and hospitality education has been noted in this study.

First, this study has confirmed that education can positively influence the formation of entrepreneurial intention, which further responds to the controversial issue of the relationship between education and entrepreneurship (Echtner, 1995; Gurel et al., 2010). Empirical training and theoretical enhancement are two important components of education. Especially for the tourism and hospitality industry, which has strong practicality, empirical training is the critical leading factor influencing the entrepreneurial intention of college students. Empirical training education can enhance students' ability to identify business opportunities by cultivating their personal ability (creativity) and positive psychological state (psychological capital), and these personal characteristics

are the critical factors that form the entrepreneurial intention. Specifically, the results found that empirical training improved students' creativity and psychological capital; this was identified as the views of Li and Liu (2016) and Murrell et al. (2004). However, the difference is that this study found that empirical training to cultivate students' creativity and psychological capital was an important intermediary mechanism to enhance the ability to identify opportunities. In this process, theoretical enhancement plays an important moderating role, which further strengthens the beneficial factors for students to start their own businesses in the future.

Second, the study further proves that the risk-taking ability and social worth of college students in tourism and hospitality can influence their entrepreneurial intention. Risk-taking is often used to explore the important factors of entrepreneurs' personal characteristics in the enterprise development process (Liu et al., 2017). Our results show that tourism and hospitality students with strong risk-taking are more likely to have entrepreneurial intention. The reason is that risk-taking involves the risk tolerance of enterprises in the future development process. Moreover, entrepreneurship also has great uncertainty, and it is difficult to predict the success or failure of behavioral decisions (Brockhaus, 1980). When college students with the ability to take risks discover opportunities, they are better able to make entrepreneurial decisions. Conversely, the research once again proves that social worth, as an individual value, is an important moderating factor to accelerate the formation of entrepreneurial intention of college students. Social worth emphasizes self-fulfillment (Bacq & Alt, 2018), and students with such sentiment and characteristics often want to satisfy their self-actualization need through entrepreneurship.

Third, to further identify the important factors forming the entrepreneurial intention of tourism and hospitality students, qualitative analysis of fuzzy sets (fsQCA) is applied to five causal combination schemes of entrepreneurial intention formation; this further verifies the education-entrepreneurial intention model proposed in this study. The results show that self-efficacy, resilience, social worth and risk-takings are necessary conditions for the formation of entrepreneurial intention. Furthermore, a composite model covering the two attributes of education (i.e., empirical training and theoretical enhancement), creativity, psychological capital, and social worth are the best combination of entrepreneurial intention. Specifically, education develops the creativity and psychological capital of tourism and hospitality students; consequently, they will be sure of their ability to start their own business and be able to actively confront entrepreneurial challenges. Furthermore, social worth and risk-taking characteristics can enhance students' enthusiasm to realize self-value through entrepreneurship and their sense of responsibility when confronting entrepreneurial risks. Importantly, the combination of these factors can effectively predict the entrepreneurial intention of college students. Additionally, self-efficacy and resilience in psychological capital point to students' strong assessment of themselves and their determination to confront difficulties in the entrepreneurial decision-making process, and these two factors are necessary to form entrepreneurial intention.

5.1. Theoretical contribution

The results of this study are robust, and the social learning theory significantly supports the research findings. First, the findings highlight the positive effects of tourism education on the tourism and hospitality students' entrepreneurial intention. It is worth noting that education contributes to positive response about the academic controversy (Ayikoru et al., 2009; Gurel et al., 2010). Compared with previous studies, the specific roles of the two attributes of education are identified, including empirical training and theoretical enhancement. Although previous literature emphasizes the importance of empirical training and theoretical enhancement in education (Li & Liu, 2016), this study particularly concludes that empirical training is a leading factor and theoretical enhancement moderates the forming process of the entrepreneurial intention. Further, the results strengthen that empirical training as prior knowledge and theoretical enhancement as professional knowledge are the guiding factors of cultivating students' entrepreneurial traits, such as psychological capital of creativity and opportunity recognition (Farmaki, 2018). Undoubtedly, this study confirms that cultivating students' entrepreneurial traits influences their entrepreneurial intention through empirical tests for education.

Second, this study is the first to examine the mediating and moderating conditions for the formation of college students' entrepreneurial intention from the perspective of entrepreneurial traits. The findings provide a more detailed theoretic mechanism for the forming process of tourism and hospitality students' entrepreneurial intention (Herman & Stefanescu, 2017). Compared with previous studies, this study highlights the important mediating mechanism of creativity and psychological capital in the process of education creating opportunity recognition. Additionally, the study also highlights that the factors of external environment (risk-taking) and internal value (social worth) accelerate the formation of the tourism and hospitality students' entrepreneurial intention. Many studies use risk-taking as an essential moderating effect to discuss business performance (Mathews et al., 2018) and innovative behavior (Tan, 2001). However, our research innovatively examines student entrepreneurial traits from the perspective of entrepreneurs. In the tourism and hospitality industry with high-risk and high-investment, we found that college students with the ability to take risks are more likely to make entrepreneurial decisions.

Third, this study is not only the first time to propose a more comprehensive and complex forming path of college students' entrepreneurial intention, but also identify the combination of multiple factors contributing to the outcome. Even more groundbreaking are the findings that psychological capital (including self-efficacy and resilience), social worth and risk-takings are necessary conditions for the formation of entrepreneurial intention. The research conclusion provides a new perspective to predict the entrepreneurial intention of college students and broadens the critical roles of positive psychological traits in college students' entrepreneurial decision-making (Bonesso et al., 2018). Furthermore, Bacq and Alt (2018) introduced variables of social worth as a crucial moderating role for the formation of college students' social entrepreneurial intention for the first time, and this study once again verified the stability of the conclusion. Moreover, in addition to personal ability, the leading role of personal values in entrepreneurial decision-making is highlighted in this study, which further enriches the research fields and research situations related to positive psychology (Van De Water, 1997) and values (Amit & Zott, 2001).

5.2. Educational implications

This study has made outstanding contributions to the further prediction and cultivation of the entrepreneurial intention of college students. The research results show that the theoretical model we constructed has important practical significance for how to cultivate students' creativity and shape their psychological capital through education to further enhance students' entrepreneurial intention.

First, empirical training contributes to its leading role in course education of enhancing students' opportunity recognition by cultivating their creativity and shaping their psychological capital (Li & Liu, 2016). Therefore, training guidance must focus on the cultivation of systematic thinking and industrial application. Empirical courses could include extensive innovative content and corporation engineer in the tourism and hospitality field (Turner & Gianiodis, 2018). Further, industry cases are introduced to enhance students' comprehensive abilities. In this way, students can fully understand the importance of innovation and creativity of entrepreneurship in their career development through empirical education. Apparently, a complete training process and regulations are fundamental. In addition, frequent experimental training and field-based learning are quite necessary, and inviting professional experienced teachers to assist in training courses can help students build up a sense of industry, cultivate their entrepreneurial skills, and enhance their positive psychological capital (Rauch & Hulsink, 2015; Zhang & Xiong, 2017). It contributes to a detailed understanding and mastery of new problems and new development trends in the industry (Li & Liu, 2016).

Second, this study proves that the accumulation of theoretical knowledge plays a critical moderation in enhancing students' ability and improve their positive psychology, rather than a weak role. Furthermore, entrepreneurship theory and knowledge content should be taught. The courses focus on tourism and hospitality trends and curriculum design in creative thinking or methods, such as mind mapping training and so forth (Nadim & Singh, 2011), which lays the professional knowledge foundation for students to start their own business. Moreover, major courses can create an attractive atmosphere in the classroom (Daniel, Costa, Pita, & Costa, 2017), including case analysis, scenario simulation, etc. Because relevant theories enhance the course design, students' new ideas and change their behavior through effective knowledge and experience will be stimulated (Lugmayr, 2011). Properly, students are required to participate in theoretical explanation and sharing, inspiring students to participate in the theory probes (Ndou et al., 2018). Furthermore, theory and empirical learning complement each other. Only through the complementary learning of theory and empirical education can students have more insight into the current situation of the industry and predict the future of the industry, which stimulate their more entrepreneurial intention.

Third, students' personal characteristics such as risk-taking ability and social worth should be heeded, and the findings stress the importance of these factors in predicting future entrepreneurs. Educators should try their best to teach knowledge output courses in risk identification, analysis, prevention and control for students. Examples about risks are given for students to discuss and learn, which will strengthen college students' ability to take entrepreneurial risks and reduce the negative psychological impact caused by unstable factors of entrepreneurship (Macaskill & Denovan, 2013). Further, cultivating students' internalized quality and externalized behavior is the key point. Therefore, educational psychology training and value guidance are not to be ignored by educators (Tang, Byrge, & Zhou, 2018). Guiding students to establish the spirit of innovation and entrepreneurship means that the education mode turns from the original ability cultivation to the spiritual and psychological process cultivation, such as social worth. The course design should include lectures and guidance from hands-on entrepreneurs and successful people, and provide students with internship opportunities in enterprises. More importantly, a simulated team training camp was conducted to enhance students' cooperative spirit and social responsibility (Huebscher & Lendner, 2010).

5.3. Limitations and future research suggestion

This study constructs a more complex model for the formation of the entrepreneurial intention of college students, and our findings also highlight theoretical contributions and practical value. However, certain research limitations remain; these can further improve future research. First, our research samples were from tourism and hospitality students from six universities in southern China. The results of this study confirmed that education has a strong positive impact on the entrepreneurial intention of college students. However, there are great differences in educational systems and modes between different countries, including the learning environment, the cultural concepts and the feedback system. Therefore, samples will be collected in other countries or regions to further explore the universality of the conclusions of this study and explore the differences of various characteristics of trans-regional education on the formation of the entrepreneurial intention of college students through comparative research. Second, the research university and the application university teaching methodology are different. Furthermore, practical teaching and theoretical teaching have different emphases in different types of colleges (Hofmann-Towfigh, 2007). The results of this study confirm that empirical training is a leading factor in the formation of the entrepreneurial intention of college students and theoretical enhancement as an important moderating role. However, for college students from different types of schools, whether the role of empirical training and theoretical enhancement is different or not is a question that remains; this will be part of the in-depth discussion in the future.

CRedit authorship contribution statement

Chih-Hsing Liu: Writing - original draft. Wen-Qi Ruan: Data curation.

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Appendix A. Supplementary data

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