



The Impact of Entrepreneurship Perceptions on Entrepreneurial Intention During the COVID-19 Pandemic

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The global pandemic of COVID-19 is a challenge for entrepreneurship education in universities and various organizations. Although positive responses to overcome the challenges of COVID-19 are being made, entrepreneurship strategies and policies might not meet students' requirements. In order to enrich education management research, the main aim of this study is to provide a conceptual model and examine the relationship between perceptions, perceived positive attitudes on entrepreneurship education, and entrepreneurial intention (EI) during the COVID-19 crisis. The model is tested by using data from universities that are located in Shanghai, P.R. China. The study reveals that 1) perceived social norms and perceived self-efficacy positively influence perceived positive attitudes in entrepreneurship education; 2) there is no relationship between perceived entrepreneurial barriers and perceived positive attitudes in entrepreneurship education; 3) perceived positive attitudes in entrepreneurship education positively influence EI. The findings contribute to university and government policies on the development of entrepreneurial education. The framework of this study provides insight into the influential factors of entrepreneurship education that contribute to theoretical studies in the COVID-19 pandemic.

Keywords: perceived barriers, perceived self-efficacy, perceived social norms, perceived positive attitudes towards entrepreneurship education, entrepreneurial intention

INTRODUCTION

As a result of the COVID-19 pandemic, there are some limitations and restrictions in university education that have resulted in teaching methods being changed to online teaching (Ratten, 2020), which may affect entrepreneurship education. Before there are several findings that prove the positive impact of students' intention towards entrepreneurship education; their willingness to engage in entrepreneurial activities and their employment performance (Graevenitz et al., 2010; Li and Liu, 2011; Souitaris et al., 2007; Tkachev and Kolvereid, 1999). Furthermore, entrepreneurship education has been studied by students, who are encouraged to consider their future directions and career goals (Ratten and Jones, 2018; Ratten and Jones, 2020). Entrepreneurship education is especially related to innovative thinking, which can empower students' EI (Oosterbeek et al., 2010; Ratten and Jones, 2020). Especially, entrepreneurship education teaches skills for business management and for the future directions of university students (Mentoor and Friedrich, 2007).

In universities, the effectiveness of entrepreneurial education is improved by entrepreneurial competencies, the reduction of entrepreneurial barriers and the change of EI (Liu et al., 2021). However, the COVID-19 pandemic has become a crisis for people's daily life (Ruiz-Rosa et al., 2020), students may not perceive a qualified career in education. It is also difficult to evaluate their perceptions as the influential factors have not been studied sufficiently during the COVID-19 pandemic. Although, the perception of entrepreneurship education has been measured through various perspectives, still more research is required during this time of COVID-19 pandemic. The perception of entrepreneurship education has been explored through various factors, such as perceived self-efficacy, perceived desirability, desire for achievement and fear of failure (Farashah, 2013; Peterman and Kennedy, 2003; Shrivastava and Acharya, 2020). Even qualitative and quantitative methods are adopted in the exploration of factors (Blenker et al., 2014), studies on the perception of entrepreneurship education in the time of COVID-19 are inadequate.

As the stress caused by the COVID-19 pandemic has a psychological influence on education (Roman and Plopeanu, 2021), the perceptions of entrepreneurship education should be explored in the context of the health crisis. The way to confront the social crisis and address students' perception of entrepreneurship education has been overlooked in previous studies. This breach is mainly due to the neglect of validity in the international health crisis (namely, COVID-19) and its effects on university students' EI. Current literature lacks studies that focus on perceptions during the COVID-19 pandemic and among other factors, exploring students' perceptions is vital for improving entrepreneurship education and achieving its goals. Additionally, there have been insufficient studies on a perception-intention model for use under the influence of crisis. Due to the uncertainty of the effects of COVID-19 on entrepreneurship, there may have some changes on university students' entrepreneurial activity (Meahjohn and Persad, 2020). Some limited studies have been published that tend towards qualitative research; however, there is still a need for credible research with the support of quantitative analysis (Lin and Xu, 2017).

The above mentioned gaps provide an opportunity for this research. This study proposed a perception-intention model for measuring the perception of entrepreneurship education during the COVID-19 pandemic. Further, we not only focus on the contents and approaches of entrepreneurship education alone, but also explore the quality in university students' perceptions and attitudes. The objectives of this study are as follows: 1) to identify a conceptual model that discovers and emphasizes university students' perception on entrepreneurship education during COVID-19; 2) to explore and identify attitudes towards entrepreneurship education that may have strong effects on university students' EI during COVID-19; 3) to address the implications of this study for future research on entrepreneurship education; 4) identify the relationship of the views of university students. We also aim to contribute to literature by exploring the effect of students' perception created by the COVID-19 pandemic on entrepreneurial

intention. The paper contains five sections. In the following section, we review the literature on entrepreneurship education, perceived self-efficacy, perceived social norms, perceived entrepreneurial barriers, perceived positive attitudes towards entrepreneurship education, and EI and we propose a research model. The *Methods* and *Results* are method and results. In *Discussion and Conclusion*, we present discussion and conclusion.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Perceived Positive Attitudes Towards Entrepreneurship Education

Students' entrepreneurial abilities have been influenced by entrepreneurship education (Beynon, et al., 2016). Many researchers studied entrepreneurship education that mainly focused on assessing entrepreneurship education courses (Pittaway and Edwards, 2012; Gerba, 2012), learning models on entrepreneurship education courses (Graevenitz et al., 2010) and proposing theoretical models of entrepreneurship and emotions (Jones and Underwood, 2017). As an example, Abou-Warda (2016) supported by qualitative and quantitative research approaches, developed the framework of technology-based entrepreneurship education from the following three aspects: centres for innovation and entrepreneurship, technology entrepreneurship professors/education, and technology entrepreneurship programmes/courses. Additionally, after systematically reviewing the methods in entrepreneurship education research, Blenker et al. (2014) identified five levels in entrepreneurship education activities, namely, regional and national levels, institutional level, programme level, course level and student and teacher level (see a review). From the above literature, it can be found that researchers studied entrepreneurship education from various viewpoints (e.g., courses and activities). Attitude is the extent to which an individual forms positive or negative opinion on becoming an entrepreneur (Farashah, 2013). Attitude is important for changing or enhancing individuals' intentions and behaviour. Students' attitudes to entrepreneurship can be developed, based on their opinions to education (Harris and Gibson, 2008; Souitaris et al., 2007). In order to enrich policy in entrepreneurship education, researchers investigating the attitudes and motivation of female students towards entrepreneurship revealed that clear goals should be set for entrepreneurship education (Sowmya et al., 2010). Thus, we defined perceived positive attitudes towards entrepreneurship education as the perception on entrepreneurship training and courses during the COVID-19 pandemic.

Perceived Self-Efficacy

Self-efficacy is a social-cognitive process that can be adopted to explain a person's attitude, intention, performance, and behaviour towards entrepreneurship (Wardana et al., 2020). Self-efficacy can be described as a person's confidence in their performance and abilities to be successful (Puni et al., 2018).

Perceived self-efficacy is a measurement of individuals' abilities and skills that can indicate their beliefs and intentions on how they want to perform and achieve (Shrivastava and Acharya, 2020). Perceived self-efficacy has been adopted as a predictor to intentions and performance that enhance EI (Boyd and Vozikis, 1994; Chen et al., 1998). In this study, perceived self-efficacy is defined as university students' confidence on entrepreneurial abilities and performance during the COVID-19 pandemic. Consequently, we hypothesized that:

H1. Perceived self-efficacy (PS) positively influences perceived positive attitudes towards entrepreneurship education (PPAEE) during COVID-19.

Perceived Social Norms

Social norms are defined as informal rules that are not written; however, they might influence individual perceptions (Elster, 1989). Social norms refer to the perceptions of a person who could be influenced from surrounding people, such as friends, family members and important persons (Liñán, 2008). Especially, individuals in society belong to social groups. Some people may prefer to follow social norms, while others may be annoyed by perceived social norms (Iyer et al., 2007). After analysing 170 questionnaires from students in Quaid-i-Azam University, Yousaf et al. (2015) found that when compared to students' skills and capabilities, subjective norms have a significant effect in improving their intentions to be entrepreneurs. Thus, perceived social norms can be defined as the extent of university students' care about opinions from friends, family, teachers, and the person who is important to them. The hypothesis is proposed as follows:

H2. Perceived social norms (PSN) positively influence PPAEE during COVID-19.

Perceived Entrepreneurial Barriers

Researchers examined the barriers in entrepreneurship that were affected by intrinsic and extrinsic factors. Intrinsic factors include personal skills, characteristics and abilities (Ibrahim and Goodwin, 1986). Extrinsic factors are those that are out of an entrepreneur's control, including government regulations and taxes (Theng and Boon, 1996). Stamboulis and Barlas (2014) concluded that there are three categories of entrepreneurial barriers, namely, individual barriers (family and education), organizational barriers (financing, physical resources and marketing) and environmental barriers (socio-cultural factors and rules and regulations). Giacomini et al. (2011) found there were differences in barrier perceptions among students from America, China, India, Belgium and Spain. They found that compared to American, Belgian and Indian students, Chinese and Spanish students rated perceived risk as a less important barrier in entrepreneurship. They also proved that lack of initial capital is the main barrier to starting businesses. Some barriers may have negative effects on EI that should be considered in entrepreneurship education (Shahverdi et al., 2018). Perceived entrepreneurial barriers is defined as university students' difficulties in entrepreneurship during

the COVID-19 pandemic, including lack of initial capital, experience, ideas, and formal help. Hence, we hypothesized that:

H3. Perceived entrepreneurial barriers (PEB) negatively influence PPAEE during COVID-19.

Entrepreneurial Intention

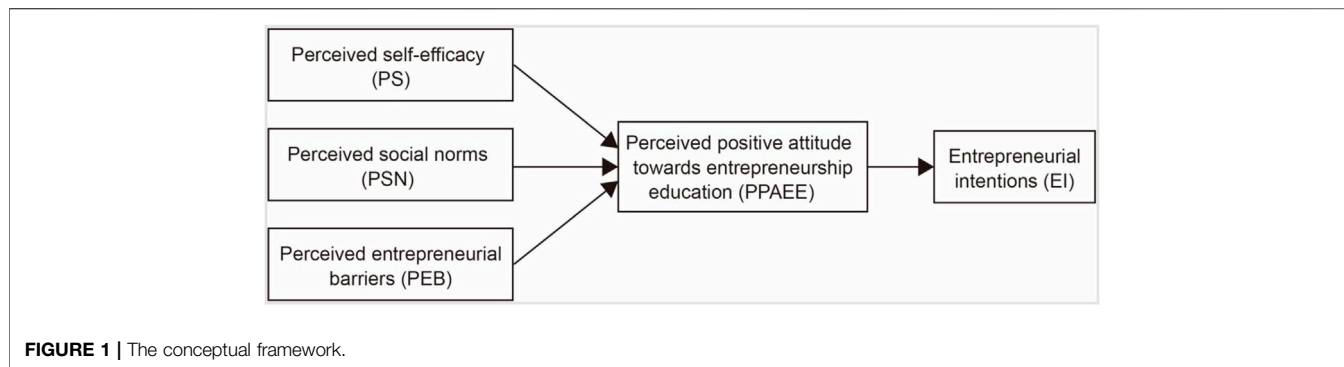
The theory of planned behaviour (TPB) is based on an individual's rational choice and intention that may predict a certain behaviour (Küttim et al., 2014). Attitudes towards behaviour, subjective norms, and perceived behavioural control can be adopted to predict intentions to perform behaviours (Ajzen, 1991). This theory has been applied in the studies of entrepreneurship, such as the effect of entrepreneurship education and EI (Shrivastava and Acharya, 2020). Furthermore, intention is a predictor of behaviour and action, such as a self-plan to become an entrepreneur or to start entrepreneurship activities in the future (Lent et al., 1994; Souitaris et al., 2007; Shrivastava and Acharya, 2020). Thus, TPB can be conducted to analyse intentions in an entrepreneurship setting. The conceptual framework of this study is presented in **Figure 1**.

Nabi et al. (2010) defined entrepreneurial intention as individual awareness that he/she plans to set up a new business in the future. It also means that a person wants to develop entrepreneurship activities (Mohamad et al., 2015; Souitaris et al., 2007). Several researchers found that there is a significant correlation between entrepreneurial education and EI (Harima, et al., 2021; Peterman and Kennedy, 2003). Students' EI had increased since they had received entrepreneurship education (Sowmya et al., 2010). Further, after analysed the data from 308 university students, Krichen and Chaabouni (2021) proved that perceived educational support positively affects entrepreneurial activities during the COVID-19. However, several researchers found that there was no effect to students' intentions after taking entrepreneurship education and some students' intentions even decreased (Mentoor and Friedrich, 2007; Oosterbeek et al., 2010). Various researchers explored the factors that affect entrepreneurship education and EI (see **Table 1**), while only a few studies investigated EI at a time of crisis (e.g., COVID-19). In this study, entrepreneurial intention can be defined as university students' intention to participate into entrepreneurship. Hence, we hypothesized that: H4. Perceived positive attitudes towards entrepreneurship education (PPAEE) positively influence EI during COVID-19.

METHODS

Data Collection

In order to ensure the validity and reliability of the questionnaire, it was translated into Chinese by a professional researcher, and then translated back to English by another language researcher. A pilot study was then conducted with ten students at a university to verify if the questionnaire was clear and easily understood. No problems

**TABLE 1 |** Review previous research on entrepreneurial intention.

Authors	Sample size	Analysis method	Results
Boubker et al. (2021)	98 management students from the Laayoune higher School of Technology	Structural equation modeling–Partial least square	There is a significant relationship between entrepreneurship education, attitude towards entrepreneurship and entrepreneurial intention
Liu et al. (2021)	308 students from a Chinese university	Confirmatory factor analysis, multivariate analysis of variance	Both the change of entrepreneurial intention and the reduction of entrepreneurial barriers reflect the effectiveness of entrepreneurial education
Iwu et al. (2021)	125 students from a South African university	Factor analysis, regression analysis	Perceived entrepreneurship education is valuable and motivating student entrepreneurial intention
Shahverdi et al. (2018)	288 students from Malaysian research universities	Confirmatory factor analysis	Entrepreneurial education moderated the relationship between perceived barriers and entrepreneurial intention
Puni et al. (2018)	357 students from a public university in Ghana	Linear multiple regression	Entrepreneurial education can positive effect and improve entrepreneurial intention. Self-efficacy can promote entrepreneurial intention
Adekiya, and Ibrahim (2016)	357 final year students of Bayero University Kano	Linear multiple regression analysis	Perceived appropriateness, perceived effectiveness and entrepreneurial training have positive effects on students' entrepreneurial intention
Tsai et al. (2014)	308 valid responses	Regression analysis	Entrepreneurial self-efficacy and subjective norm positively affect entrepreneurial intention
Küttim et al. (2014)	55,781 students from 17 European countries	Frequencies and binary logistic regression	Social norm has no significant effects on entrepreneurial intentions. Entrepreneurial intention is positively impacted by the participation in entrepreneurship education
Farashah (2013)	601 individuals from Iran	Binary logistic regression	Self-efficacy, fear of failure, and desirability of entrepreneurial career are predictors to entrepreneurial intention
Elnadi and Gheith. (2021)	259 students from a public university in Saudi Arabia	Partial least square structural equation modelling	Gender has a significant moderating effect on entrepreneurial self-efficacy and entrepreneurial intention

were found. Then, the data was collected via social media (e.g., WeChat and email) direct to students in universities in Shanghai, China P.R. The target participants of this study were the students who have taken or attended the entrepreneurial courses or training at university. For participants, there is no requirements on their major. Before the data collection, the participants were informed of the research procedure. At the beginning of the survey, participants were asked to rate their perceptions and responses in the questionnaire. All participants were volunteers. There was no time limitation. In order to meet the requirement of this study, the data was cleaned. A total of 318 valid data was collected from 122 (38.4%) males and 196 (61.6%) females. The participants were mostly 19–22 years old (82.4%). The demographic information is analysed by frequency analysis (see **Table 2**).

Measures

All measures and scales were extracted from previous studies. The measures and scales of perceived positive attitudes on entrepreneurship education were adopted from Adekiya and Ibrahim (2016). The measures and scales of perceived self-efficacy were supported by Zhao et al. (2005); the measures and scales of perceived social norms were adopted from Boissin et al. (2017); the measures and scales of perceived entrepreneurial barriers were developed by Giacomini et al. (2011); and the measures and scales of EI were supported by Liñán et al. (2011). The measures and scales are presented in **Supplementary Appendix SA**. All the items were measured by a five-point Likert scale format ranging from “1 = strongly disagree/completely unsure/not at all/no confidence” to “5 = strongly agree/completely sure/very much/complete confidence.”

TABLE 2 | Demographics of participants in this study.

Variables	Characteristic	Frequency	Percentage (%)
Gender	Female	196	61.6
	Male	122	38.4
Age (Years)	Less than 18	11	3.5
	19–20	134	42.1
	21–22	128	40.3
	23–24	39	12.3
	25–26	4	1.3
	Above 27	2	0.6
Year of Study	1st Year	53	16.7
	2nd Year	122	38.4
	3rd Year	43	13.5
	4th Year	84	26.4
	Master students	16	5.0
Family income every month (Chinese yuan)	Up to 5,000	44	13.8
	5,001–10,000	88	27.7
	10,001–15,000	68	21.4
	15,001–20,000	47	14.8
	20,001–25,000	19	6.0
	25,001–30,000	14	4.4
	Over 30,000	38	11.9
Occupations of father	Private sector	82	25.8
	Self-employed sector	35	11
	State-owned sector	26	8.2
	Government sponsored institution	40	12.6
	Retired	79	24.8
	Other	56	17.6
Occupations of mother	Private sector	64	20.1
	Self-employed sector	34	10.7
	State-owned sector	29	9.1
	Government sponsored institution	42	13.2
	Housewife	14	4.4
	Retired	66	20.8
	Other	69	21.7

Both exploratory factor analysis and confirmatory factor analysis are conducted in the data analysis. First, the reliability is tested by SPSS Statistics 25.0. The threshold of Cronbach's alpha is higher than 0.7 (Hair et al., 2010). The factor loading should be above 0.5, and the value of Kaiser-Meyer-Olkin metrics (KMO) needed to be above 0.5 (Hair et al., 2010). Further, the confirmatory factor analysis is operated in SPSS Amos 23.0. The criteria of Root Mean Square Error of Approximation (RMSEA) values should be below than 0.6 (Hu and Bentler, 1999).

RESULTS

Exploratory Factor Analysis

In the first step, the reliability and validity of the model was analysed. The validity is measured by three indices, namely, factor loadings, average variance extracted (AVE) and composite reliability (CR). The result of exploratory factor analysis is presented in **Table 3**. There are 26 items, including perceived positive attitudes towards entrepreneurship education, perceived social norms, perceived self-efficacy, perceived entrepreneurial barriers, and EI. It can be seen that the scores of Cronbach's alpha are between 0.891 and

0.954, the KMO = 0.922, CR > 0.950, AVE > 0.760. Correlation of the constructs is significant (see **Table 4**), which indicated the reliability for the following analysis.

Hypothesis Testing

Based on the structural equation modelling, a fitting model was calculated in SPSS Amos 23.0. In total, the validity of the measurement model is confirmed. The relationships between constructs are presented in **Figure 2**. The overall fit statistics are presented in an acceptable level (see **Table 5**). As shown in **Table 6**, it can be found that H1 ($\beta = 0.601$, $t = 8.168$, $p < 0.001$), H2 ($\beta = 0.518$, $t = 9.204$, $p < 0.001$), and H3 ($\beta = 0.285$, $t = 4.067$, $p < 0.001$) were supported. H4 ($\beta = -0.033$, $t = -0.618$, $p = 0.536$) was not supported (see **Table 6**).

DISCUSSION AND CONCLUSION

The aim of this study was to investigate the relationship between perception and EI in university students during the time of COVID-19. Perceived self-efficacy, perceived social norms, perceived entrepreneurial barriers and perceived positive attitudes towards entrepreneurship education and EI are considered. This study presented an insight into

TABLE 3 | Validity and reliability evidence.

Construct	Item	Factor loading (>0.7)	Cronbach's alpha (>0.7)	CR (>0.7)	AVE (>0.5)
Perceived positive attitudes towards entrepreneurship education (PPAEE)	PPAEE 1	0.733	0.935	0.952	0.766
	PPAEE 2	0.856			
	PPAEE3	0.813			
	PPAEE4	0.791			
	PPAEE5	0.841			
	PPAEE6	0.860			
Perceived social norms (PSN)	PSN1	0.786	0.891	0.944	0.809
	PSN2	0.830			
	PSN3	0.766			
	PSN4	0.744			
Perceived self-efficacy (PS)	PS1	0.733	0.918	0.952	0.831
	PS2	0.761			
	PS3	0.796			
	PS4	0.778			
Perceived entrepreneurial barriers (PEB)	PEB1	0.761	0.920	0.950	0.760
	PEB2	0.690			
	PEB3	0.863			
	PEB4	0.882			
	PEB5	0.878			
	PEB6	0.875			
Entrepreneurial intentions (EI)	EI1	0.763	0.954	0.955	0.779
	EI2	0.864			
	EI3	0.821			
	EI4	0.911			
	EI5	0.901			
	EI6	0.920			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.922	—	—	—
Bartlett's Test of Sphericity	Approx. Chi-Square	7,425.521			
df		325			
Sig.		0.000			

Extraction Method: Principal component analysis. Rotation Method: Varimax with Kaiser normalization. CR, composite reliability; AVE, average variance extracted.

TABLE 4 | Summary of principal component analysis of the constructs.

	PPAEE	PSN	PS	PEB	EI
PPAEE	1	—	—	—	—
PSN	0.463 ^a	1	—	—	—
PS	0.577 ^a	0.471 ^a	1	—	—
PEB	0.233 ^a	0.499 ^a	0.235 ^a	1	—
EI	0.415 ^a	0.232 ^a	0.567 ^a	0.137 ^b	1

^aCorrelation is significant at the 0.01 level (2-tailed).

^bCorrelation is significant at the 0.05 level (2-tailed).

variables that related to university students' EI during the COVID-19 crisis.

Discussions

Although considerable empirical studies (Adekiya and Ibrahim, 2016; Elnadi and Gheith., 2021; Iwu et al., 2021; Liu et al., 2021; Shahverdi et al., 2018) explore the factors that affect EI in different countries, most of them have not studied the relationship in the time of COVID-19. Before the TPB was adopted to test the relationship on EI (Boubker et al., 2021; Fragoso et al., 2019), there still needed to be further research on EI during the COVID-19 pandemic. This research studied four hypotheses via the research model. After data analysis, three

proposed hypotheses were accepted, and one hypothesis was rejected.

The first hypothesis of this study (H1) indicated that perceived self-efficacy positively influences university students' positive attitudes towards entrepreneurship education. Specifically, it shows that perceived self-confidence increases students' positive attitudes towards the course of entrepreneurship. This means that the more confidence they have in themselves to develop their own businesses, the more satisfied and happier they may be in engaging in entrepreneurial education. The finding is in line with a previous study by Farashah (2013). Puni et al. (2018) found that self-efficacy and entrepreneurship education have a positive relationship.

A possible explanation for the finding may be that students like to create new products, develop new ideas and identify new business opportunities. It could further imply that university students intend to operate a business, rather than be employed by a company during the time of COVID-19. Additionally, it could also imply that students recognize the limited employment opportunities available during COVID-19. Therefore, they tend to have more creative and more inspired ideas for their own businesses.

The second hypothesis (H2) found that perceived social norms positively influence university students' perceived positive

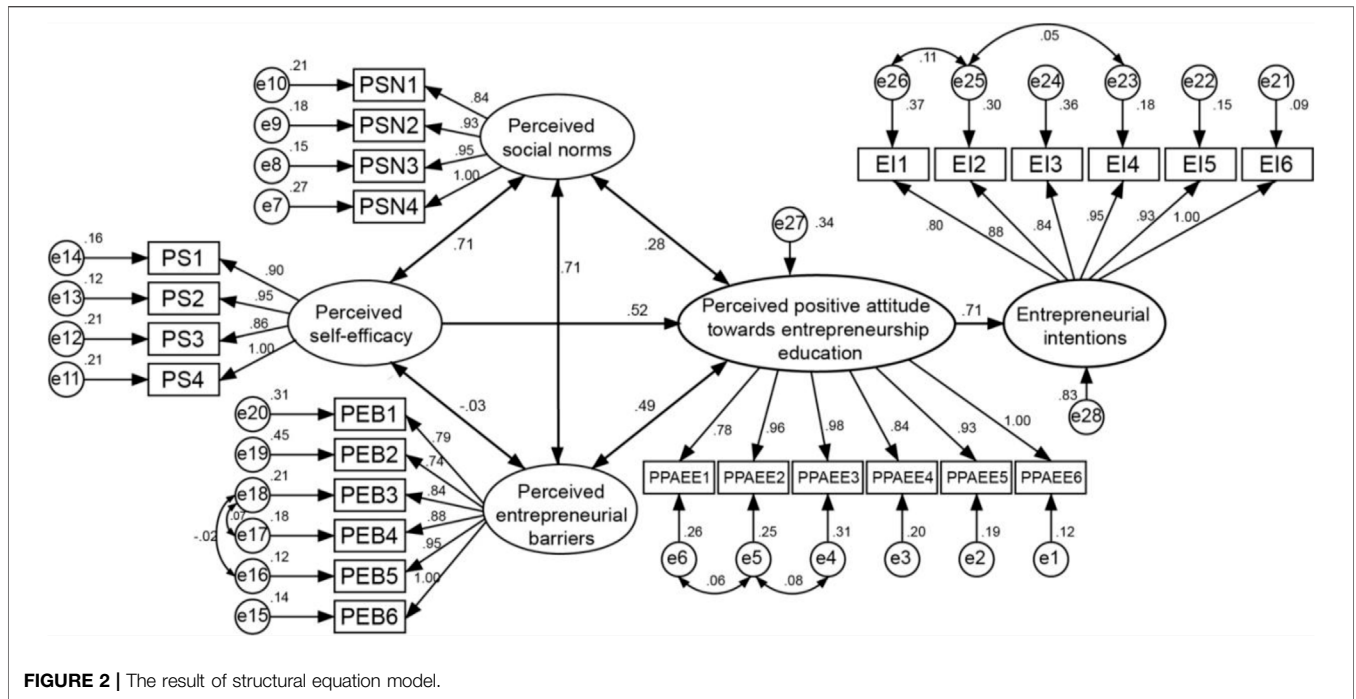


TABLE 5 | Fit indices of the model.

χ^2/df	GFI	NFI	CFI	AGFI	IFI	TLI	RMSEA
2.590	0.853	0.902	0.937	0.821	0.938	0.930	0.071

χ^2 , chi-square; *df*, degree of freedom; *GFI*, goodness of fit index; *NFI*, normed fit index; *CFI*, comparative fit index; *AGFI*, adjusted goodness-of-fit index; *IFI*, incremental fit index; *TLI*, tucker lewis index; *RMSEA*, root mean square error of approximation.

attitudes towards entrepreneurship education. The finding corroborates with the findings of previous works by Boubker et al. (2021). This finding implies that students who have or run businesses are influenced by family, friends, teachers and other important persons, and thus, an influential person’s opinion would affect a student’s attitude to entrepreneurship education. It further suggests that during the time of COVID-19, these close relationships have an important effect on students’ decision-making. Therefore, the finding reveals that if university students get support from relatives and friends, they would like to

devote themselves to entrepreneurship education and improve their entrepreneurial knowledge.

The result of the third hypothesis (H3) showed that there is no relationship between perceived entrepreneurial barriers and perceived positive attitudes towards entrepreneurship education. This result supports previous findings that lack of support was not considered as a potential barrier for an entrepreneur (Shahverdi et al., 2018). It indicates that during COVID-19, positive attitudes towards entrepreneurship education have no relationship with entrepreneurial barriers (e.g., lack of experience, lack of ideas, and lack of assistance or of formal help). As both intrinsic and extrinsic barriers of entrepreneurship may affect perceptions, this should be explored separately in entrepreneurship education. During COVID-19, the entrepreneurship courses and training are mainly conducted online. Significantly, there are almost no opportunities for students to visit or do internships in factories and companies that may influence their perception on entrepreneurial barriers as company operations may be

TABLE 6 | Theoretical framework testing.

Hypotheses	Estimate	S.E.	C.R.	P	Conclusion
H1 Perceived self-efficacy → Perceived positive attitudes towards entrepreneurship education	0.518	0.056	9.204	***	Accepted
H2 Perceived social norms → Perceived positive attitudes towards entrepreneurship education	0.285	0.054	4.067	***	Accepted
H3 Perceived entrepreneurial barriers → Perceived positive attitudes towards entrepreneurship education	-0.033	0.054	-0.618	0.536	Rejected
H4 Perceived positive attitudes towards entrepreneurship education → Entrepreneurial intentions	0.601	0.074	8.168	***	Accepted

***<0.001; *S.E.*, standard deviation; *C.R.*, critical ratios.

influenced by the effects of COVID-19 and cannot offer opportunities for students to be involved through internships or part-time work. Limited work experience may influence their perceptions on barriers or risks of entrepreneurship.

With regard to EI, the fourth hypothesis (H4) indicated that students who have positive attitudes towards entrepreneurship education may be intending to become entrepreneurs. The finding supports previous studies by Boubker et al. (2021); Küttim et al. (2014); Iwu et al. (2021); Puni et al. (2018) and Liñán (2008). Students can identify opportunities and form creative ideas after having entrepreneurship education. A possible reason for this finding may be that students have positive attitudes to entrepreneurship education, which help them to increase their possibility of engaging in entrepreneurship and improve their impetus to develop their own businesses. Moreover, earlier findings indicate that as perceived entrepreneurship education can enhance students' knowledge and abilities to find opportunities, it directly affects EI (Zhao et al., 2005). Additionally entrepreneurship education provides entrepreneurial knowledge, theories and cases in the study course, and the students get support to improve their EI. Thus, perceived positive attitudes towards entrepreneurship education can inspire students to start their own businesses during the time of COVID-19.

Theoretical and Practical Implications

The findings of the current study present theoretical and practical implications and suggestions for both public organizations and universities. In theoretical implications, our research findings highlight the perceptions in understanding the university students' EI during COVID-19. Therefore, we contribute to a better understanding of university students' entrepreneurship education in the period of COVID-19. Furthermore, this study develops a new model that is supported by data from Shanghai universities. This study enriches the entrepreneurship literature by considering the relationship of perceptions, perceived positive attitudes towards entrepreneurship education and EI. Finally, we extend the use of the TPB with a focus on entrepreneurship education and EI during the period of COVID-19. Thus, this study enriches the literature on university students' perceptions and entrepreneurship education during COVID-19.

In practical implications, this research studied the perceptions and perceived positive attitudes towards entrepreneurship education in order to improve EI. First, further teaching methods should be explored in entrepreneurship. During the time of COVID-19, students can learn online, which is supported by video and audio technology, and obtain creative ideas from the e-training process. Entrepreneurship education triggers students' innovative thinking and creativity on entrepreneurship. The universities should set up an entrepreneurship education centre to provide professional and business practice opportunities to students. Second, universities should create an entrepreneurial atmosphere for the public and provide support to students. Company managers, factory operators and entrepreneurs should be engaged in entrepreneurship education so as to extend students' understanding with up-to-date news in entrepreneurship. Third, our study also provides some suggestions

to teachers and education organizers. Barriers of entrepreneurship may be considered as an important section in entrepreneurship education. As most of the teachers have not received up-to-date business service training, it is essential to organize and establish an entrepreneurship team to not only improve the quality of entrepreneurship education and to help tackle the students' entrepreneurship process but also to meet students' requirements in entrepreneurship.

Our study offers some suggestions to universities, educational organizations and for government policies. Students' perceptions and attitudes towards entrepreneurship education should be considered as vital factors for enhancing EI; creating more opportunities and entrepreneurial activities. Students should be fully involved in the entrepreneurship education training, course development and programmes. Thus, education organizers and university teachers should investigate students' perceptions before and after entrepreneurship education, for example, track their attitudes on entrepreneurship after graduation and collect feedback to their entrepreneurship education.

Limitations and Future Directions

There are some limitations in this research. First, a small sample size was adopted to analyse the EI. Future studies can study more data from different areas of China P.R. In addition, there is no comparison of before and during the COVID-19 setting. It would be necessary to operate such a comparison, which may enrich the practical implications. Third, relevant influential factors such as students' perceived desirability and perceived feasibility should be adopted to enrich the EI research model. Future studies could also adopt both quantitative and qualitative research methods to provide insight into the relationships among variables. Further empirical studies may focus on students from different disciplines that may have some effect on their attitudes to entrepreneurship education and EI during the COVID-19 pandemic.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusion of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Shanghai University of Engineering Science. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

PL contributed to design of the study. BL contributed to the data collection. PL, BL, and ZL performed the data analysis. PL wrote the first draft of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2021.770710/full#supplementary-material>

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