DOI 10.3868/s070-008-023-0012-3

Factors Influencing the Entrepreneurial Intentions of Hong Kong and Macao Students in Chinese Mainland Universities in the Context of Guangdong-Hong Kong-Macao Greater Bay Area: A Study from the Perspective of Cultivating Innovative Talents*

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Abstract Based on the theory of planned behavior, this study considers entrepreneurial traits and divides the entrepreneurial environment into policy environment, economic environment, and educational and cultural environment. Using SPSS 23.0 and Amos 24.0 softwares, a structural equation model of entrepreneurial intentions for university students originating from Hong Kong and Macao is constructed. A questionnaire survey method is used to collect data from 689 Hong Kong and Macao students in Chinese mainland universities to explore the factors influencing their entrepreneurial intentions and the ranges of their entrepreneurial intentions based on demographic variables. The results show that entrepreneurial attitude, subjective norms, perceived behavioral control, entrepreneurial traits, and entrepreneurial environment have a significant positive impact on the entrepreneurial intentions of Hong Kong and Macao students in the mainland universities. Male students have a higher level of entrepreneurial intentions than female students. Hong Kong students are more likely to have entrepreneurial intentions than Macao students, and students in Guangdong-Hong Kong-Macao Greater Bay Area (briefly, Greater Bay Area) universities are more likely to have such intentions than those from non-Greater Bay Area universities. Students majoring in science, engineering and medicine show a lower likelihood of intension than those majoring in humanities and social sciences. To comprehensively improve the entrepreneurial intentions of Hong Kong and Macao students and enable them to better shoulder their responsibilities in sharing the development dividends of the Greater Bay Area, it is necessary to start from

* This paper is translated from *Science and Technology Management Research* 科技管理研究, 2021, (12), 149–156.

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the entrepreneurial environment and from the perspective of cultivating innovative talents. A support framework that integrates a training system, an ecological system, and a resource system is proposed to support students from Hong Kong and Macao in entrepreneurial development in the mainland.

Keywords entrepreneurial intention, students originating from Hong Kong and Macao, innovative talents, Guangdong-Hong Kong-Macao Greater Bay Area

The vigorous development of the Guangdong-Hong Kong-Macao Greater Bay Area (briefly, Greater Bay Area) has multi-fold strategic significance, including promotion of the integration of Hong Kong and Macao into national development, prompting the high-quality economic development, and enhancing the national identity of Hong Kong and Macao compatriots (Deng, 2021). The development of the Greater Bay Area has to depend on the cultivation of innovative talents, which is an essential for strengthening China's national strength and the core for accelerating the innovation-driven development of the Greater Bay Area. Relatively, the youth group born and grown up in the Hong Kong and Macao regions have unique advantages, such as familiarity with the regional culture and abundance of social resource, and can play a crucial role in the development of the Greater Bay Area. The *Outline Development Plan for the Greater Bay Area* also explicitly states that the Greater Bay Area should be developed into a land of talents, should stimulate the vitality of various innovative entities, and should facilitate youth from Hong Kong and Macao to succeed in the mainland. As such, it is important for Hong Kong and Macao youth to engage in innovative and entrepreneurial activities in the mainland, to practice the new development concept and to support the high-quality economic development of the Greater Bay Area. Among the Hong Kong and Macao youth group, those studying in the mainland play a key role in connecting Hong Kong and Macao with the mainland. Their long-term experience in the mainland gives them more abundant resources and significant advantages in engaging in innovative and entrepreneurial activities. Cultivating them to become innovative talents to meet the requirements of the society is important for promoting the innovation and entrepreneurial development of the Greater Bay Area, for advancing the integration of Hong Kong and Macao youth into national development, and for improving the core work of cultivating innovative talents in universities. Therefore, it is valuable to further study the factors influencing the entrepreneurial intentions of Hong Kong and Macao students. However, existing literature shows that China is still in the initial stage of researching entrepreneurial intentions, with most of the research subjects being the mainland university students. There is a lack of literature on the cultivation of innovative talents among Hong Kong and Macao students. Although some scholars have researched the scientific and technological collaborative development of the Greater Bay Area, as well as entrepreneurial policies, and the current situation of innovation and

entrepreneurship among Hong Kong and Macao youth, few have explored the cultivation path of innovative talents among Hong Kong and Macao students from the perspective of the influencing factors of entrepreneurial intentions in the context of the development of the Greater Bay Area. This study takes students from Hong Kong and Macao as the research subjects, combines questionnaire survey and interview methods, and utilizes a structural equation model to analyze the influencing factors of their entrepreneurial intentions. It proposes workable recommendations for universities and other related entities to advance the cultivation of innovative talents among Hong Kong and Macao students, for promotion of innovation and entrepreneurial development of the Greater Bay Area.

1 Research Summary and Theoretical Basis

1.1 | Entrepreneurial Intention

The concept of entrepreneurial intention is first proposed by Bird (1988), a scholar at the University of Southern California, USA. He believes that entrepreneurial intention is a psychological state that enables entrepreneurial subsectors to invest all their available resources, effective time, and energy into the development of their businesses and create new value. Currently, the most influential research achievements in the field of entrepreneurial intention primarily include Ajzen's Theory of Planned Behavior (TPB) (Ajzen, 1991) and Shapero's Model of Entrepreneurial Event (MSE) (Shapero, 1982, pp. 72–90). Attitude towards entrepreneurship, subjective norm, and perceived behavioral control are the main independent variables used by TPB to explain the dependent variables of entrepreneurial intention. Chinese scholars (Li et al., 2008) have found that TPB has a strong explanatory power for the entrepreneurial intentions of Chinese students, and MSE can explain close to 50% of the variance. MSE primarily sets perceived behavioral feasibility, perceived expectation, and behavioral tendency as explanatory variables for entrepreneurial intention (Shapero, 1982, pp. 72–90). Chinese scholars (Fan & Wang, 2006) have applied the entrepreneurial intention factor structure model to analyze entrepreneurial intention from the two dimensions of entrepreneurial aspiration and entrepreneurial feasibility. However, some scholars have pointed out that the explanatory power of MSE regarding the dependent variables of entrepreneurial intention needs further research (Krueger, 1993) and confirmation of validity, compared to TPB. Therefore, this study uses TPB to analyze the entrepreneurial intentions of Hong Kong and Macao students.

1.2 | Theory of Planned Behavior

The TPB is proposed by Ajzen (1991) in the 1990s and is one of the most influential theories in the field of social psychology. It holds that an individual's behavioral intention is influenced by three factors: attitude, subjective norm, and perceived behavioral control. Attitude towards behavior (AB) refers to the degree of liking an individual has of performing a behavior; subjective norm (SN) refers to the social

pressure perceived by an individual when performing a behavior; and perceived behavioral control (PBC) is the individual's judgment of the ease or difficulty of performing a behavior (Duan & Jiang, 2008). Based on maintaining the stable entrepreneurial intention and accurate perception, perceived behavioral control and behavioral intention can be used to directly predict the occurrence of behavior (Ajzen, 1991) (see dashed line in Figure 1). Since this study focuses on the factors influencing the entrepreneurial intentions of Hong Kong and Macao students in the mainland, it studies the prerequisites for individuals to engage in a certain behavior in the future. Therefore, TPB can be applied to the modelling of this study (Ajzen, 1991) (see Figure 1). Specifically, three independent variables are associated with the influence of behavior preference, social network, and risk perception on entrepreneurial intention. Behavior preference relates to the positive or negative views of Hong Kong and Macao students regarding entrepreneurship. Subjective norm corresponds to the influence from parents, teachers, classmates, school leaders, and other people in the social networks of Hong Kong and Macao students during their studies in the mainland. Perceived behavioral control refers to the self-evaluation of Hong Kong and Macao students on the ease or difficulty, or risk perception, of starting a business in the mainland.

1.3 | Entrepreneurial Traits and Entrepreneurial Intention

In the 1940s, Allport (1966) proposed the theory of personality trait, believing that entrepreneurial traits refer to the physiologically-based psychological stability characteristics exhibited by entrepreneurs. These traits allow entrepreneurial activities to be predicted to a certain extent. Personality traits are influenced by genetics or long-term social life (Chen et al., 2017). Since Hong Kong and Macao students have grown up in the Hong Kong and Macao regions, and have been influenced by the two regions' business culture, it is generally believed that Hong Kong and Macao students possess more pronounced entrepreneurial traits such as critical thinking, strong innovation, and a desire for achievement, compared to the mainland students. Therefore, this study incorporates entrepreneurial traits into the research model. Veciana et al. (2005) believe that the factors in entrepreneurial traits that have a strong impact on entrepreneurial intentions include a spirit of adventure,

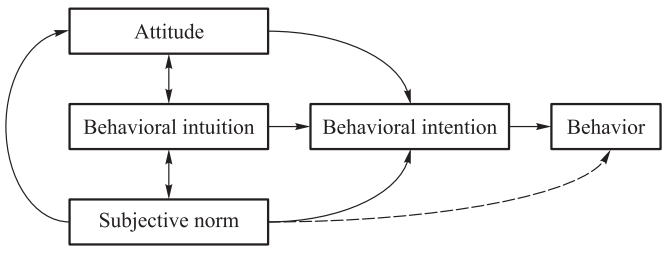

Figure 1 Research Model Based on the Theory of Planned Behavior (TPB)

innovative spirit, risk-taking ability, and independence.

1.4 | Entrepreneurial Environment and Entrepreneurial Intention

The results from trait theory research show that entrepreneurial intention depends on individual psychological characteristics and on individual's living environment (Zhao, 2010). As the government of China has been facilitating Hong Kong and Macao youth to integrate into the development of the Greater Bay Area, Hong Kong and Macao students prefer starting a business in the mainland instead of seeking employment in Hong Kong and Macao, and such preference is closely related to the entrepreneurial environment in the mainland. Therefore, this study includes policy environment, economic environment, and educational and cultural environment as factors influencing the entrepreneurial intention of Hong Kong and Macao students.

First, regarding policy environment, Hong Kong and Macao are capitalist societies and practice political and social systems that are different from those of the mainland. There are significant differences in systems, such as salaries, taxes, and welfare benefit. In addition, entrepreneurial policy is a vital factor in attracting Hong Kong and Macao students to start businesses in the mainland. Fu and Yang (2020) believe that cross-border employment and entrepreneurship policies are critical political factors that affect the integration of Hong Kong and Macao youth into life and development of the mainland.

Second, regarding economic environment, the Greater Bay Area has the highest concentration of Hong Kong and Macao youth in the mainland and has significant influence of One Country, Two Systems, Three Customs Zones. The business and legal systems, industrial and commercial registration systems, tax systems, and other economic environments of the three regions have significant differences, especially in laws and regulations relating to labor and entrepreneurship. This can easily confuse youngsters in their cross-regional development and directly affect employment and entrepreneurship of Hong Kong and Macao youth in the mainland (Xie & Hu, 2019).

Third, regarding education and cultural environment, the primary challenge faced by Hong Kong and Macao students wishing to study, work and start a business in the mainland is adapting to the way of life in the mainland. Research by Wen & Chen (2019) find that Hong Kong and Macao students have relatively high intentions to stay in the mainland for development, but most of them are still in the stage of consideration or of giving it a try. Hong Kong and Macao students in the mainland believe that their advantages compared to other Hong Kong and Macao students who have not studied in the mainland are their familiarity with the cultural environment in the mainland, their ability to leverage various resources and networks in both Hong Kong/Macao and the mainland, and their understanding of the policies and regulations in the mainland. Innovation and entrepreneurship education is part of the entrepreneurial environment and is generally included in educational training or school environments. The

subjects of this study are not in the mainland, Hong Kong and Macao students, and the authors note that entrepreneurship education in the mainland universities may differ from that in Hong Kong and Macao. Therefore, this study includes innovation and entrepreneurship education as a factor in the entrepreneurial environment.

1.5 | Research on Cultivation of Innovative Talents

Currently, research on cultivation of innovative talents primarily focuses on three aspects. The first is the definition and traits of innovative talents. Innovative talents refer to those who contribute to society through innovative effort. They have strong innovative awareness, innovative mentality, and innovative ability, and are the key to improving the overall efficiency of the innovation system (Yang, 2015). The second is the model of cultivating innovative talents. Chinese scholars generally recognize that entrepreneurial talent cultivation model is interdisciplinary, cross-industry, and a combination of knowledge with practice, as researched by Liu (2021) and Shi (2016). The third is the optimization of the technology commercialization chain for cultivation of innovative talents, as researched by Jiang & Chen (2020) and Wang & Wang (2019). To comprehensively strengthen the development of innovative talents in the Greater Bay Area, it is essential to cultivate Hong Kong and Macao students in the mainland as those who can serve the development of the Greater Bay Area. At the same time a high-level talent introduction model can be implemented; this is an indispensable part of developing innovative talents.

2 Study Design

2.1 | Theoretical Modelling Construction

To further confirm the rationality of the research model, this study conducts unstructured interviews with 7 Hong Kong and Macao students who have participated deeply in campus-based entrepreneurship education and innovation and entrepreneurship competitions. The results show that when discussing the factors driving them to engage in entrepreneurial activities, they emphasize the influence of personal intrinsic traits (such as risk preferences, achievement motivation, and leadership preferences) and external environment (such as the policy dividends of the Greater Bay Area and macroeconomic situation). This study combines literature review and interview materials to add two variables of entrepreneurial traits and entrepreneurial environment to the planned behavior theory model to explore the influencing factors on Hong Kong and Macao students' entrepreneurial intentions. The theoretical modelling of this study is shown in Figure 2, and the following hypotheses are proposed.

H1: There is a positive correlation between Hong Kong and Macao students' entrepreneurial attitudes and their entrepreneurial intentions.

H2: There is a positive correlation between Hong Kong and Macao students' subjective norms for entrepreneurship and their entrepreneurial intentions.

H3: There is a positive correlation between Hong Kong and Macao students' perceived behavioral control and their entrepreneurial intentions.

H4: There is a positive correlation between Hong Kong and Macao students' entrepreneurial traits and their entrepreneurial intentions.

H5: There is a positive correlation between entrepreneurial environment and Hong Kong and Macao students' entrepreneurial intentions.

2.2 | Questionnaire Design

The questionnaire covers six dimensions: entrepreneurial attitude, subjective norms, perceived behavioral control, entrepreneurial intention, entrepreneurial traits, and entrepreneurial environment, with a total of 31 items. The reference sources for the relevant scales are shown in Table 1. Entrepreneurial intention refers to the intention to start a business in the mainland cities in the Greater Bay Area. The Likert five-point scale method was used to quantify the research items.

2.3 | Research Process and Data Collection

To ensure quality of the formal survey questionnaire, this study does a pilot survey before distributing the formal questionnaire. The pilot survey is conducted at Jinan University, where 100 questionnaires are distributed, and 68 valid questionnaires are received, with a valid response rate of

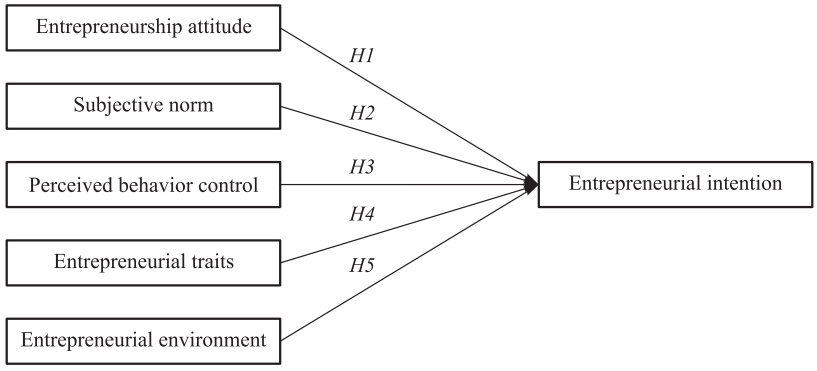

Figure 2 The Theoretical Modelling

Table 1 Measurement of Related Variables of Influencing Factors of Entrepreneurial Intention of Hong Kong and Macao Students

Latent variable	Number of observed variables/numbers	Source of reference scale
Entrepreneurial attitude	5	Phan et al. (2002)
Subjective norm	5	Li et al. (2008), Lin (2018)
Perceptual behavior control	5	Denoble et al. (2019)
Entrepreneurial traits	6	Liu (2018)
Entrepreneurial environment	5	Wu (2019)
Entrepreneurial intention	5	Thompson (2009)

68%. The results of the pilot questionnaire show that there are significant differences in the mean scores of each item in the high-score group and low-score group, the discrimination of each item is high, and the Cronbach's α coefficient of the six dimensions is greater than 0.8. Therefore, it is decided that the formal questionnaire survey should have 31 items.

2.4 | Formal Survey and Data Processing

To enhance external validity and rationality, this study selects universities in Guangdong Province and Fujian Province, which have the highest number of Hong Kong and Macao students in the mainland, as the main sources of data. Sample data from Jinan University and Sun Yat-sen University in Guangdong Province, and from Huaqiao University and Xiamen University in Fujian Province, are collected. As the questionnaires are distributed and completed online, samples are also received from Hong Kong and Macao students in Peking University, Beijing Normal University-Hong Kong Baptist University United International College, and Southern Medical University, which are classified as samples from other universities for reference. In total, samples are collected from 7 universities, with 4 located within the Greater Bay Area and 3 outside of the Greater Bay Area. Convenience sampling is used to distribute the questionnaire. The formal questionnaire was distributed on October 5, 2020, and 731 questionnaires were collected on March 10, 2021. After data analysis, 689 valid samples are obtained, and the valid response rate is 94.25%.

3 Analysis of Survey Results

3.1 | Descriptive Analysis of Samples

This study divides the survey samples according to demographic variables such as gender, household registration, school, degree pursued and discipline. The statistical description of the samples is shown in Table 2. Generally, the sample distribution for each demographic variable is close to the true demographic proportion, indicating that the samples collected in this study has a fair representativeness.

3.2 | Common Method Deviation Test

This study uses Harman's one-factor test to examine the common method deviation. Exploratory factor analysis is performed using SPSS 23.0 software on all items in the formal questionnaire, and five factors with eigenvalues greater than 1 are obtained. The first factor explains 48.69% of the variance, which is less than the critical value of 50%, indicating that there is no serious common method deviation in the sample used.

3.3 | Reliability, Validity Test, and Correlation Analysis

This study uses Cronbach's α coefficient to test the internal consistency of each dimension. Table 3 indicates that the Cronbach's α coefficient of each dimension was higher than 0.7, indicating that the reliability of each dimension was within an acceptable range and valid for subsequent analysis.

After reliability analysis, confirmatory

Table 2 Statistical Description of Samples

Item	Attribute	Frequency/person	Percentage	Cumulative percentage
Gender	Man	328	47.60%	47.60%
	Woman	361	52.40%	100%
Household registration	Hong Kong	540	78.40%	78.40%
	Macao	149	21.60%	100%
University	Jinan University	404	58.64%	58.64%
	Huaqiao University	218	31.64%	90.28%
	Sun Yat-sen University	21	3.05%	93.32%
	Xiamen University	32	4.64%	97.97%
	Other universities	14	2.03%	100%
Degree	Undergraduate	619	89.80%	89.80%
	Postgraduate	64	9.30%	99.10%
	Doctorate	6	0.90%	100%
Discipline	Humanities	79	11.50%	11.50%
	Art	95	13.80%	25.30%
	Economics Management/ Law	366	53.10%	78.40%
	Science/ Engineering	66	9.60%	88.00%
	Medicine	83	12.00%	100%

factor analysis is performed using Amos 24.0 software. The results, as shown in Table 4, indicate that the factor loadings of each item are above 0.5, and the *P*-values are significant at the 0.001 level, indicating that each dimension has a high convergent validity. The fit indices of the measurement model are as follows: CMIN = 1338.661, DF = 419, CMIN/DF = 3.195, CFI = 0.950, TLI = 0.944, IFI = 0.950, and RMSEA = 0.056. These results indicate that the measurement model has a good fit.

Then, SPSS 23.0 software is further used to analyze the correlation and discriminant validity of six dimensions: entrepreneurial attitude, subjective norms, perceived behavior control, entrepreneurial characteristics, entrepreneurial environment and entrepreneurial intention. The data in Table 5 show that the Pearson correlation coefficients among the dimensions are all less than 0.8, and the square root value of AVE in each dimension is greater than the Pearson correlation coefficient value of this dimension and other dimensions, which indicates that there is no high correlation between the dimensions in this study and the discriminant validity is good.

Table 3 Reliability Analysis Results of Sample Questionnaire

Dimension	Number	Cronbach's α
Entrepreneurship attitude	5	0.922
Subjective norm	5	0.807
Perceived behavior control	5	0.927
Entrepreneurial intention	5	0.952
Entrepreneurial traits	6	0.798
Entrepreneurial environment	5	0.908

Table 4 Confirmatory Factor Analysis of Variable Measurement Model

Dimension	Question	Factor load (standard deviation)	*P*-value	Composition reliability	Average variance extraction
Entrepreneurship attitude	I hope to achieve my personal achievements in the mainland.	0.876(−)		0.923	0.705
	I long for independence.	0.771(0.034)	0.000		
	I hope to be recognized by society.	0.837(0.031)	0.000		
	I hope to accumulate money and wealth in the mainland.	0.890(0.031)	0.000		
	I hope to contribute to my motherland.	0.820(0.034)	0.000		
Subjective norm	My parents support me to start a business in the mainland.	0.838(−)		0.903	0.655
	My best friend supports me to start a business in the mainland.	0.864(0.036)	0.000		
	My familiar teachers support me to start a business in the mainland.	0.870(0.035)	0.000		
	The successful case of my senior sister's entrepreneurship in the mainland prompted me to start a business in the mainland.	0.600(0.041)	0.000		
	Most students around me think that starting a business in the mainland is a good career choice.	0.843(0.036)	0.000		
Perceived behavior control	I am creative.	0.815(−)		0.928	0.719
	I can calmly face the risks in starting a business because I believe I have the ability to address problems.	0.863(0.039)	0.000		
	In any case, I can create or maintain an innovative working environment.	0.896(0.039)	0.000		
	I can always use or allocate the resources in my hands effectively.	0.822(0.039)	0.000		
	I am confident that I can effectively handle emergencies in my business.	0.842(0.039)	0.000		
Entrepreneurial intention	I am looking for opportunities to start a business in the mainland.	0.856(−)		0.952	0.799
	I will save money for starting a company in the mainland.	0.895(0.033)	0.000		
	I will take the time to learn about the information about starting a company in the mainland.	0.915(0.032)	0.000		
	I know how to start a business in the mainland.	0.883(0.034)	0.000		
	I will be very enthusiastic about opening a company in the mainland.	0.918(0.032)	0.000		

(*To be continued*)

(*Continued*)

Dimension	Question	Factor load (standard deviation)	*P*-value	Composition reliability	Average variance extraction
Entrepreneurial traits	I am eager to take on a challenging job.	0.770(−)		0.893	0.581
	I am eager for a job with a sense of accomplishment.	0.774(0.045)	0.000		
	The success of starting a business mainly depends on oneself.	0.745(0.046)	0.000		
	When there are uncertain factors, I will treat them positively and think positively.	0.789(0.044)	0.000		
	I like to make my own decisions.	0.710(0.046)	0.000		
	I will motivate my team to work together.	0.782(0.045)	0.000		
Entrepreneurial environment	The government attaches great importance to Hong Kong and Macao students starting businesses in the mainland and has introduced effective measures to encourage them to start businesses.	0.844(−)		0.909	0.666
	For students from Hong Kong and Macao to start businesses in the mainland, the government has business startup loans and aid funds.	0.801(0.039)	0.000		
	The government supports Hong Kong and Macao students to start businesses in the mainland and has preferential tax policies.	0.851(0.039)	0.000		
	The mainland cities in Greater Bay Area have a good entrepreneurial culture.	0.803(0.038)	0.000		
	The school has set up a wealth of innovative and entrepreneurial courses and projects.	0.778(0.041)	0.000		

Table 5 Correlation and Discriminant Validity Analysis of Variables

Variable	Average value	Standard deviation	Entrepreneurship attitude	Subjective norm	Perceived behavior control	Entrepreneurial intention	Entrepreneurial traits	Entrepreneurial environment
Entrepreneurship attitude	2.020	0.780	0.840					
Subjective norm	2.224	0.853	0.702**	0.809				
Perceived behavior control	2.304	0.774	0.649**	0.681**	0.848			
Entrepreneurial intention	2.491	0.988	0.600**	0.632**	0.700**	0.894		
Entrepreneurial traits	2.323	0.764	0.582**	0.554**	0.756**	0.672**	0.762	
Entrepreneurial environment	2.219	0.804	0.592**	0.624**	0.630**	0.628**	0.678**	0.816

Note. The final value in each row is the square root of AVE in each dimension.

3.4 | Path Analysis

This study uses Amos 24.0 software to test the relationship between the independent variables of entrepreneurial attitude, subjective norms, perceived behavioral control, entrepreneurial traits, entrepreneurial environment, and the dependent variable of entrepreneurial intention. The fit indices of the structural model are as follows: CMIN/DF = 3.195 (the closer this value is to 0, the better, and it is usually considered acceptable when the $\chi 2$/df is less than 5); RMSEA = 0.056 (the closer this value is to 0, the better, and RMSEA less than 0.1 is usually considered acceptable); TLI = 0.944, CFI = 0.950, IFI = 0.950 (the closer these values are to 1, the better, and they are usually considered acceptable when the indices are greater than 0.9). All fit indices meet the model index standards, indicating that the structural model had a good fit. The explanatory power of the overall predictive variable for the outcome variable, satisfaction, as indicated by the R^2 value, is 0.623, or 62.3%, indicating that the overall predictive variables have good explanatory power for the outcome variable and that the independent variables selected for the model are appropriate. The standardized path coefficients of the overall fit analysis are shown in Figure 3, and the hypotheses *H1* to *H5* proposed in this study are all supported (as shown in Table 6). Among them, the standardized path coefficient for perceived behavioral control is the largest, reaching 0.301 ($P < 0.001$), while the standardized path coefficient for entrepreneurial environment is the smallest, with a value of 0.101 ($P < 0.05$).

3.5 | Differences Analysis

To further explore the differences in entrepreneurial intentions among Hong Kong and Macao students in different types of the mainland universities, this study uses independent sample *t*-tests and one-way ANOVA to test the differences in groups under different demographic variables. The results of the independent sample *t*-test show that there are statistically significant differences in the mean values of gender, household registration, and university ($P < 0.05$) among Hong Kong and Macao students. Specifically, male students have a higher entrepreneurial intention than female students; Hong Kong students have a higher entrepreneurial intention than Macao students; and students in universities in the Greater Bay Area have a higher entrepreneurial intention than those in universities outside the Greater Bay Area. The results of the one-way ANOVA show that there is a statistically significant difference in entrepreneurial intention among students from different disciplines (F=17.333, $P < 0.001$). Further post-hoc comparisons using the LSD method reveal that there are statistically significant differences in entrepreneurial intention scores between the students in the humanities and social sciences group and those in the management and law group, science and engineering group, and medicine group ($P < 0.05$); between the students in the arts group and those in the science and engineering group and medical group ($P < 0.05$); and between the students in the management and law group and those in the medical group ($P < 0.05$). The specific results are shown in Table 7.

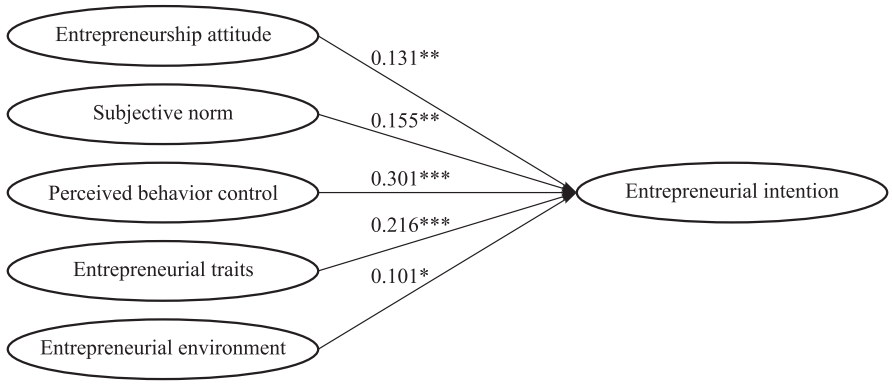

Figure 3 Structural Equation Model Results of Sample Variables

Table 6 Test Results of Research Hypothesis

Hypothesis	Path	Nonstandard coefficient estimation	Standard error	Critical ratio value	*P*-value	Standardized coefficient estimation	Conclusion
H1	Entrepreneurial intention <---Entrepreneurial attitude	0.147	0.052	2.856	0.004	0.131	Accept
H2	Entrepreneurial intention <---Subjective norm	0.169	0.053	3.167	0.002	0.155	Accept
H3	Entrepreneurial intention <---Perceived behavior control	0.378	0.078	4.883	0.000	0.301	Accept
H4	Entrepreneurial intention <---Entrepreneurial traits	0.258	0.073	3.557	0.000	0.216	Accept
H5	Entrepreneurial Intention <---Entrepreneurial environment	0.117	0.051	2.271	0.023	0.101	Accept

Table 7 Difference Analysis of Sample Entrepreneurial Intention in Demographic Variables

Item	Attribute	Average value	Standard deviation	Variance ratio	*P*-value	Post-event comparison
Gender	0 Male (*n* = 328)	2.759	0.830			0.000
	1 Female (*n* = 361)	2.248	1.057			
Household registration	0 Hong Kong (*n* = 540)	2.540	1.000			0.050
	1 Macao (*n* = 149)	2.315	0.925			
University	0 Non-Greater Bay Area (*n* = 257)	2.154	0.950			0.000
	1 Greater Bay Area (*n* = 432)	2.692	0.957			
Discipline	1 Literature, history and philosophy (*n* = 79)	3.081	1.150			
	2 Art (*n* = 95)	2.752	0.803			Literature, history and philosophy > Economics, management, science, engineering and medicine
	3 Management method (*n* = 366)	2.460	0.840	17.333	0.000	Art > Science, engineering and medicine economics and management > Medicine
	4 Science and engineering (*n* = 66)	2.264	1.329			
	5 Medicine (*n* = 83)	1.952	0.948			

4 Conclusion and Enlightenment

4.1 | Main Conclusion

Based on 689 valid questionnaires, this study uses SPSS 23.0 and Amos 24.0 software to develop a structural equation model and analyze the factors influencing the entrepreneurial intentions of Hong Kong and Macao students. Below are the main conclusions of this study.

First, the entrepreneurial attitude, subjective norms, perceived behavioral control, entrepreneurial traits, and entrepreneurial environment of Hong Kong and Macao students have a significant positive impact on their entrepreneurial intention. The perception of the ease or difficulty of entrepreneurship has the greatest impact on the entrepreneurial intentions of Hong Kong and Macao students, followed by entrepreneurial traits, subjective norms, and entrepreneurial attitudes. The impact of the entrepreneurial environment on their entrepreneurial intention is the smallest. This means that the entrepreneurial intention of Hong Kong and Macao students is primarily influenced by their own factors, and the external influence of the entrepreneurial environment is relatively weak.

Second, the differences in the entrepreneurial intention of Hong Kong and Macao students according to demographic variables such as gender, household registration, university type, and discipline are statistically significant. Firstly, male students have a higher entrepreneurial intention than female students, which may be due to different gender role expectations in society. Women are more likely to be stereotyped as caregivers, which may lead to lower subjective initiative towards entrepreneurship. Secondly, Hong Kong students have a higher entrepreneurial intention than Macao students. Thirdly, students in universities in the Greater Bay Area have a higher entrepreneurial intention than those in universities outside the Greater Bay Area, which is closely related to geographical factors. Hong Kong and Macao students at universities in the Greater Bay Area receive more favorable policies and assistance compared to those at universities outside the Greater Bay Area. Finally, students majoring in science and engineering and medicine have lower entrepreneurial intentions than those majoring in social sciences and humanities. There may be two reasons for these differences: The first reason is that science and engineering majors have higher research and entrepreneurship thresholds, requiring intellectual and equipment support, and students in these majors tend to be more conservative and weaker in entrepreneurial mentality. The second reason is that medicine major students have many job opportunities with good salaries and stable development, which may lead to lower entrepreneurial motivation. The lower entrepreneurial intention of Hong Kong and Macao students majoring in science, engineering, and medicine indicates that there is a lack of talent supply for innovation and entrepreneurship in these fields, even though such talent supply is essential for high-quality economic development and the constant source of high value-added entrepreneurship.

Universities should strengthen education in innovation and entrepreneurship for students majoring in science, engineering, and medicine, and society should also help improve the research and entrepreneurship chain.

4.2 | Significance and Enlightenment

This study focuses on Hong Kong and Macao students in the mainland universities as the research subject of entrepreneurial intentions. In reality, this study adds two dimensions of entrepreneurial traits and entrepreneurial environment to the TPB to improve the traditional research model. The study attempts to make corresponding theoretical contributions in further expanding the research subjects of entrepreneurial intention, exploring the applicability and variable relationships of the model. In addition, considering factors such as the development stage and resource situation of the mainland universities, based on the research conclusions, the study proposes a support framework for Hong Kong and Macao students in the mainland universities to start businesses in the mainland, which integrates training systems, ecological systems, and resource systems, for the purpose of cultivating innovative talents. Such support can effectively enhance entrepreneurial intentions and better meet the talent needs of high-quality economic development and strategic emerging industries in the Greater Bay Area.

Firstly, in terms of the development of the training system, the mainland universities should start from enrollment and recruit students with innovative potential. They should focus on entrepreneurship education from the beginning of enrollment, tailoring it to students' abilities by means of course design, professional education, and innovation and entrepreneurship competitions. In terms of high school curriculum connection and enrollment policies, universities that offer pre-college courses for Hong Kong, Macao, and Taiwan students, as well as overseas Chinese students, should improve curriculum connection in mathematics, physics, and chemistry, to reduce students' fear of not being able to major in science, engineering, and medicine. Moreover, universities should increase the publicity of science, engineering, and medicine majors to high school students before attending university, and popularize their good employment and entrepreneurial prospects and development opportunities in the Greater Bay Area, so that Hong Kong and Macao students can enroll in various majors. Furthermore, universities should introduce cutting-edge science professors from home and abroad, enhance the strength of scientific research faculty, and attract students to enroll in science, engineering, and medicine. In terms of course design, courses such as entrepreneurship management and technology innovation management should be offered to meet the needs of strategic emerging industries in the Greater Bay Area (Tai, 2019). In addition, given the particular traits of Hong Kong and Macao students, differences in tax, law, and other knowledge between the mainland and Hong Kong and Macao should be introduced in business courses to improve their entrepreneurial

self-efficacy. In terms of professional education, students' intrinsic motivation should be emphasized. Combined with the differences in individual traits and gender psychology of Hong Kong and Macao students, they should be encouraged to leverage their professional expertise to engage in innovative opportunity-based entrepreneurship instead of survival-based entrepreneurship, in line with the need is of science, technology and industrial development in the Greater Bay Area. What is more, experts and renowned alumni entrepreneurs from home and abroad should be invited to discuss industry frontiers, industrial structure, and other topics with Hong Kong and Macao students, guiding them to seize the opportunities for development in the Greater Bay Area and to engage in innovative entrepreneurial practices aimed at promoting regional progress and at leading social development. In terms of innovation and entrepreneurship competitions, various levels of innovation and entrepreneurship competitions and scientific and technological events should be sponsored at the university, community, city, and provincial levels, with dedicated access for Hong Kong and Macao students. Award-winning Hong Kong and Macao students should be provided with free opportunities for external exchanges to study advanced scientific and technological and innovative concepts abroad. Through a combination of "on-campus training + off-campus practice," Hong Kong and Macao students can develop the correct entrepreneurial attitude and reduce their misconceptions about entrepreneurship.

Secondly, in terms of ecological construction, Hong Kong and Macao students should be guided to innovate and start businesses to serve the overall strategic development of the Greater Bay Area. The Greater Bay Area Hong Kong and Macao Student Entrepreneurship Alliance should be established to formulate a regional entrepreneurial culture. On the one hand, universities can tap into the industrial characteristics and innovation and entrepreneurship resources of their host cities, and guide Hong Kong and Macao students to innovate and start businesses based on their own advantages and majors. Specifically, universities can leverage the cultural entrepreneurship, high-tech, and electronic information industries in the three core cities of Guangzhou, Shenzhen, and Zhuhai to promote the development of the Greater Bay Area International Science and Technology Innovation Center, fully mobilizing the enthusiasm of Hong Kong and Macao students for innovation and entrepreneurship in the mainland (Zhang & Liu, 2020). On the other hand, the Greater Bay Area Hong Kong and Macao Student Entrepreneurship Alliance should be established to connect students interested in innovation and entrepreneurship in the mainland, forming a network of support among Hong Kong and Macao student entrepreneurs and creating a unique culture of entrepreneurship among Hong Kong and Macao students in the Greater Bay Area, thereby expanding their influence globally.

Thirdly, in terms of resource system development, starting from venue and equipment, funding support, policy support, etc., the entrepreneurial environment

for Hong Kong and Macao students should be optimized, and the perceived difficulties of entrepreneurship should be appropriately reduced to raise the quality of entrepreneurship. In terms of venue and equipment, Hong Kong and Macao student innovation and entrepreneurship bases should be established in universities and university towns and other appropriate locations, providing them with public spaces such as workstations for them to independently conduct various entrepreneurial explorations. The development of joint laboratories and national technology innovation centers for emerging industries should be accelerated to provide them with complete infrastructure and advanced technical equipment for entrepreneurship. In terms of funding support, the "government-enterprise-bank-university" four-party linkage should be promoted to raise complementary entrepreneurial resources, establish a Hong Kong and Macao student innovation and entrepreneurship fund, and further utilize the fund to establish an internet platform for Hong Kong and Macao student project angel investors and crowdfunding. This can realize the organic combination of the technology innovation chain and the financial capital chain, and can unblock project landing channels and industrialization. In terms of policy support, talent introduction and talent cultivation should be combined; the service guarantee mechanism should be optimized for Hong Kong and Macao innovative talents; the living support policies and public services should be improved to encourage Hong Kong and Macao graduates to buy homes and settle down in the mainland, enhancing their sense of belonging and security in entrepreneurship in the mainland.

In conclusion, the mainland universities can actively respond to national policies by establishing a three-in-one entrepreneurial support system consisting of a training system, an ecological system, and a resource system. Through cooperation with the government, enterprises, and society, a complete chain of entrepreneurship services can be formed, starting from government guidance, university training, to incubator support, and to technology achievement commercialization and industrialization. This will comprehensively enhance the entrepreneurial intentions of Hong Kong and Macao students, enabling them to better shoulder their mission while sharing the benefits of the Greater Bay Area development.

4.3 | Research Limitation

This study has broadened the research field of entrepreneurial intention and has practical guidance for the mass entrepreneurship and innovation education of Hong Kong and Macao students. However, there are still some limitations. For example, due to the impact of the COVID-19 pandemic, the survey questionnaire is distributed online, which may have resulted in lower control over the questionnaire environment than will have been the case for an on-site survey, and may have had some impact on the data quality. In addition, since entrepreneurial intention is a prerequisite for entrepreneurial behavior, this study focuses on the influencing factors of entrepreneurial intention and does not

further study the impact of this intention on behavior. Future research can explore such an impact on the entrepreneurial behavior of students originating from Hong Kong and Macao.

Acknowledgments This paper is supported by Research Institute of China (Guangdong) Pilot Free Trade Zone, Jinan University, under the project of "Research on the Present Situation and Predicament of Hong Kong and Macao Youth Innovation and Entrepreneurship Development Platform in Guangdong-Hong Kong-Macao Greater Bay Area" (No. 45018204008).

References

Ajzen, I. (1991). The theory of planned behavior. *Organization Behavior and Human Decision Processes*, (2), 179–211.

Allport, G. W. (1966). Traits revisited. *The American Psychologist*, (1), 1–10.

Bird, B. (1988). Implementing entrepreneurial ideas: the case for intention. *The Academy of Management Review*, (3), 442–453.

Chen, W., An, N., & Zhu, G. (2017). Study on the effectiveness of entrepreneurial learning methods based on the relationship between personality traits and entrepreneurial intention. *Science and Technology Management Research*, (20), 167–173 (陈万明, 安宁, 朱广华 (2017). 基于人格特质与创业意愿关系的创业学习方式效用研究. 科技管理研究, (20), 167–173).

Deng, Q. (2021). Challenges and countermeasures for promoting Hong Kong and Macao youth to participate in the development of Greater Bay Area International Science and Technology Innovation Center. *Science and Technology Management Research*, (2), 28–37 (邓琦 (2021). 促进港澳青年投身大湾区国际科技创新中心建设的挑战与对策. 科技管理研究, (2), 28–37).

Denoble, A., Jung, D., & Ehrlich, S. (1999). *Entrepreneurial self-efficacy: The development of a measure and its relationship to entrepreneurial action*. Babson College.

Duan, W., & Jiang, G. (2008). Review of theory of planned behavior. *Advances in Psychological Science*, (16), 315–320 (段文婷, 江光荣 (2008). 计划行为理论述评. 心理科学进展, (16), 315–320).

Fan, W., & Wang, Z. (2006). Confirmatory factor analysis of entrepreneurial intention dimension structure. *Chinese Journal of Ergonomics*, (1), 14–16 (范巍, 王重鸣 (2006). 创业意向维度结构的验证性因素分析. 人类工效学, (1), 14–16).

Fu, C., & Yang, A. (2020). The psychological integration effect of cross-border employment and entrepreneurship policies of Hong Kong and Macao youth and its cognitive mechanism: From the perspective of behavioral public management. *Academic Forum*, (1), 79–89 (傅承哲, 杨爱平 (2020). 港澳青年跨境就业创业政策的心理融合效应及其认知机制：基于行为公共管理的视角. 学术论坛, (1), 79–89).

Jiang, C., & Chen, H. (2020). Research on the evolution of the transformation of scientific and technological achievements in colleges and universities to promote the cultivation of innovative talents. *Science and Technology Management Research*, (13), 183–188 (姜春, 陈红喜 (2020). 高校科技成果转化促进创新型人才培养演化博弈研究. 科技管理研究, (13), 183–188).

Krueger, N. (1993). The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship Theory and Practice*, (1), 5–21.

Li, Y., Bai, X., Mao Y., & Zeng, Z. (2008) Analysis of influencing factors of students' entrepreneurial intention based on TPB model. *China Soft Science*, (5), 122–128 (李永强, 白璇, 毛雨, 曾峥 (2008). 基于TPB 模型的学生创业意愿影响因素分析. 中国软科学, (5), 122–128).

Lin, S. (2018). *Research on the intention of university students to participate in innovation and entrepreneurship education based on theory of planned behavior*. Master dissertation,

Xiamen University (林珊珊 (2018). 基于计划行为理论的高校学生创新创业教育参与意愿研究. 硕士论文, 厦门大学).

Liu, H. (2021). Research on the development of new technology applied innovation and entrepreneurship ecosystem in higher vocational colleges. *Science and Technology Management Research*, (1), 29–36 (刘海明 (2021). 高职院校新技术应用型创新创业生态系统构建研究. 科技管理研究, (1), 29–36).

Liu, Y. (2018). *Study on the mechanism of entrepreneurial intention on entrepreneurial Behavior*. Doctoral dissertation, Jilin University (刘宇娜 (2018). 创业意愿对创业行为的作用机制研究. 博士论文, 吉林大学).

Phan, P. H., Wong, P. K., & Wang, C. K. (2002). Antecedents to entrepreneurship among university students in Singapore: Beliefs, attitudes and background. *Journal of Enterprising Culture*, (2), 151–174.

Shapero, A., & Sokol, L. (1982). The social dimensions of entrepreneurship. In C. A. Kent, D. L. Sexton, & K. H. Vesper (Eds.), *The encyclopedia of entrepreneurship*. Prentice Hall.

Shi, Z. (2016). In-depth participation in the innovation-driven development strategy for promoting innovation and entrepreneurship education. *China Higher Education*, (21), 10–12 (史宗恺 (2016). 深度参与创新驱动发展战略大力推进创新创业教育. 中国高等教育, (21), 10–12).

Tai, H. (2019). Who has been inspired by entrepreneurship education? Empirical analysis based on innovation and entrepreneurship education policy in colleges and universities. *Higher Education Exploration*, (9), 111–118 (邴浩(2019). 创业教育究竟激发了谁的创业意愿?: 基于高校创新创业教育政策的实证分析. 高教探索, (9), 111–118).

Thompson, E. R. (2009). Individual entrepreneurial intent: Construct clarification and development of an internationally reliable metric. *Entrepreneurship Theory and Practice*, (3), 669–694.

Veciana, J. M., Aponte, M., & Urbano, D. (2005). University students' attitudes towards entrepreneurship: A two countries comparison. *International Entrepreneurship and Management Journal*, (2), 165–182.

Wang, L., & Wang, J. (2019). Research on the influence mechanism of inclusive talent development model on the innovation quality of scientific and technological achievements in colleges and universities. *Science & Technology Progress and Policy*, (3), 146–153 (王丽平, 王俊霞 (2019). 包容型人才开发模式对高校科技成果创新质量的影响机制研究. 科技进步与对策, (3), 146–153).

Wen, F., Zhao, J., Chen, R., & Wang, L. (2019). Investigation on the current situation of entrepreneurship and employment education for Hong Kong and Macao students in Chinese mainland universities: Based on the investigation of Guangzhou J University. *Hong Kong and Macao Journal* (3), 45–49 (文峰, 赵健, 陈仁鸿, 王璐 (2019). 内地高校港澳学生的创业就业教育现状调查：基于广州 J大学的调查. 港澳研究, (3), 45–49).

Wu, L. (2019). Study on the influence of entrepreneurial environment on college students' entrepreneurial intention: Taking 2114 college students in Hangzhou as an example. *Research in Higher Education of Engineering*, (1), 184–189 (吴立爽 (2019). 创业环境对大学生创业意愿的影响研究：以在杭高校2114名大学生为例. 高等工程教育研究, (1), 184–189).

Xie, B., & Hu, J. (2019). Research on the development of Hong Kong and Macao youth in Guangdong-Hong Kong-Macao Greater Bay Area. *Youth Exploration*, (1), 5–14 (谢宝剑, 胡洁怡 (2019). 港澳青年在粤港澳大湾区发展研究. 青年探索, (1), 5–14).

Yang, X. (2015). Research on entrepreneurship education and innovative talents training in Chinese universities. *China Higher Education Research*, (1), 39–44 (杨晓慧 (2015). 我国高校创业教育与创新型人才培养研究. 中国高教研究, (1), 39–44).

Zhang, L., & Liu, J. (2020). Comparative study on the policies of strategic emerging industries in Guangdong-Hong Kong-Macao Greater Bay Area. *Science and Technology Management Research*, (22), 39–47 (张龙鹏, 刘俊杰 (2020). 粤港澳大湾区战略性新兴产业政策比较研究. 科技管理研究, (22), 39–47).

Zhao, H., Seibert, S. E., & Lumpkin, G. T. (2010). The relationship of personality to entrepreneurial intentions and performance: A meta-analytic review. *Journal of Management*, (2), 381–404.