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Education program and experiential learning in Chinese entrepreneurship education: A year-long Social Cognitive Theory intervention's impact on self-efficacy and intention

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ABSTRACT

Entrepreneurship education helps young people create their first job, typically through either experiential learning or education programs. Our study evaluated the effect of integrating both methods in a single intervention involving 40 people aged 18 to 25.

Our research intervention was grounded in the Social Cognitive Theory. We assessed its impact via ANCOVA analyses. We looked for shifts in entrepreneurial self-efficacy (across six sub-dimensions) and intention of 20 intervention participants compared with an equal number of control participants. The results indicated statistically significant changes in all the measures except initiating investor relationships and building an innovative environment.

To the best of the authors' knowledge, this study is the first to examine the effect of delivering entrepreneurial education in non-formal Chinese settings. It also pioneers exploring the impact of education programs and experiential learning in a single intervention. Finally, it assesses this impact over one year, sharply contrasting with the more typical exploring of relationships at a single time point.

Our findings contribute to the ongoing discourse on the efficacy of entrepreneurship education programs in China, providing support for offering such programs outside formal education. Our results also emphasize the significance of comprehending the surroundings in which the programs are being delivered and the potential external forces that participants may be exposed to.

1. Introduction

Globally, entrepreneurship contributes to economic recovery and development (Global Entrepreneurship Monitor, 2022; Vatavu et al., 2022; Zemlyak et al., 2023) by boosting productivity (Erken et al., 2018; Farha et al., 2023), technological advancement (Abdelfattah et al., 2023; Awad and Martín-Rojas, 2024; Si et al., 2023), and innovation (Chen et al., 2024; Hang and Chen, 2021; Phillips et al., 2024; Schaltegger and Wagner, 2011). As innovators, entrepreneurs develop new products and services that meet market demands and enhance consumer welfare (Chen et al., 2024; Hang and Chen, 2021; Schaltegger and Wagner, 2011). By creating innovative business models that utilize local resources and technologies, they stimulate economic growth and enrich the innovation ecosystem (Hang and Chen, 2021; Schaltegger and Wagner, 2011). By pushing the boundaries of technological advancement, they

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contribute significantly to their economies (Awad and Martín-Rojas, 2024; Schaltegger and Wagner, 2011; Si et al., 2023). Overall, entrepreneurs optimize resources, enhancing productivity and efficiency in operations (Erken et al., 2018; Farha et al., 2023). These activities contribute to job creation (Obschonka et al., 2023; Valliere and Peterson, 2009).

Entrepreneurship education (EE) supports job creation by improving employment outcomes for young people (Arshed et al., 2024; Obschonka et al., 2023; Quality Assurance Agency for Higher Education, 2018). Various forms of EE are widespread in schools, universities, and community programs (Arshed et al., 2024; Obschonka et al., 2023; UNESCO Institute for Statistics, 2012). Through them, young people learn to survive in the challenging entrepreneurship environment (Al-Qadasi et al., 2021; Motta and Galina, 2023). These learning outcomes are often of systematic research interest, particularly in higher education settings (Carpenter and Wilson, 2022; de Sousa et al., 2022; Motta and Galina, 2023; Obschonka et al., 2023; Wong and Chan, 2022).

More than 80% of research focuses on university populations, although different target groups are recognized as potentially having unique needs (de Sousa et al., 2022). This limitation hinders understanding EE's potential impact (de Sousa et al., 2022). Other methodological weaknesses include underdescribed interventions, a lack of robust experiential designs, self-selection biases, and overuse of surveys (Carpenter and Wilson, 2022). Wong and Chan (2022) add that EE best practices are hardly available and that there is scarce knowledge of EE effects.

Despite the limited robust evidence for sustainable benefits in the literature, EE is considered a viable first employment step for young people (Dvouletý et al., 2018; Newman et al., 2019). As a result, it benefits from considerable government support (European Commission, 2017; Weiming et al., 2016), such as the Chinese "Mass Entrepreneurship and Innovation" (MEI) policy. The MEI was designed to stimulate China's economic growth by transforming, supporting, and developing the Chinese potential for domestic innovation through fiscal and tax policies. While MEI tax incentives were found to be counterproductive, subsidies had positive innovation effects (Zhao et al., 2023).

MEI was preceded by the 2008 "Guiding Framework on Promoting Entrepreneurship-Driven Employment" (Mei et al., 2020). The framework highlights the necessity of motivating college students to embark on entrepreneurial ventures to address unemployment and stimulate China's economic growth by establishing new enterprises. It was followed in 2012 by the Chinese Ministry of Education's requirement for colleges and universities to establish entrepreneurship courses. Through such frameworks, the Chinese government has consistently supported embedding entrepreneurship into the national education system (Mei et al., 2020; Weiming et al., 2016). In response, Chinese universities offer students EE within and beyond the regular curricula (Cui and Bell, 2022; Dou et al., 2019; Mei et al., 2020). Although the outreach and uptake have been considerable (Mei et al., 2020), the results do not seem impressive. Chien-Chi et al. (2020) reported that under 3% of college graduates were self-employed six months post-graduation, and their failure rate was as high as 90%. The authors see the need for improvement in Chinese EE.

There are two research gaps that need to be addressed in Chinese EE before embarking on its improvement. First, within the unique Chinese context (Huang et al., 2021), researchers seem to limit their work to exploring multiple relationships between entrepreneurial measures and showing EE as a significant determinant (Cui and Bell, 2022; Cui et al., 2021; Dou et al., 2019; Mei et al., 2020) without exploring its effects over time. For example, Mei et al. (2020) found that engagement in EE positively determined students' entrepreneurial intention and self-efficacy. Newman et al. (2019) regard entrepreneurial self-efficacy (ESE) as people's belief in their ability to achieve entrepreneurial outcomes, whereas entrepreneurial intention is the desire to start a new business instead of being employed by someone else (Krueger et al., 2000) or the starting point of a new venture (Veciana et al., 2005). Dou et al. (2019) and Huang et al. (2023) also find a positive relationship between EE and entrepreneurial intention. Their work explores the entrepreneurial attitude as a mediator. The entrepreneurial mindset is another strong mediator between EE and intention identified in the population of Chinese students (Cui and Bell, 2022; Cui et al., 2021). According to Cui and Bell (2022), those complex interrelations may lead to EE positively influencing entrepreneurial behavior.

Despite establishing evidence for the statistically significant EE influence on core entrepreneurship measures, researchers fail to explore any shifts in those measures over time. Although such exploration is associated with increased temporal and financial demands (Caruana et al., 2015; Vankov and Vankov, 2023), it offers numerous research advantages. For example, rather than snapshots, researchers should be interested in assessing how EE effects evolve over time and whether they are sustained. A longitudinal trial would allow them to observe temporal changes (Cook et al., 2002; Sameroff and Mackenzie, 2003). Such changes are often captured via repeated measures (Caruana et al., 2015), which may reveal more complex and evolving effects. Furthermore, such effects could not only be delayed in time but could accumulate over time (Cook et al., 2002). Suppose such an investigation is not undertaken in the case of EE. In that case, there is a chance that any cited positive relationships could have been valid even before the study participants embarked on their EE journey. Self-bias may also play a part in their significance (Carpenter and Wilson, 2022). In other words, although EE has strong predictive validity, it may trigger no improvement in students' salient beliefs due to inherent self-selection biases (Carpenter and Wilson, 2022). Thus, evidence of whether EE caused any shifts in those measures is needed but missing. Research with a more robust methodological design, e.g., longitudinal, is necessary to confirm causal effects (Carpenter and Wilson, 2022). In summary, research gap 1 in understanding Chinese EE is the missing evidence about its impact.

Second, studying EE takes place predominantly in higher education settings (Chien-Chi et al., 2020; Cui and Bell, 2022; Cui et al., 2021; Dou et al., 2019; Huang et al., 2023; Mei et al., 2020). Other settings, such as social purpose enterprises, have been recognized internationally for their potential for EE delivery (Biney, 2023; European Commission, 2017). While universities may offer theoretically robust learning and broader skills development, social purpose enterprises address authentic, real-world challenges, enhancing the experiential learning process. Their dual focus on profitability and meaningful social change drives entrepreneurs to develop innovative business models that prioritize both (Grilo and Moreira, 2022; Khan et al., 2023). Higher education lacks such an embedded social mission, stressing the need for academic excellence. These differences predetermine how EE success is measured. While higher education typically focuses on academic achievement, social purpose enterprises measure and report social and environmental

impacts. As a result, aspiring social entrepreneurs would additionally have to develop skills to assess and communicate the tangible effects of their business activities on communities and the environment. To build those skills early in life, youth activities can provide a supportive environment for young people to develop and act upon their entrepreneurship ideas (Arnkil, 2015). In addition, such an environment may encourage social innovation, i.e., entrepreneurship activities not focused on profit but on broader social benefits (Grilo and Moreira, 2022; Thomsen et al., 2021). Thus, social purpose enterprises should be utilized as another channel to deliver EE and add value where higher education institutions find it more challenging. In summary, research gap 2 in understanding Chinese EE is the missing knowledge about EE when delivered by social purpose enterprises.

To enable a Chinese social purpose enterprise to create an environment encouraging social innovation, the European Commission supported the "Youth Employment and Social entrepreneurship" (YES) project through the Erasmus Plus programme. The project targeted 18- to 25-year-old young people, presenting a unique opportunity to undertake novel research in its Chinese geographical context, where entrepreneurship studies generally seem to be sparse and limited. In the present study, the authors aimed to explore whether the YES-embedded EE resulted in statistically significant changes in the participants' ESE and intention over one year. Our objectives were to 1) adopt a longitudinal design instead of exploring relationships at a single time point, thus addressing gap 1, and 2) utilize a social purpose enterprise as opposed to a higher education setting, thus addressing gap 2.

This article contributes to the literature by providing empirical evidence on the longitudinal impacts of EE on young Chinese people, offering insights into how EE can be tailored to different contexts to maximize its effectiveness. After this Introduction, it is structured as follows: Section 2: Literature review and hypothesis development; Section 3: Material and methods; Section 4: Results; Section 5: Discussion; Section 6: Conclusions and implications; and Section 7: Limitations and future research.

2. Literature review and hypothesis development

2.1. Social Cognitive Theory and entrepreneurship education

Bandura's (1986) Social Cognitive Theory (SCT) is a helpful framework for studying behavior in humans, including in the entrepreneurship context (Athayde, 2012; Heinrichs, 2016; Ho et al., 2018). It accounts for education (observation) and experiential (applied) learning. According to the theory, learning develops ESE, which can be multi- or uni-dimensional. For example, the SCT-tailored ESE scale of De Noble et al. (1999) has six sub-dimensions that explore different entrepreneurial requirements. It includes *defining core purpose* (vision) and *developing new product and market opportunities* (opportunity recognition), *initiating investor relationships* (raising capital), *building an innovative environment* (abilities to innovate), *developing critical human resources* (leadership skills), and *coping with unexpected challenges* (resilience). ESE can significantly predict entrepreneurial intention, including in the Chinese context (Chien-Chi et al., 2020; Mei et al., 2020; Vankov et al., 2022). Through intention, which is shown to be the strongest behavioral predictor (Ajzen, 1991), ESE affects entrepreneurial behavior (Chen et al., 1998; Cui and Bell, 2022; Schlaegel and Koenig, 2014).

The theoretical significance of entrepreneurial intention and ESE and their strong connection to behavior determined our investigation's SCT grounding, a theoretical underpinning supported by the EE literature. With SCT as a theoretical framework, EE was shown to significantly impact ESE (Heinrichs, 2016; Ho et al., 2018) and enterprising attitudes (Athayde, 2012). Extensive guidance is available for delivering EE (Bacigalupo et al., 2016), covering diverse contexts (McCallum et al., 2018). This guidance offers strong foundations for interventions' implementation and follow-up research into their impacts. Consequently, the connection between EE and entrepreneurial beliefs, such as entrepreneurial intention and ESE (Newman et al., 2019), is readily established (Global Entrepreneurship Monitor, 2022; Anwar et al., 2022; Rehman et al., 2023; Saoula et al., 2023). In the context of China, SCT-underpinned studies have shown that EE influences entrepreneurial intention directly (Cui and Bell, 2022; Cui et al., 2021) and indirectly through ESE (Chien-Chi et al., 2020; Mei et al., 2020). By measuring ESE and entrepreneurial intention over time and determining the EE intervention effect on them, our robust methodological design (Carpenter and Wilson, 2022) and findings add to the broader theoretical and practical discussions around the benefits of EE in China and globally. Thus, the SCT was considered a good theoretical fit for the current research.

Outside the context of China, EE success characteristics have been identified (Hardie et al., 2022). However, applying them does not guarantee positive results. For example, Aljaouni et al.'s (2020) EE program increased entrepreneurial awareness but decreased participants' entrepreneurial intentions while having no impact on beliefs. Oosterbeek et al. (2010) also reported a negative effect on intention accompanied by a lack of such skills. Bjorvatn et al. (2020) could not impact skills, but their work positively impacted intention. Krause et al.'s (2016) results were the opposite of the ones of Bjorvatn et al. (2020), i.e., a positive effect on skills but no effect on intention. Only one study reported an overall positive impact (Athayde, 2009). Regardless of results, characteristics or context, entrepreneurship education is delivered in two forms: experiential learning and education programs.

2.2. Education programs

As discussed above, the more common approach to EE delivery in China is education programs (Cui and Bell, 2022; Dou et al., 2019; Huang et al., 2023; Mei et al., 2020). Such programs are typically part of universities' business curricula (European Commission, 2017; Liu, 2021; Valerio et al., 2014). Regardless of their more structured delivery, they seem to produce a full spectrum of negative, neutral, and positive results (Aljaouni et al., 2020; de Sousa et al., 2022; Grewe and Brahm, 2020; Huang et al., 2023). Notably, the results from the same program may also be inconsistent. For example, the mini-company program "Junior Achievement Young Enterprise" failed to impact ESE or entrepreneurial knowledge in Israel (Bergman et al., 2011). Neither did it affect entrepreneurial skills

in the Netherlands, but it negatively impacted entrepreneurial intention (Oosterbeek et al., 2010). At the same time, there was a long-term probability increase for entrepreneurial outcomes, including founding a company in Sweden (Elert et al., 2015), positively affecting enterprise potential in the United Kingdom (Athayde, 2012), and achieving the transmission of entrepreneurship knowledge in Portugal (do Paço and Palinhas, 2011).

2.3. Experiential learning

Experiential learning is another approach to delivering EE (Douglas, 2015). It is valuable because it allows participants to engage in observation and entrepreneurial activity (Hockerts, 2018). Diverse potential implementation contexts can be created by integrating strategic partnerships and interactions with businesses within the EE. Such a practically-oriented framework may enrich the participants' learning experiences, improve their employability, and expand their entrepreneurial skill sets. Collaborations can take various forms, such as internships, apprenticeships, guest lectures, industry-sponsored projects, and mentorship opportunities. Within such collaborations, informal EE can integrate field trips, incubator programs, action learning projects, entrepreneurial boot camps, and business simulation games. Field trips, in which participants visit successful businesses and entrepreneurs, provide insights into real-world experiences, strategies, and challenges, fostering creativity and inspiration (Suacamram, 2019). Incubator programs create a supportive environment for entrepreneurs, offering mentorship and resources to promote business growth. They have been found to positively affect work effort and risk aversion while facilitating employability (Guerrero et al., 2020). Similarly, action learning involves people working on entrepreneurial projects, where they apply skill sets to resolve real business problems, enhancing their employability by developing various skills (Olivares et al., 2020). Entrepreneurial boot camps provide intensive hands-on experiences that simulate establishing and running a new company. These programs have significantly impacted entrepreneurial thinking and general entrepreneurial knowledge (Tih et al., 2019). While participating in business simulation games, people make decisions in virtual business scenarios and experience the consequences of their choices. Such simulations significantly influence ESE and attitudes, although they may not always impact intention (Chen et al., 2022). By actively involving businesses in EE, the participants will be offered real-world exposure to market demands, insights into industry trends, and a chance to apply theoretical knowledge to actual business challenges, similar to what we achieved through our intervention's experiential learning component. As part of such interactions, business stakeholders can offer valuable feedback on intervention designs, ensuring that EE remains relevant and aligned with broader industry needs.

To facilitate such direct engagement, Noyes (2018) suggests prototyping. It allows for identifying and evaluating demand, which provides space for developing ideas and testing whether they address market needs (Noyes, 2018). Such practices find their way into Chinese EE. For example, researchers used a Chinese social entrepreneurship practice to better understand the significant interrelationships between entrepreneurship measures, such as social-emotional competence, ESE, and intention (Chien-Chi et al., 2020). However, like their colleagues, Chien-Chi et al. (2020) did not explore whether their experiential learning entrepreneurship practice positively shifted any studied measures.

2.4. Hypothesis

Education programs and experiential learning are sometimes compared (Thomsen et al., 2021). More often, they are researched separately (Douglas, 2015; Thomsen et al., 2021; Valerio et al., 2014). However, the literature is silent about how the two complement each other in a mixed EE intervention, a third gap this article addresses in the context of China under a robust theoretical framework. In this novel study, we utilized experiential learning and an education program as complementary EE tools, expanding the limited research with similar characteristics in this geographical context. Our study examined whether a mixed EE intervention influenced young participants' entrepreneurial intention and ESE. We hypothesized that:

H. After a mixed EE intervention comprising an education program and experiential learning, the Intervention group will report significantly higher ESE and entrepreneurial intention than the Control group, demonstrating the combined impact of these two EE components within the framework of Social Cognitive Theory.

Table 1
Profile of the participants ($n = 40$).

Demographic variable	Category	Frequency	(%)
Gender	Male	14	35.0
	Female	26	65.0
Age	18	2	5.0
	21	3	7.5
	22	6	15.0
	23	5	12.5
	24	6	15.0
	25	18	45.0

3. Material and methods

3.1. Design

We recruited 40 participants ($Mage = 23.5$, $SD = 1.87$) for this study through an open invitation from October 13th to 18th, 2021: Time 1 (before delivery of the EE program, T1). A preliminary examination of the participants' profiles (see Table 1) was carried out, uncovering that the majority of respondents (65%) identified as female, and the prevailing age was 25 years (45%). Although a sample of 40 may be considered low in comparison with other Chinese EE studies (Chien-Chi et al., 2020; Cui and Bell, 2022; Cui et al., 2021; Dou et al., 2019; Huang et al., 2023; Mei et al., 2020), the current study is different from a typical study in that it explores an intervention delivered in a social purpose enterprise as opposed to higher education setting. It is not uncommon for innovative pilot studies to use smaller samples to explore their research questions and assess novel interventions. Such pilots can be useful in the early identification of potential challenges. They also test the methodologies to refine them later while gathering preliminary data to inform future larger interventions. Regardless of the smaller sample size, compared with Chinese higher education studies, the recruited sample is deemed sufficient, surpassing the suggested 30 subjects to estimate a parameter (Lancaster et al., 2004; Teare et al., 2014). Finally, the entrepreneurship literature highlights many examples of quantitative studies that follow this guidance, e.g., exploring samples of 32 (Williams, 2015), 33 (Santini et al., 2020) or 40 (Berry et al., 2013).

The opportunity to participate in the current study was publicized through the social media channels of the Chinese social purpose enterprise that organized the EE intervention. Additionally, details were disseminated via flyers and conveyed verbally to eligible youth. Participants were considered eligible for the study if they were within the age range of 18–25 and possessed an adequate level of



Fig. 1. ChaoJS.

proficiency in the English language to actively engage in the EE program. To be admitted to participate, everyone was required to provide implied consent, which was considered granted once participants had been presented with the study information and completed a survey. Each person was responsible for creating an anonymous identifier for their survey, which included their birthdate, the initial letters of their first and last names, and the last two digits of their cell phone number (e.g., 29PP56).

In addition to T1, all the participants completed the same survey at Time 2 (post-EE and experiential learning delivery, T2). T2 data was collected from October 05th to 07th, 2022, with no dropout. Using the anonymous identifiers, participants' data were reliably linked across the two-time points. After completing the T1 survey, the young people were divided randomly into Intervention and Control groups, with 20 participants in each group. The Control participants were not expected to do anything, while the Intervention group was subjected to the mixed EE intervention.

3.2. EE intervention

The EE intervention consisted of two components. The first component, i.e., the education program, comprises two modules, Spark and Fuel. They are regularly freely offered online by an Australian university. Spark explores entrepreneurial thinking with participants unfamiliar with entrepreneurship. Fuel introduces processes to clarify a problem and meet market demand through prototyping. The Intervention group followed the program in Zoom real-time.

While following Fuel, the Intervention group looked at the growing popularity of web-based platforms for consumers to look for services, e.g., restaurants, taxis or general goods. They were inspired by the success of Alibaba and decided to design such a platform for children's extracurricular activities. According to them, the idea would support the Chinese national policy of reducing the number of extracurriculars embedded into formal learning. The chosen name for the platform was ChaoJS, meaning "grow beyond yourself" in Chinese. The participants dreamed that when parents think of children's activity, they will first open ChaoJS (see Fig. 1). Within the experiential learning, the Intervention group was required to organize a large-scale youth event to promote their platform prototype. The event occurred at T2.

3.3. Instruments

In the current study, we followed Ismail's (2017) approach to measuring entrepreneurial intention based on a scale underpinned by Gollwitzer and Sheeran's (2006) model for entrepreneurial implementation intention. We assessed the participants' ESE via De Noble et al.'s (1999) domain-specific 22-item multi-dimensional scale, as Bandura (1986) recommended. The literature supports this approach, with the scale being widely applied in entrepreneurship research (Newman et al., 2019).

The participants' data were collected through a three-section survey with questions presented online in a fixed order. First, it included demographics: *age* (in years) and *gender* (1 = male/0 = female). Second, it measured each of ESE's six sub-dimensions on a scale ranging from "Strongly disagree" (1) to "Strongly agree" (5):

- *Developing new product and market opportunities* (7 items, T1 internal consistency $\alpha = .92$, sample item: *I can bring product concepts to market in a timely manner.*),
- *Building an innovative environment* (4 items, T1 internal consistency $\alpha = .87$, sample item: *I can create a working environment that allows people to be more of their own boss.*),
- *Initiating investor relationships* (3 items, T1 internal consistency $\alpha = .98$, sample item: *I can develop and maintain favorable relationships with potential investors.*),
- *Defining core purpose* (3 items, T1 internal consistency $\alpha = .78$, sample item: *I can inspire others to embrace the vision and values of the company.*),
- *Coping with unexpected challenges* (3 items, T1 internal consistency $\alpha = .94$, sample item: *I can work productively under continuous stress, pressure, and conflict.*), and
- *Developing critical human resources* (3 items, T1 internal consistency $\alpha = .94$, sample item: *I can develop contingency plans to backfill key technical staff.*) (De Noble et al., 1999).

Third, on a scale from "Extremely unlikely" (1) to "Extremely likely" (5), it measured *entrepreneurial intention* (5 items, T1 internal consistency $\alpha = .96$, sample item: *How likely is that you will start a new firm on your own or with friends on a part-time basis within five (5) years?*), adapted from Ismail (2017).

Our data revealed high reliability with values above the generally accepted .70 limit for Cronbach's α (DeVellis, 2016). In addition to reliability, we considered assessing the validity of the scales. However, the stability of correlation coefficients among variables in small samples tends to be less dependable (Tabachnick and Fidell, 2007). Factors extracted from limited datasets demonstrate a reduced ability to generalize, so Tabachnick and Fidell (2007) propose having a minimum of 300 cases for factor analysis. An alternative approach explores not the total sample size but the ratio of participants to items. Tabachnick and Fidell (2007) advocate a sufficient ratio of five cases per item as generally acceptable. Unfortunately, our study entails a small sample size and encompasses numerous variables, making it unsuitable for factor analysis. Thus, after examining internal consistency, we calculated single values for ESE and *entrepreneurial intention* by averaging each measure's scale's items without performing further assessments.

4. Results

The survey data were processed in SPSS Statistics 28. First, a one-way between-groups MANOVA (multivariate analysis of variance) preliminary determined if statistically significant differences existed between the Control and Intervention groups at T1. The group (i. e., Intervention or Control) was the independent variable (IV). *ESE* and *entrepreneurial intention* were the dependent variables (DVs). Between the two groups, there was no significant pre-existing difference (Wilks' Lambda = .99, $F(2, 37) = .24, p = .78, \eta^2 = .013$). Subsequently, we assessed all the measures' normality (skewness and kurtosis). The normality values fell within the acceptable range (−2; 2) (Tabachnick and Fidell, 2007), which supported analyzing effects within this research via parametric tests.

4.1. Zero-order correlations

The means of *entrepreneurial intention* and *ESE* overall scores with their standard deviations and Pearson's *r* correlations from T1 and T2 are shown in Table 2. An interesting observation is that the two measures exhibited strong, significant correlations at the two-time points. The strongest correlation we observed was between the T1 and T2 *ESE* ($r = .70, p < .001$), which indicated that the young people gave comparable *ESE* answers despite the twelve-month difference between the two measurement points. The only insignificant correlation was observed between T1 *ESE* and T2 *entrepreneurial intention*. This weak relationship indicated that potential shifts might have occurred due to the intervention, leading to changes in young people's perceptions.

4.2. Impact of the intervention

We evaluated our mixed EE intervention by seeking effects on *entrepreneurial intention*, *ESE*, and its sub-dimensions. Through one-way ANCOVA (analyses of covariance), we examined whether the study participants were influenced by being subjected to an EE program and experiential learning. The IV fixed factor was the group, i.e., Intervention and Control. We controlled for pre-existing group conditions by using measurements at T1 (*ESE*, *developing new product and market opportunities*, *coping with unexpected challenges*, *defining core purpose*, *initiating investor relationships*, *building an innovative environment*, *developing critical human resources*, and *entrepreneurial intention*) as covariates. For all measures but *initiating investor relationships* and *building an innovative environment*, we identified statistically significant results ($p < .05$, see Table 3).

Our results supported H partially. H predicted that after the mixed EE intervention and compared with the Control group, the Intervention group would report significantly higher *ESE* and *entrepreneurial intention*. Table 4 provides more details about the changes in the mean scores of both groups on each measure.

5. Discussion

This novel for the Chinese geographical context study investigated the impact of a mixed EE intervention on *entrepreneurial intention* and *ESE* constructs, including sub-dimensions, as proposed by De Noble et al. (1999). The intervention consisted of educational and experiential learning components and was implemented over one year from October 2021 to October 2022. This research tested the hypothesis that the Intervention group would show measures' scores significantly higher than those of the Control group. The study used data from 40 young Chinese individuals.

5.1. Education program and experiential learning as one intervention

This study analyzed the overall impact of the intervention on Chinese participants. The researchers conducted one-way ANCOVAs to examine the start-to-end changes between the two surveys. The results revealed statistically significant differences between the Control and Intervention groups regarding *entrepreneurial intention* and most *ESE* sub-dimensions, except for two. These findings contradict the findings of Krause et al. (2016) and Aljaouni et al. (2020), who did not find positive impacts while supporting the findings of Bjorvatn et al. (2020), who reported benefits from their interventions. Unfortunately, we could not compare our results to those of Chinese studies, as our literature review identified no similar experiential designs. Although we could not draw parallels with Chinese-focused experimental studies, we still found support for previous findings in the literature. The strong correlations between *ESE* and *entrepreneurial intention* confirmed their statistically significant links, as established in the context of young Chinese people (Chien-Chi et al., 2020; Mei et al., 2020; Saoula et al., 2023; Vankov et al., 2022).

A comparison of the current study results is possible with non-Chinese studies of similar size (Berry et al., 2013; Santini et al., 2020;

Table 2
Bivariate correlations with means and standard deviations ($n = 40$).

	Construct	Scale range (min/max)	Mean (SD)	1	2	3	4
T1	1. <i>ESE</i>	1–5	3.65 (.76)	–	.61 ^a	.70 ^a	.25
	2. <i>Entrepreneurial intention</i>	1–5	2.64 (.78)		–	.42 ^a	.48 ^a
T2	3. <i>ESE</i>	1–5	4.30 (.29)			–	.55 ^a
	4. <i>Entrepreneurial intention</i>	1–5	3.49 (.41)				–

^a Correlation is significant at the .01 level (2-tailed).

Table 3Effect of the intervention on T2 measures adjusted for T1 values ($n = 40$).

Measure	$F(1, 37)$	p	ηp^2
ESE	40.31	<.001	.521
Developing new product and market opportunities	27.53	<.001	.427
Building an innovative environment	2.52	.121	.064
Initiating investor relationships	1.40	.244	.036
Defining core purpose	7.48	.010	.168
Coping with unexpected challenges	34.67	<.001	.482
Developing critical human resources	7.55	.009	.170
Entrepreneurial intention	30.95	<.001	.455

Table 4Mean scores for the Intervention and the Control group at T1 and T2 on each measure ($n = 40$).

Measure	Intervention ($n = 20$)		Control ($n = 20$)	
	T1	T2	T1	T2
ESE	3.67	4.46	3.63	4.15
Developing new product and market opportunities	3.45	4.55	3.33	4.14
Building an innovative environment	3.64	4.49	3.83	4.45
Initiating investor relationships	3.73	3.92	3.82	3.82
Defining core purpose	4.12	4.75	4.13	4.55
Coping with unexpected challenges	4.17	4.57	3.85	3.88
Developing critical human resources	3.25	4.35	3.18	3.97
Entrepreneurial intention	2.72	3.74	2.56	3.23

Williams, 2015). These studies report positive results on non-cognitive (Berry et al., 2013; Williams, 2015) and cognitive skills (Santini et al., 2020; Williams, 2015), similar to the EE achievements reported in this research. Another high-level comparison is possible with international studies that evaluated the mini-company program "Junior Achievement Young Enterprise". In such a comparison, the current findings align with the effects observed in Portugal (do Paço and Palinhos, 2011), the United Kingdom (Athayde, 2012) and Sweden (Elert et al., 2015), namely that the EE delivered positive outcomes for the involved participants. However, even the same program could not replicate such positive results across jurisdictions, with evaluations reporting its failure in the Netherlands (Oosterbeek et al., 2010) and Israel (Bergman et al., 2011). Thus, further comparisons might not be inappropriate because the most appropriate comparison would be with similar initiatives in China, which, even if existent, to the best of our knowledge, have not yet been evaluated.

In this perceived uniqueness of our study lies our arguably most important contribution to the literature and even more so to the literature that explores entrepreneurship in the context of China. While addressing research gap 1, we were able to observe changes over one year in multiple entrepreneurship measures whose importance is well established in the literature, i.e., *entrepreneurial intention* and *ESE* with its sub-dimensions (Carpenter and Wilson, 2022; de Sousa et al., 2022; Wong and Chan, 2022). As a result, we have seen that although starting from comparable average scores with the Control group, the Intervention participants achieved significant score increases in *ESE*, *developing critical human resources*, *coping with unexpected challenges*, *defining core purpose*, *developing new product and market opportunities*, and *entrepreneurial intention*. Those findings provide evidence about the effects of Spark and Fuel on measures of theoretical and practical importance. However, not all measures were significantly impacted, which raises further questions worth investigating.

Initiating investor relationships was the one measure that changed the least (see Table 4). The change for the Intervention group was marginal, at only .19. The Control group did not show any change on average. Such a result may be attributed to the design of this study intervention. Although investor relationships were part of the training modules, such were not required within the experiential learning. In other words, the Intervention participants were given all the resources and support needed to implement their ideas as part of the YES project. Such an outcome may signify that whatever the education program knowledge transfer, this knowledge transfer may need to be put to work at later stages.

A completely different picture is revealed by the second measure, which did not show significant differences between the Intervention and Control groups. *Building an innovative environment* visibly increased for both groups over time. Consequently, no statistically significant result could be attributed to our intervention. This finding is particularly interesting as the experiential learning idea itself was considered innovative. Thus, we may argue that there was some general influence over time besides our intervention. This influence affected the Control group in a manner comparable to that exercised on the Intervention participants.

Such general influences may include the Chinese "Guiding Framework on Promoting Entrepreneurship-Driven Employment" and the MEI policy (see Introduction). Understanding such general influences and how they impact particular measures, such as *building an innovative environment*, will require future research. For example, the Guiding Framework and MEI could have such a vast outreach in China that they consciously and subconsciously influence any person considering entrepreneurship.

5.2. Social Cognitive Theory and entrepreneurship education

Our study provides support to use SCT (Bandura, 1986) as theoretical underpinning, contributing a valuable example to the expanding entrepreneurship literature (Athayde, 2012; Heinrichs, 2016; Ho et al., 2018) and addressing the third identified research gap. It carries several significant theoretical implications. For example, our findings revealed the significantly changed entrepreneurial intention and ESE (except for two sub-dimensions) of the Intervention group as compared to the Control group. This outcome suggests that our theoretically underpinned intervention program effectively provided the participants with a valuable opportunity to acquire and apply new entrepreneurial skills.

To substantiate this positive result, our study provides evidence for the significance of observational and applied learning, which are central concepts in SCT (Bandura, 1986). Through both, participants acquire new entrepreneurial knowledge, skills, and behaviors. Furthermore, within this intervention, young entrepreneurs were successfully motivated to collaborate, providing one another with essential social support. According to SCT (Bandura, 1986), such support shapes behaviors and fosters intentions. To increase the chances for a positive outcome, the YES project provided a supportive and collaborative environment where participants could work alongside their peers.

To our knowledge, this research is the first to leverage such complex experiential design in Chinese entrepreneurship research. It was also the first to evaluate a mixed entrepreneurial education intervention using educational and experiential learning components in the Chinese context. The study used a longitudinal design, collecting data from participants at two points in time, one year apart.

Utilizing a Control group to assess general influences was another strength of our work. It allowed the elimination of potential bias and identified the interesting findings discussed above. The gender-diverse sample, with 26 females and 14 males, further adds to the study's strengths.

In addition to its findings on theoretical constructs, this study supported various broader concepts. First, we demonstrated the importance of directly participating in entrepreneurial learning activities, as proposed by Hockerts (2018). While participating, participants could directly engage with a market and identify demand. They employed a prototype approach to refine concepts and cater to the market's needs, as Noyes (2018) suggested. Second, the study revealed the impact of empowering young entrepreneurs through youth activities to transform their ideas into values, as Arnkil (2015) proposed. Finally, it allowed the young entrepreneurs to focus on broader social benefits through their business activities by applying social innovation, as Thomsen et al. (2021) and Mair and Martí (2006) suggested.

6. Conclusions and implications

This research evaluated the impact of a unique intervention that combined experiential learning and an education program on entrepreneurial intention and ESE (six sub-dimensions) self-reported scores over a one-year period. While addressing two of the identified significant entrepreneurship research gaps by exploring a longitudinal design and utilizing a social purpose enterprise, the paper carries particular novelty through its geographical context, where our literature review revealed that such research is sparse and limited. To the best of our knowledge, this is the first study to examine two-part experiential entrepreneurship intervention delivery in China.

Our participants were 18–25 years old, and split into a Control and an Intervention group. We found positive statistically significant effects on all their measures, but two, initiating investor relationships and building an innovative environment.

Policymakers and social purpose enterprises can use our findings for youth entrepreneurship promotion by integrating them into their programs. They can use the results to enhance the delivery of EE programs in various environments and enhance local, national, and international guidelines. Future research could concentrate on gaining a deeper understanding of the external factors that impact program delivery to maximize its positive potential. As our study has shown, these external factors can significantly influence the EE impact of specific measures. Additionally, Chinese policymakers may look beyond higher education to stimulate such processes. By integrating our insights, they can refine entrepreneurship policies across various implementation contexts while simultaneously contributing to enhancing guidelines locally and globally.

7. Limitations and future research

Self-bias is a known issue in entrepreneurship research (Carpenter and Wilson, 2022). To reduce it, our data collection process was anonymized. As a result, we ensured no pressure on the participants to provide socially desirable responses. Additionally, social desirability seems to be of little concern in entrepreneurship research.

Our sample size was a more notable research limitation. Our data was collected from 40 participants with no dropouts. Although at the spectrum's lower end, such samples do not seem untypical. Similar sample sizes exist in research in countries with low and high incomes (Berry et al., 2013; Ferguson, 2018; Santini et al., 2020). Pilot case studies seem more likely to employ small sample sizes, e.g., Pinho et al. (2019) and Williams (2015). With such support from the literature, our sample seems to be an excellent starting point for an innovative longitudinal intervention, particularly in the context of China.

Regardless of its suitability for an innovative pilot study, the small sample size triggered an additional limitation. It was considered unsuitable for factor analysis. This limitation should be addressed in future research, building on our results. In particular, researchers should aim at samples of more than 300 participants (Tabachnick and Fidell, 2007) to assess the validity of the utilized scales.

Future research endeavors might also aim to enhance comprehension of the general influences accompanying program implementation, thereby enhancing the potential for positive outcomes. Our study hints at such potential impacts triggered by government

policy in the Chinese context. Additionally, future investigations, building upon the insights from our research, could consider replicating our methodology via a larger participant pool.

If researchers intend to modify the methodology, they might also consider adopting our approach to pilot innovation with comparatively fewer participants. Although smaller intervention groups typically raise questions about the generalizability of findings, they are a cost-efficient way to test novel research designs. Such designs can encompass other tailored EE, customized to meet specific demographics' or target groups' unique needs. Customization can be achieved by adapting content, teaching approaches, and resources to address learners' distinct characteristics and requirements. Due consideration can be given to age, gender, and geographic and cultural contexts. Such an approach would help maximize EE's impact by recognizing the potential entrepreneurs' diversity while keeping it relevant and open to innovation.

Building upon our examination of innovation-driven EE intervention, future research could delve deeper into the emerging technologies' effects on ESE and entrepreneurial intention. For example, artificial intelligence (AI) is a recent technological advancement that warrants exploration for its potential integration into new entrepreneurial endeavors. This avenue could unravel novel ways AI contributes to business innovation.

Although such novel ways of leveraging technology represent an exciting opportunity, researchers should focus on ensuring that experience is accessible. Digital tools and resources, such as the Spark and Fuel modules, should be designed to be inclusive and user-friendly. As a result, researchers can ensure that participants, including those with disabilities and varying levels of technology proficiency, can fully engage in entrepreneurial learning and activities. Such considerations are particularly applicable in research such as ours, where addressing the identified research gap 2, a social enterprise delivered EE.

Our intervention encompassed exploring EE delivered through a social purpose enterprise. Future researchers might take a closer look at quantifying the economic value delivered by entrepreneurial innovations derived from social-purpose enterprises and how they interact with sustainable development and the promotion of inclusive growth. This line of inquiry holds the potential for shedding light on the broader social impact of entrepreneurship and social innovation initiatives. Understanding the broader social impact could further incentivize social enterprise stakeholders to consider utilizing young people's entrepreneurship potential without MEI subsidies and tax incentives.

Ethics statement

Ethics approval was obtained from the **YES Project Ethics Committee**. The participants provided their informed consent to participate in this study.

Declaration of competing interest

The author(s) declare no conflict of interest.

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