Empowering Social Responsibility through Education: Development and Validation of a Social Entrepreneurship Education Scale in Chinese Higher Education

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Abstract

This study addresses a critical gap in educational research by developing and validating a perception scale for Social Entrepreneurship Education (SEE) in Chinese higher education. As the role of universities in shaping socially responsible youth becomes increasingly vital, especially in rapidly transforming Asian societies, a robust instrument to assess students' engagement with SEE is urgently needed. Drawing on a survey of 974 university students in Chongqing, China, this study employs Confirmatory Factor Analysis (CFA) and Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the structure and antecedents of SEE perception. The analysis identifies five core components of SEE: pre-program awareness, program engagement, post-program impact, social implementation, and future commitment. Results reveal that prior experience, self-efficacy, social support, and institutional factors significantly influence SEE engagement, while empathy and moral obligation show limited predictive power. The validated scale offers practical and theoretical implications for policymakers and educators seeking to advance socially transformative education. This tool provides a framework for assessing SEE effectiveness and informing context-sensitive curriculum design for Asian youth empowerment.

Keywords: Social entrepreneurship education, Social entrepreneurship education antecedents, Partial least square structural equation modeling

Introduction

Social entrepreneurship (SE) is a global movement that uses innovation to solve social problems. Its primary goals are to improve society, promote social change, and accelerate social progress by creating value for the community (Fauzi, 2025). Innovative and durable strategies are used to bring about transformative social changes by developing social enterprises. The event under study can have economic, psychological, social, and environmental impacts (Méndez-Picazo, 2021). It aids the economy and eliminates market failures. Promoting social

change through SEE requires improving public education and encouraging entrepreneurship. Higher education institutions are critical in promoting cross-sector collaboration and supporting social innovation initiatives (Pittz & Intindola, 2021). Research allocations, external partnerships, and research structural reforms are necessary to implement SEE in HEIs effectively. Despite the increased number of SEE studies, no SEE scale remains. This may lead some researchers to use entrepreneurship education (EE) instead of SEE. SEE and EE are different

yet related, with SEE emphasizing social issues, change, and community sustainability, while EE emphasizes profit, expansion, and trade. Unlike EE, which focuses on profit-oriented businesses, SEE promotes social, environmental, and ethical entrepreneurship that targets poverty, healthcare, or the environment (Paswan, 2025). While there are scales for EE, adopting these scales cannot capture the specific nuances of SEE. Intention models like that of Bläse (2025) highlight the drivers for pursuing impact-oriented ventures. Chinese students' interest in SE is increasing, although they often lack value orientation. Many young entrepreneurs want to tackle socio-economic problems. However, few studies examine Chinese students' impressions of the multifaceted SEE experience. This calls for a customized SEE measurement based on theories. Our measurement advances the models by shedding light on the underlying motivations of SEE engagement from the learners' perspective. The development of the scale facilitates understanding whether generalized or localized perspectives influence Chinese students' aspirations for social engagement – with

implications for optimizing the preparation of future decision-makers.

The objectives of this study

1. To develop and validate a perception measurement scale for Social Entrepreneurship Education (SEE) using Confirmatory Factor Analysis (CFA), structured around five key dimensions: pre-program, program delivery, post-program outcomes, perceived impact, and future commitment.

2. To examine the influence of key antecedent variables— including prior experience, empathy, moral obligation, social self-efficacy, perceived social support, social entrepreneurial intent, and higher education institution (HEI) factors—on student perceptions of SEE using Partial Least Squares Structural Equation Modeling (PLS-SEM).

3. To identify the most significant predictors of student engagement in SEE and propose practical recommendations for designing more effective SEE programs in higher education, particularly within the Asia-Pacific context.
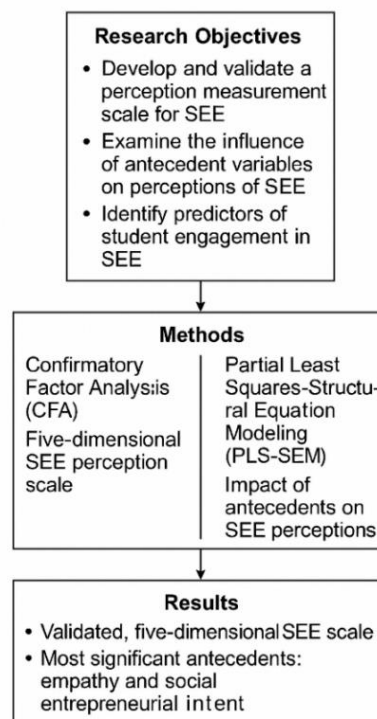

Figure 1 Roadmap linking research objectives, analytical methods, and expected results of the SEE perception study

Literature review

The significance of the study

This study makes an important scholarly contribution by filling critical gaps in the assessment of social entrepreneurship education (SEE), an under-researched area that is often confused with entrepreneurship education (EE) more broadly (Alourhzal et al., 2022). We describe unique SEE dimensions that focus on fostering social innovation and social impact. We introduce and validate a new tool that evaluates students' perceptions of SEE experiences, representing the first empirical assessment of this complex phenomenon. This fills substantial measurement gaps in the existing literature. By integrating the large body of theoretical and empirical work on SEE outcomes, we provide one of the initial, groundbreaking scales available to advance scientific understanding of this work and allow practitioners to assess those learning initiatives (Halsall, 2022). This study has important implications for several fronts.

SEE vs EE: We define important and cognitive differences between those two learning methodologies. Filling a significant knowledge vacuum, clarifying SEE's focus on addressing societal challenges. Scale Development: Our survey scale measuring SEE addresses an important methodological gap. A standardized quantitative instrument allows for high-quality evaluation of SEE programs. Exploring antecedent factors: Theoretical avenues investigating factors that shape the participation of Chinese students in social entrepreneurship, such as their college choice and social entrepreneurship intentions—extend the definition of this context-bound phenomenon.

Positive youth social innovation: Data up to October 2023 provides practice-informed and evidence-based insights to influence policy and classroom practice. The outcomes can impact curricula, community partnerships, and ecosystem coordination. This timely paper informs the scientific SEE literature. It serves as a guide for education, seizing the tremendous potential for societal transformation through advancing measurement frameworks appropriate to emergent conceptual maturity.

The changes in Chinese social enterprises and youth education

In 1978, China's national science and technology strategy was replaced by market-oriented management with government institutions at multiple levels (Wang, 2022). A significant impact on China is implementing a very ambitious growth strategy driven by small and medium-sized enterprises (SMEs) (Ayoungman, 2025). By 2020, there will be more than 140 million SMEs and independent entrepreneurs in China. Collectively, these enterprises have a huge impact, accounting for more than 60% of GDP, 50% of tax revenue, 79% of employment opportunities, and 68% of export-related activities (Tang et al., 2020). In 2020, government records show that nearly 2.52 million new enterprises were registered—an average of approximately 22,000 per day. The rapid growth of China's economy has led to the establishment of social enterprises (Wang, 2023). In the last decade, entrepreneurs have developed a sense of social responsibility and established several social enterprises. SE aid has improved community life and health by eliminating supply shortages, creating jobs, and solving social problems. This region is better suited to socialize and find jobs. Chinese social enterprises have addressed poverty, rural rejuvenation, employment, entrepreneurship, environmental protection, retirement, education, employment of mentally disabled people, and community services.

In 2017, the Chinese Ministry of Education launched YRDBJ to instill social values in youth through socialism and Communist Party principles, promoting patriotism and responsibility (Svensson, 2023). Despite challenges, Social Entrepreneurship Education (SEE) was integrated into YRDBJ via Project 2023 to enhance its effectiveness, viewing it as a catalyst for youth development. Chinese universities should promote social entrepreneurship by developing students' values, creativity, and sustainable economic mindsets through research and hands-on training (Svensson, 2023).

The importance of SEE

Social entrepreneurship education is vital for individual and societal progress, recognizing commercial

opportunities while promoting social responsibility and awareness. Combining resources addresses problems, fosters business growth and practical solutions (Ndou, 2021) . Like entrepreneurial education (EE) , social entrepreneurship education (SEE) is increasingly acknowledged for its economic benefits, contributing to social and economic value. SEE trains students to grow businesses for worldwide development. Consequently, universities globally implement SEE programs, motivated by students' wish to impact society positively. Support comes from GIZ, ASHOKA, Schwab Foundation, and Skoll Centre for Social Entrepreneurship (Shekhawat, 2022).

Collaboration among universities, local governments, and businesses is critical to fostering innovation, engaging the community, and improving understanding of social and economic issues. SEE has gained widespread dissemination due to its significant global relevance. SEE requires specific curricula integrating economic and social components to provide students with practical skills, experiences, and knowledge (Shahid & Alarifi, 2021). The approach encourages hybrid approaches and requires students to balance social, economic, and public sector principles. Customized SEE programs also help promote entrepreneurship in academic settings. Nevertheless, it is essential to recognize that providing education that effectively promotes the growth of entrepreneurial skills can be fraught with difficulties. The SEE program cultivates social entrepreneurs by teaching them skills to solve social problems. Collaboration and hands-on learning are essential for developing thriving social enterprises.

Measuring the SEE in Higher Education Institutions

Social Entrepreneurship Education (SEE) is gaining popularity with the growing focus on sustainable growth. It fosters entrepreneurial mindsets and equips students with skills to start and manage businesses while promoting collaboration to create social value. SEE is not the same as EE because it requires a unique mix of technical, financial, and human skills. Morris (2021), have demonstrated that SEE works well in academic contexts and emphasizes the

need to equip professionals to deal with social issues from various fields. SEE students should understand private donations, corporate profits, foundations, and government grants to social entrepreneurs. SEE programs should incorporate missions and commitments to help students understand the motivations underlying social enterprises. SEE in higher education promotes empathy, social sustainability, and well-being, especially in competitive contexts. SEE fosters personal growth, opportunity recognition, proactive problem-solving, and engagement in social and environmental issues. García-González and Ramírez-Montoya (2021) asserts that experiential SEE learning creates a community of practice that helps students become social entrepreneurs. Further research is needed to differentiate SEE from traditional entrepreneurship education.

Instead of using an SEE scale, Naveed (2021) use EE to distinguish between the two because SEE has social and economic aspects. Rakicevic (2023) could improve their model using SEE instead of EE. They use EE to influence social entrepreneurship intention and perceive the importance of social entrepreneurship (PISE) as a mediator. Students' views and attitudes influence the effectiveness of the SEE program. This study assesses SEE's impact and students' impressions before, during, and after the program, enabling researchers to understand how it affects their motivations and futures (Tinto, 2022). This study measures SEE in five steps based on students' perceptions:

The Social Entrepreneurship Education (SEE) assessment framework consists of five stages: pre-program evaluation of student expectations and motivations; mid-program assessment of course feedback; post-program evaluation of skill development and satisfaction; impact assessment of SEE's influence on growth and community engagement; and evaluation of future improvements and student commitment beyond high school. This comprehensive approach captures insights throughout the curriculum, ensuring effectiveness and alignment with educational requirements.

RQ1: What is the SEE perception scale for students?

Social entrepreneurship education intention

The literature highlights the complexity of social entrepreneurial intentions (SEI) and emphasizes the importance of understanding the factors that motivate them. Hassan (2020) particularly emphasizes the influence of self-efficacy, attitudes, beliefs, and social support on perceived desirability and feasibility. Tan (2021) extend this framework, which includes personality, subjective norms, social and human capital, perceived behavioral control, and perceived desirability and feasibility of social entrepreneurship as additional variables.

However, Wach (2023) believe that the unique characteristics of SE require a departure from the conventional measures used in theories such as the theory of planned behavior (TPB) and other models of entrepreneurial intentions. To account for these differences, they postulate four variables that influence SEI: Empathy, moral judgment, self-efficacy, and perceived availability of social support. These variables replace traditional measures of behavioral attitudes, social norms, and internal and external behavioral control.

Wach et al. (2023) conceptual framework is grounded in established theories such as the Theory of Entrepreneurial Intention. Similarly, Sutrisno, Prabowo, and Kurniawan (2023) apply the Theory of Planned Behavior (TPB), which posits that intentions can accurately predict actual behavior. Interested readers can consult, for a more comprehensive literature review on entrepreneurial intentions. Examines the determinants of SEE, which can be divided into three levels. First, researchers categorize the external environment into political factors, such as the legal recognition of social entrepreneurship, and economic factors, such as the availability of external funding. The second level, the organizational level, consists of the organizational learning strategy, management policy, and organizational culture. Third, the individual level consists of knowledge, skills, abilities, attitudes, and motivation.

In addition, Duong's (2023) extension of Mair and Noboa's model has shown that prior experience predicts SEI through important factors such as self-efficacy. This study examines the antecedents of intention to SEE by integrating Hockert's model SEI with higher education-related variables such as study characteristics, and higher education institution characteristics (HEI) (Hockerts & Di Lorenzo, 2023). Sustainability strategies include SE courses, incubators, networking, and integration initiatives. This study pioneers combining academic intentions with SEI elements, bridging academic and practical SE. This section formulates research questions.

RQ2: What motivates young Chinese people to enroll in SEE?

This study seeks to identify seven factors influencing students' decision to enroll in higher education institutions that offer SEE. The study identified prior experience (EXP), empathy (EMP), moral commitment (OBL), self-efficacy in social entrepreneurship (SEF), perceived social support (SUP), and social entrepreneurship intent (SOC)as significant predictors of social entrepreneurship intention. SEE provides the skills and knowledge necessary for SE, making it an appropriate choice for prospective students and individuals who want to start social enterprises. There is a strong correlation between the factors that drive people to SE and the benefits of SEE. Thus, the elements identified by Hockerts and Di Lorenzo (2023) that influence individuals to become social entrepreneurs positively correlate with SEE. Therefore, the researchers formulated Hypotheses 1 to 6 as follows:

H1: Prior experience (EXP) with SE positively correlates with SEE.

H2: Empathy (EMP) is positively related to SEE.

H3: Moral commitment (OBL) is significantly positively related to SEE.

H4: Social entrepreneurship (SEF) self-efficacy is positively related to SEE.

H5: Perceived social support - positively related to SEE.

H6: Social entrepreneurship intent (SOC) is positively related to SEE.

The seventh latent factor was enroll in higher education (HEI), which included related resources, reputation, prominent alumni, and faculty expertise in social entrepreneurship. Mitić and Mojić (2020) have

found that several academics consider reputational factors, financial considerations, career prospects, the quality of degree programs, their structure, type and diversity, and location as influencing factors in the choice of higher education. Gaşpar and Soares (2021) divided thirty variables into six factors: study characteristics, prospects, HEI attributes and HR friendliness, external influences, location and study costs, and individual interests. All HEI

items had the same characteristics at the organizational level factor, which could also positively affect SEE. This study shows that.

H7: The researchers propose that the decision to enroll in a higher education institution (HEI) is positively associated with social entrepreneurial education (SEE). All hypotheses are depicted in Figure 2:
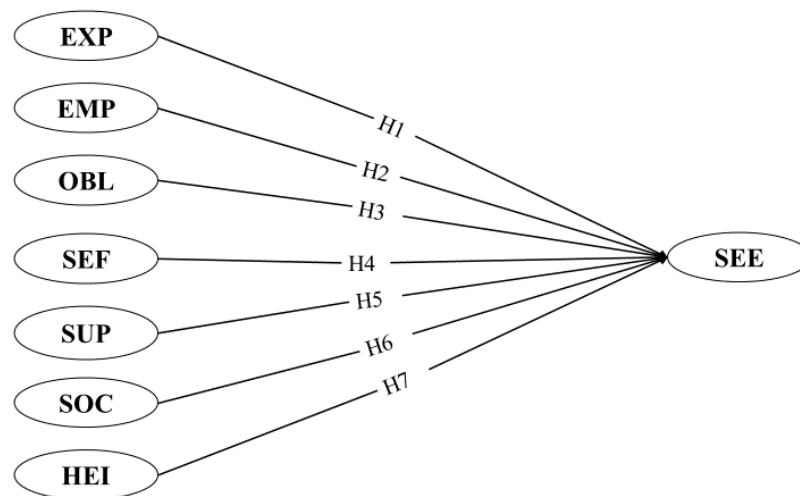

Figure 2 Hypothesis

Research methods

Population and sample

The researchers employed an appropriate sampling approach to determine a sample size of 400 students in Chongqing, China, based on the assumption of an unknown population size. The effect size and statistical power calculations for a structural equation model revealed a required sample size of at least 922 individuals, based on 12 latent variables and 40 observations, to achieve a 0.05 probability level, 0.8 power, and 0.1 effect size.

Researchers collected data from college students in Chongqing in August 2023. Lecturers distributed the questionnaire through WeChat and QQ using WPS Smart Forms. Out of 1,057 distributed surveys, the researchers received 974 valid responses, yielding a response rate of 92.15%.

Measurement of the model

The following research builds upon Hockert's model by investigating seven factors influencing Social Entrepreneurship Education: empathy, moral responsibility, experience, self-efficacy, perceived social support, study characteristics, and college enrollment. It implements a five-point Likert scale in five distinct phases: pre-program, syllabus, post-program, during-program, and future impact. For instance, if awareness of social problems existed prior to entering the program, the course may be evaluated based on the skills it provided. Operational knowledge gained, intention to implement the social mission, and likelihood of recommending the course to others are also considered. This analysis offers forecasted insights into the capacity of education to advance social entrepreneurship.

This study explores Social Entrepreneurship Education through seven factors: empathy, moral responsibility, experience, self-efficacy, perceived social

support, study characteristics, and HEI. Assessment occurs across five program stages using a 5-point Likert scale (1=strongly disagree to agree 5=strongly). Sample questions evaluate students' ability to identify social problems pre-program, assess course skill development, measure operational knowledge post-program, verify social mission implementation, and gauge future program advocacy.

Questionnaire on the expert committee for SEE

Experts collaborated to develop a thorough Social Entrepreneurship Education (SEE) assessment questionnaire. The expert group included education, social entrepreneurship, and questionnaire design experts for diverse viewpoints.

The development process has five phases:

1. Pre-program assessment: Experts designed questions to evaluate students' initial goals and motivations through collaborative brainstorming.

2. Program evaluation: Development of questions focused on student experiences, program support, and workshop feedback.

3. Post-program assessment: Creating items measuring SEE effectiveness and program satisfaction, incorporating quantitative and qualitative elements.

4. Impact evaluation: Assessment of SEE's influence on students' personal/professional development and community engagement.

5. Future planning: Development of questions regarding program improvement suggestions and students' long-term social sector commitment.

The questionnaire underwent pilot testing with a small student group, leading to necessary refinements. The collaborative approach among experts across different specializations enhanced the instrument's reliability and validity for data collection across all five phases.

Result

Table 1 Demographic of respondent

Variable	Frequency	Percentage
Gender		
Female	140	14.40%
Male	834	85.60%
Age		
Below 15 years	1	0.10
15-17 years	2	0.20
18-20 years	848	87.10%
Higher than 20 years	123	12.60%

The quality criterion of PLS-SEM and CFA

The PLS-SEM analyzes variable relationships in complex models with undersized samples without requiring normal data distribution. The method evaluates both measurement and structural models through specific criteria. Bootstrapping determines result uncertainty using fit indices SRMR (below 0.08), d_{ULS}, and d_G. The measurement model uses Cronbach's alpha, Jöreskog's rho, and Dijkstra-Henseler's rho to evaluate internal consistency, with a minimum value of 0.70. While discriminant validity requires Heterotrait-Monotrait correlations to be less than 0.85, convergent validity requires an Average Variance Extracted (AVE) above 0.50 and indicator reliability above 0.708. In the structural model, the researchers evaluated path coefficients, R-squared values (≥ 0.35), effect sizes (≥ 0.15), and predictive relevance. The researchers deemed relationships significant when p-values were <0.05 and t-

statistics exceeded 1.96. Confirmatory factor analysis only verifies the relationships between constructs and indicators.

Table 1 shows the demographic data of 974 surveyed students from Chongqing. Of these, 834 (85.60%) were male, and 848 (87.1%) were between 18 and 20 years old.

Table 2 Model fit indexes

First-order	Saturate model			Estimate model			Hypothesis test
	Value	**HI95**	**HI99**	**Value**	**HI95**	**HI99**	
SRMR	0.025	0.014	0.015	0.051	0.016	0.017	
d_{ULS}	0.683	0.231	0.253	2.880	0.301	0.343	R
d_G	0.802	0.460	0.491	1.053	0.462	0.487	
CFA	Value	HI95	HI99	Value	HI95	HI99	
SRMR	0.025	0.014	0.015	-	-	-	
d_{ULS}	0.248	0.084	0.096	-	-	-	R
d_G	0.301	0.143	0.155	-	-	-	
Antecedent analysis	Value	HI95	HI99	Value	HI95	HI99	
SRMR	0.027	0.017	0.018	0.027	0.017	0.018	
d_{ULS}	0.295	0.115	0.132	0.295	0.115	0.132	R
d_G	0.319	0.160	0.179	0.319	0.160	0.179	

SEE scale construct

This study comprised three crucial phases. First, the researchers examined the SEE scale. Figure 2 shows the methodology used to establish SEE as the primary construct. Table 2 shows the index of model fit. Three initial lows of SRMR, dULS, and dG show the overall model fit of the first-order construct. The data and the model fit, as shown by the SRMR below 0.080.

The measurement model is not presented in a table but describes and observes the loading of each latent variable in Figure 3. The internal consistency, the reliability of the indicators, and the convergent validity of all latent characteristics exceed the criteria except for SOC3. Discriminant validity is invalid between SOC PRE and POS, as is the case between all latent components of SEE, as shown in Table 3. The study identified the most important items from the PRE, PRO, POS, IMP, and FUT

categories for the SEE scale. These items are PRE3, PRO1, POS4, IMP1 (or IMP3), and FUT4. The study also investigated the factors that precede the occurrence of SEE. It used the specified elements (PRE3, PRO1, POS4, IMP1 or IMP3, and FUT4) to assess their associations with seven antecedent factors (EXP, EMP, OBL, SEF, SUP, SOC, and HEI). Finally, the study examined confirmatory factor analysis (CFA) in the third phase. Figure 3 should be used to examine the factor loadings, which show that nearly all latent indicators are well-structured and exhibit loadings greater than 0.708. The most prominent items for each component of the SEE scale can also be identified in Figure 3.

To assess the construct validity of the SEE scale, it is necessary to examine the measurement model of Figure 3. discriminant and loading validity between latent variables.
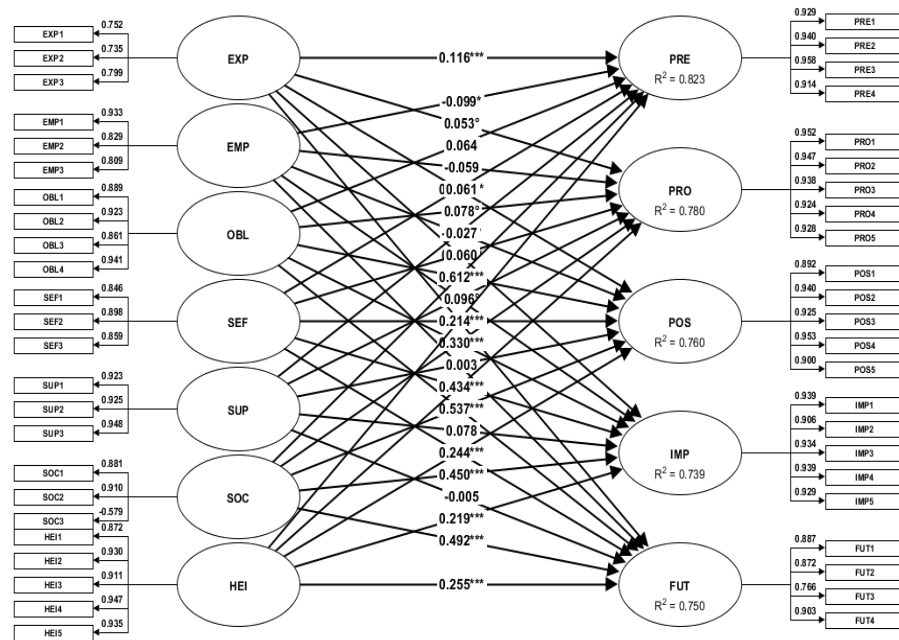
Figure 3 First-order construct using Becker, Klein, and Wetzels (2012) approach

Table 3 HTMT of first-order construct

	EXP	EMP	OBL	SEF	SUP	SOC	HEI	PRE	PRO	POS	IMP
EMP	0.519										
OBL	0.474	0.793									
SEF	0.599	0.601	0.658								
SUP	0.531	0.635	0.698	0.807							
SOC	0.556	0.500	0.546	0.752	0.742						
HEI	0.532	0.571	0.622	0.693	0.685	0.740					
PRE	0.597	0.484	0.559	0.736	0.708	0.895	0.761				
PRO	0.558	0.533	0.609	0.730	0.725	0.816	0.823	0.876			
POS	0.577	0.469	0.535	0.723	0.680	0.850	0.744	0.873	0.880		
IMP	0.581	0.532	0.588	0.733	0.714	0.832	0.744	0.832	0.868	0.893	
FUT	0.570	0.501	0.566	0.733	0.688	0.842	0.753	0.859	0.855	0.917	0.923

However, to optimize the model, the items of SOC3, which have a loading value of - 0. 579, should be eliminated. It has detrimental effects on Joreskog's rho (ρc) and Cronbach's alpha (α), with values of 0.841 and - 0. 820, respectively. After the removal of SOC3, these values increased to 0.925 and 0.924. The SOC3 oppositely posed a question. Table 2 shows that the model cannot recognize the difference between SOC and the parts of SEE. This is particularly evident in the HTMT scores, which show no discriminant validity between these hidden constructs. To address this issue, the researchers recommend removing SOC3, as it currently dominates all other SOC parameters. In SEE, the study aims to identify the items with the highest loadings for each component to construct the SEE scale. This includes selecting items PRE3, PRO1, POS4, IMP1 (IMP3) and FUT4. Using the standard construct scores to measure SEE for each construct, the components of SEE that serve as first-order constructs can also serve as second-order constructs.

SEE as a higher-order construct. The direction of the relationship of the components in the first-order construct (Figure 2) is crucial, like the direction of the relationship of latent in the second-order construct (Figure 3). Thus, the SEE scale consisted of PRE3, PRO1, POS4, IMP1 or IMP3, and FUT4 items representing each component of SEE.

Confirmatory factor analysis

Table 2 presents the comprehensive model fit of the CFA, displaying the values for SRMR, dULS, and dG. These metrics show that the model fits the data well. The CFA includes only the measurement model in Tables 4, 5, and Figure 4. All criteria, including internal consistency, indicator reliability, convergent validity, and discriminant validity, showed high quality. CFA evaluates the validity and reliability of measurement instruments by confirming whether observed indicators accurately represent latent constructs. It focuses on measurement accuracy, assessing model fit to data using fit indices. Unlike predictive modeling, CFA does not analyze relationships between constructs but verifies construct associations and model consistency.

The CFA results show that, except for SOC3 (no plans to start a social enterprise), whose loading of -0.579 necessitates exclusion from the model, the latent information of all items was well organized. The items are confirmatory to quantify their latent state, as determined by CFA. A value of less than 0.08 for the model fit index SRMR indicates that the data and the model agree. The researchers accepted discriminant validity when each latent relationship in the HTMT table was below 0.85 and both models shared the same identity number.

CFA and PLS-SEM are frequently used to assess the psychometric properties of new scales. In developing this SEE, the CFA was first used to examine the structure of factors. PLS-SEM then examined the reliability of internal consistency and convergent/discriminate validity. Replication with Chinese samples confirmed replicability. These methods were used to test dimensionality, reliability, validity, and generalizability. The specific steps in the development of the 23-item SEE scale were: CFA removed poorly loading items < 0.708) Reliability

confirmed by composite reliability and Cronbach's alpha (≥ 0.70) Convergent validity demonstrated by AVE (≥ 0.50) Discriminant validity assessed by Fornell-Larcker and HTMT ratios <0.85) CFA provided evidence of one-dimensionality, reliability, and validity Alternative model validated after identification of problems.

Psychometric testing, CFA, and PLS-SEM analysis supported the development of a valid and reliable SEE scale.

In Table 5, internal consistency, indicator reliability, and convergent validity were of superior quality in the PLS-SEM and CFA measurement models. The researchers assessed discriminant validity in Table 4 by examining the Heterotrait-Monotrait (HTMT) correlations for all latent associations. All HTMT values were below 0.85.

Antecedent analysis

As shown in Table 4, the measurement model demonstrates that all parameters exhibit a high degree of internal consistency, indicator reliability, convergent validity, and discriminant validity relative to established benchmarks. The structural model, the result of the structural model of PLS-SEM, is shown in Figure 4 and Table 6. Our research examined seven factors influencing SEE intentions: prior experience (EXP), empathy (EMP), moral obligation (OBL), social self-efficacy (SEF), perceived social support (SUP), social entrepreneurship intent (SOC), and college enrollment decision (HEI). Our results showed that prior experience (EXP), social self-efficacy (SEF), perceived social support (SUP), social entrepreneurship intent (SOC), and the decision to enroll in college (HEI) have significant positive relationships with the intention to engage in SEE. The result shows that the model proposed in this study explains 85.60% of the variance in explaining the intention to engage in SEE. This highlights these factors' crucial role in students' decision to pursue education in SE.

Table 4 Measurement model

Indicator	Loading		Dijkstra-Henseler's rho (ρ_A)		Jöreskog's rho (ρ_c)		Cronbach's alpha(α)		AVE	
	PLS-SEM	CFA	PLS-SEM	CFA	PLS-SEM	CFA	PLS-SEM	CFA	PLS-SEM	CFA
Prior experience (0.804)			0.807	0.807	0.806	0.806	0.805	0.805	0.581	0.580
EXP1	0.742	0.727								
EXP2	0.748	0.771								
EXP3	0.796	0.789								
Empathy (0.895)			0.898	0.895	0.894	0.894	0.895	0.895	0.737	0.738
EMP1	0.927	0.893								
EMP2	0.835	0.845								
EMP3	0.810	0.839								
Moral obligation (0.947)			0.948	0.948	0.947	0.947	0.947	0.947	0.817	0.817
OBL1	0.883	0.899								
OBL2	0.919	0.918								
OBL3	0.869	0.870								
OBL4	0.944	0.928								
Social self-efficacy (0.901)			0.902	0.901	0.901	0.901	0.901	0.901	0.753	0.752
SEF1	0.850	0.858								
SEF2	0.885	0.864								
SEF3	0.868	0.880								
Perceived social support (0.952)			0.952	0.952	0.952	0.952	0.952	0.952	0.868	0.869
SUP1	0.920	0.921								
SUP2	0.928	0.935								
SUP3	0.948	0.940								
Social entrepreneurship intent (0.924)			0.925	0.924	0.924	0.924	0.924	0.924	0.859	0.859
SOC1	0.917	0.923								
SOC2	0.937	0.931								
Choice to enrol of higher education (0.965)			0.965	0.965	0.965	0.965	0.964	0.965	0.845	0.845
HEI1	0.882	0.905								
HEI2	0.927	0.905								

Indicator	Loading		Dijkstra-Henseler's rho (ρ$_A$)		Jöreskog's rho (ρ$_c$)		Cronbach's alpha(α)		AVE	
	PLS-SEM	**CFA**	**PLS-SEM**	**CFA**	**PLS-SEM**	**CFA**	**PLS-SEM**	**CFA**	**PLS-SEM**	**CFA**
HEI3	0.909	0.910								
HEI4	0.946	0.947								
HEI5	0.933	0.929								
Social Entrepreneurship Education (0.943)			0.944	0.944	0.943	0.943	0.943	0.944	0.770	0.770
PRE3	0.904	0.9040								
PRO1	0.903	0.9032								
POS4	0.868	0.8684								
IMP1	0.874	0.8741								
FUT4	0.835	0.8347								

Note: The reliability tests of the surveys are indicated within brackets

Table 5 Hypothesis testing result

Hypothesis	Beta	Standard error	p-value	Percentile bootstrap quantiles		Direct effect (f^2)	Decision
				2.5%	**97.5%**		
EXP -> SEE	0.087	0.026	0.001	0.037	0.141	0.030	R
EMP -> SEE	-0.051	0.034	0.137	-0.119	0.014	0.006	Q
OBL -> SEE	0.049	0.041	0.239	-0.032	0.130	0.005	Q
SEF -> SEE	0.092	0.045	0.042	0.004	0.182	0.015	R
SUP -> SEE	0.110	0.048	0.021	0.014	0.199	0.023	R
SOC -> SEE	0.397	0.036	0.000	0.328	0.468	0.428	R
HEI -> SEE	0.374	0.039	0.000	0.296	0.445	0.384	R

However, our study found no significant relationship between empathy (EMP) and moral obligation (OBL) with SEE. Empathy (EMP) hurt SEE, which contradicts our original hypotheses for these factors. Thus, our research highlights the importance of factors such as prior experience, self- efficacy, social support, commitment to SE, and the decision to enroll in college on students' intentions to pursue SEE. However, it challenges the notion that empathy and moral commitment play an important role in this context, as our findings did not confirm their effects on SEE.
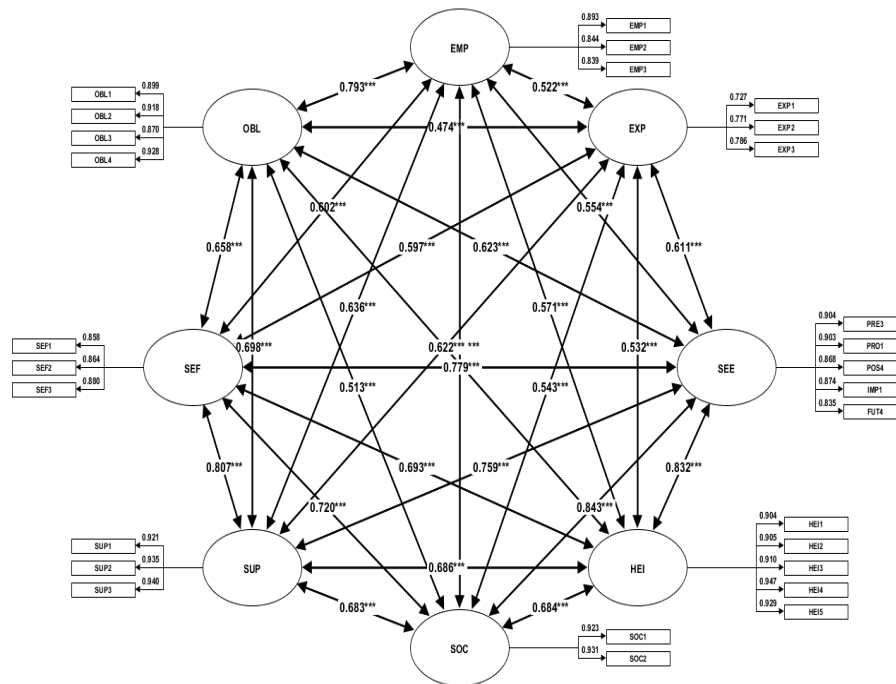
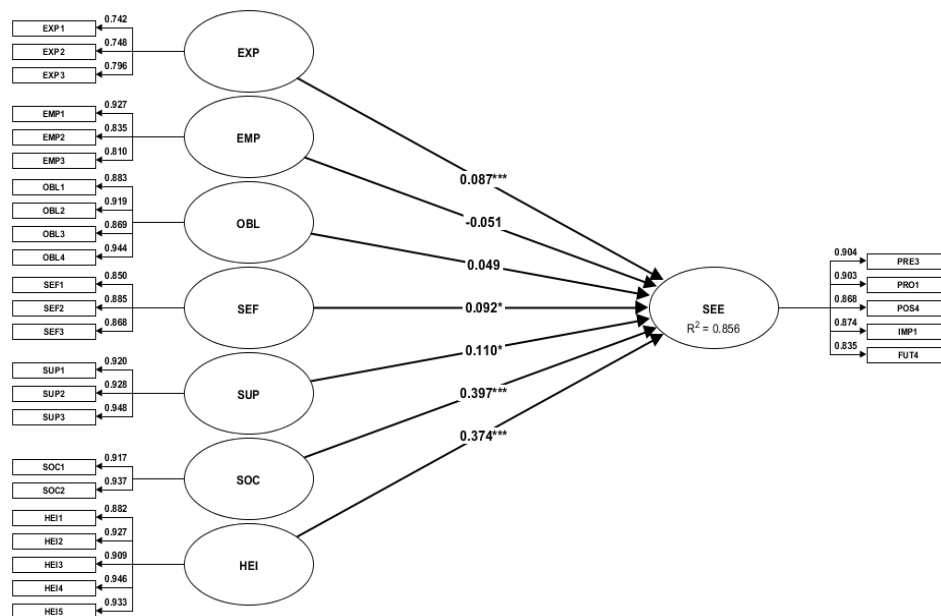**Figure 4** Confirmatory factor analysis of SEE antecedents

Figure 5 The antecedents of SEE

Discussion

This study developed and validated a perception measure for Social Entrepreneurship Education (SEE) specifically for the Chinese higher education landscape. The integration of confirmatory factor analysis (CFA) and partial least squares structural equation modeling (PLS-SEM) showed that the scale is psychometrically robust and based on the social entrepreneurship education framework (García-González & Ramírez-Montoya, 2021; Halsall et al., 2022). The five characteristics of social entrepreneurship — pre-program awareness, program implementation, post-program reflection, perceived social impact, and future engagement — summarize the broad learning experiences of students involved in social entrepreneurship projects (Christensen et al., 2023).

The results go beyond the creation of scales. Research shows that prior experience of social difficulties, confidence in social innovation skills (self-efficacy), and perceived social support are critical determinants of participation in social entrepreneurship (Atta et al., 2025). These findings support the call by researchers and policymakers to integrate social engagement into educational programs for children, especially in situations where youth civic participation is passive or merely symbolic. Policymakers should integrate social engagement into educational strategies for youth, especially when civic participation is largely passive or tokenistic.

The significant influence of empathy and moral engagement on social engagement requires careful cultural interpretation. Our results suggest that variables related to institutional factors (such as choice of higher education institution) and perceived social support have significant, meaningful effects. However, personal moral and emotional dispositions do not. This pattern suggests that within the Chinese sociocultural framework— - which is characterized by collectivist values, considerable deference to institutional authority, and an emphasis on social harmony (Svensson, 2023)— students are likely to be influenced by institutionally oriented and socially supported motivations rather than purely individual ethical appeals. This explanation is consistent with cultural theory, which assumes that communal goals and institutional structures replace individual moral considerations in collectivist societies. Therefore, the formulation of SEE programs in China should strategically depend on institutional support, social networks, and community-based methods to foster student engagement rather than merely cultivating individual empathy or moral obligation.

Higher education institutions can incorporate the SEE scale into assessments of social innovation programs. For example, curriculum designers could incorporate SEE components— such as PRE3 for problem identification or IMP1/ IMP3 for impact orientation— into courses like entrepreneurship, civic education, or service learning (García-González & Ramírez-Montoya, 2021). These checkpoints help educators assess students' competencies in identifying opportunities and addressing challenges.

Students with diminished self-efficacy (SEF) or perceived support (SUP) may bolster their confidence and collaborative abilities through peer mentoring, journaling, or project-based learning, as evidenced by (Ramírez-Montoya et al., 2024). Additionally, experiential activities such as hackathons, challenge laboratories, or policy speeches can enhance post-program engagement (POS4) and foster a lasting, long-term commitment (FUT4).

At the policy level, education ministries— especially in efforts like China's YRDBJ (Svensson, 2023) — might incorporate the SEE scale into certification procedures to evaluate SEE programs. Metrics like FUT4 (student advocacy) and PRO1 (skills preparedness), alongside Project 2023's focus on responsible citizenship, may serve as national standards for social responsibility. The SEE scale facilitates regional initiatives within ASEAN and emerging countries as a culturally flexible tool for assessing youth-driven social innovation. Given that social entrepreneurship encompasses multiple fields (Morris et al., 2021), this scale helps institutions enhance their SEE programs to achieve societal impact.

The SEE intervention studied has significant implications for higher education institutions seeking to promote social responsibility, ethical awareness, and community engagement among students. Policymakers and educators can use this tool to evaluate and improve SEE initiatives to align with educational goals and overarching social objectives. As social innovation is no longer the sole preserve of non-profit organizations and governments, equipping students with organized SEE

curricula is becoming a strategic method for educating social change agents in Asia and beyond.

Limitations and future research

Notwithstanding its adaptability, the SEE scale possesses specific limitations, notably its dependence on a Chinese sample from a singular city (Chongqing), which constrains the generalizability of the results. Cross-sectional surveys cannot determine causal correlations and may be prone to self-report bias (Indarto et al., 2023). Volkova, Arbidans, Arbidāne, Kupcova, and Synycyna (2023), advocate for the formation of heterogeneous student groups to delineate contextual parameters, whilst Dionisio et al. (2022) recommend the incorporation of objective metrics to augment validity.

To enhance generalizability, subsequent research should duplicate the SEE scale across other provinces in China and in other cultural contexts within Asia or the Global South. Comparative analyses of urban and rural student populations, or among various educational institutions (e.g., public versus private universities), may uncover region-specific participation patterns. Such replications would evaluate the cross-cultural validity of the five-factor SEE model and enable further development.

Sofia (2024) and Arifudin (2022) emphasize the need for longitudinal techniques for tracking the development of student motivation, identity, and entrepreneurial goals over time. Qualitative methodologies— such as narratives, interviews, and participatory action research—can enhance quantitative results and offer a deeper comprehension of how SEE cultivates reflective, socially aware graduates. Ramírez-Montoya et al. (2024) argue for mixed-methods research to better understand students' developmental trajectories as prospective change agents.

Conclusion and suggestions

This research pioneers a valid measure of social entrepreneurship education while revealing the motivational characteristics of Chinese students, with prior experience, self-efficacy, and choice of institution having universal motivational effects. However, the surprising finding of negative empathy calls for context-specific investigation and underscores the need to contextualize developmental frameworks for training global-minded change agents. The current limitations of the sample are that it restricts generalizable conclusions. Nonetheless, the scale's initial reliability signals the potential for tailored assessments to optimize experience-based programming in practice and drive theoretical advances in addressing knowledge gaps in this overarching niche (Halberstadt, 2019). Pending iterative validation across cultures, the 5-Item instrument holds promise for measuring perceptions of specialized entrepreneurial education and informing practice in advancing social ventures worldwide. The SEE perception scale proposed in this study aims to measure how students perceive the quality and usefulness of higher education institutions that offer social entrepreneurship education. This scale captures how they feel, what they think, and what they think about these types of educational programs. It helps teachers and researchers understand the impact and importance of teaching SE from the student's perspective. It is as follows.

PRE3: Before studying in the course, I can identify social problems that social entrepreneurship can solve.

PRO1: The course will give you the skills and knowledge to start and manage a successful social enterprise.

POS4: The course provides the knowledge to provide resources and support to overcome operational problems.

IMP1: My social enterprise has a social mission. or,

IMP3: The social entrepreneurship course will provide knowledge about the social impact assessment of social enterprises

FUT4: I will tell others who are interested in social entrepreneurship about the social entrepreneurship course.

Declaration of generative AI in scientific writing

Claude AI (Anthropic) was used to assist with language editing and content structuring. All content was reviewed and validated by the author, who takes full responsibility for its accuracy and integrity.

CRediT author statement

Chanta Jhantasana: was responsible for conceptualization, methodology, formal analysis, investigation, data curation, writing the original draft,

reviewing and editing, and project administration. **Jiang Bing:** contributed to conceptualization, methodology, validation, resources, and reviewing and editing the manuscript. **Prin Weerapong:** provided conceptualization, methodology, investigation, formal analysis, resources, reviewing and editing, and overall supervision of the project.

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