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TEACHING ENTREPRENEURSHIP OR ENCOURAGING ENTREPRENEURIAL CAREERS? EVIDENCE FROM TWO EUROPEAN HIGHER EDUCATION CONTEXTS

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Abstract: *Entrepreneurship education among scholars is recognized as an important driver of entrepreneurial intentions. Its development has become a challenging goal of higher education institutions and policymakers seeking to develop entrepreneurial culture, employability, and economic growth. Accordingly, this study explores the relationship between entrepreneurial education (EE) and entrepreneurial intentions (EI) among university students and examines the mediating role of entrepreneurial self-efficacy (ESE). Grounded on Social Cognitive Theory (SCT), the study analyzes how entrepreneurship education contributes to students' entrepreneurial intentions and its effect on students' confidence in their intention to start a business. A comparative perspective was developed through the analysis of university students in the Republic of North Macedonia and the Republic of Ireland. The results indicate a statistically significant positive direct association between entrepreneurial self-efficacy and entrepreneurial intentions in both country contexts. Entrepreneurial education was significantly associated with entrepreneurial self-efficacy among university students in North Macedonia. In contrast, no significant direct association between entrepreneurial education and entrepreneurial intentions was identified in either North Macedonia or Ireland. These results suggest that the role of entrepreneurship education may be indirect and context-dependent.*

Keywords: *Entrepreneurial Education; Entrepreneurial Self-Efficacy; Entrepreneurial Intentions; Social Cognitive Theory*

JEL Classification: *L26; M13; I23; D91*

1. INTRODUCTION

Entrepreneurship is widely recognized as a main driver of innovation, economic growth, and employment. As a result, entrepreneurship education in higher education institutions plays a crucial role in entrepreneurial career choices and in encouraging entrepreneurial thinking. Previous research studies show mixed findings where education has a direct influence on intentions and an indirect influence through

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psychological and cognitive factors. The meta-analysis conducted by Bae et al. (2014) identified only a small positive correlation between entrepreneurship education and entrepreneurial intentions. Moreover, this relationship was no longer statistically significant after controlling for participants' entrepreneurial intentions before receiving entrepreneurship education. Similarly, Nabi et al. (2017) found considerable variation in the outcomes associated with entrepreneurship education. They therefore emphasized the need for greater attention to the relationships between particular educational approaches and specific entrepreneurial outcomes. These findings indicate that entrepreneurship education may not be directly associated with students' entrepreneurial intentions. Instead, that relationship may involve psychological and cognitive factors. Ligouri et al. (2018) highlight entrepreneurial self-efficacy as a key factor associated with the development of entrepreneurial intentions. Previous studies have also identified entrepreneurial self-efficacy as an intervening variable in the statistical relationship between entrepreneurship education and entrepreneurial intentions (Wang et al., 2023; Wu et al., 2022). Accordingly, self-efficacy is positioned as one of the most frequent mediator variables that boost entrepreneurial intentions. Nevertheless, most existing studies focus on a single country, limiting understanding of whether these relationships are consistent across different higher-education and national contexts. To address the identified gap, this paper compares university students from North Macedonia and Ireland using the same conceptual framework and measurement approach. The paper makes three main contributions to the literature. First, it extends existing research by examining the relationship among entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions across two distinct European contexts. Second, it distinguishes between the direct relationship between entrepreneurship education and entrepreneurial intentions and the indirect relationship through entrepreneurial self-efficacy. Third, it assesses whether the relationship between entrepreneurship education and entrepreneurial self-efficacy differs between North Macedonia and Ireland, thereby providing further evidence regarding the context-specific nature of these relationships.

The findings show that entrepreneurship education is positively and significantly related to the entrepreneurial self-efficacy among university students in North Macedonia, whereas the corresponding relationship is not statistically significant in Ireland. In both country samples, entrepreneurial self-efficacy is positively related to entrepreneurial intentions. By contrast, no statistically significant direct link between entrepreneurship education and entrepreneurial intentions is found in either country. These findings indicate that the relevance of entrepreneurship education should not be assessed only through its direct connection with students' entrepreneurial intentions.

Universities and policymakers should also consider whether entrepreneurship programmes are linked to greater confidence in carrying out entrepreneurial activities and tasks. Furthermore, the differences identified between the two country samples suggest that entrepreneurship education policies and programme design should take account of the surrounding institutional, educational, and national context rather than relying on a uniform approach across countries.

This paper is developed based on Ajzen's Theory of Planned Behaviour (TPB) and Bandura's Social Cognitive Theory (SCT). The TPB explains that individuals' intentions are planned outcomes, while SCT emphasizes the importance of self-belief in shaping motivation and individual behaviour. Within the context of entrepreneurship and higher education institutions, it represents students' confidence in their capabilities to engage in any entrepreneurial activity, whereas entrepreneurship education contributes to the development of entrepreneurial intentions. According to the TPB, entrepreneurial intentions are considered the strongest predictor of entrepreneurial behaviour, while according to SCT, entrepreneurial education may strengthen entrepreneurial intentions through entrepreneurial self-efficacy. The proposed research model investigates the direct relationship of EE to EI and the indirect effect through ESE. Therefore, this research study aims to determine how these constructs are related among university students and whether the identified relationships differ between North Macedonia and Ireland.

2. LITERATURE REVIEW

2.1. Entrepreneurial Intentions (EI), Theory of Planned Behavior (TPB), and Social Cognitive Theory (SCT)

Entrepreneurial intentions refer to an individual's conscious commitment and readiness to establish a start-up (Fayolle & Gailly, 2015). Within the entrepreneurship literature, entrepreneurial intentions are considered key antecedents of entrepreneurial behaviour and strong predictors of individuals' engagement in venture creation (Liao et al., 2022; Shah et al., 2020). However, empirical evidence suggests that entrepreneurial intentions are dynamic and may change in response to environmental atmosphere, experience, and education. (Fayolle & Gailly, 2015; Sun et al., 2023). In this regard, Otache et al. (2019) found that students' entrepreneurial intentions, with attitudes toward behaviour acting as a mediator, significantly increase after students' exposure to entrepreneurial education. Previous studies also indicate a strong relationship between entrepreneurial education and entrepreneurial intentions. University students who participate in entrepreneurship education tend to demonstrate stronger entrepreneurial

intentions than students who have not been exposed to similar education. However, this effect may vary depending on individual characteristics, program design, and context (Bae et al., 2014; Overwien et al., 2024).

The theoretical development of the concept of entrepreneurial intentions has been influenced by several key models. Shapero and Sokol in 1982 developed the Entrepreneurial Event Model, which explains entrepreneurial intentions in terms of perceived desirability, perceived feasibility, and propensity to act. The Shapero model emphasized the role of individual perceptions in shaping entrepreneurial action. Bird in 1988 further advanced the field by conceptualizing entrepreneurship as an intentional and planned process. Later, Ajzen's Theory of Planned Behaviour became one of the most widely applied frameworks for examining entrepreneurial intentions. According to this theory, perceived behavioral control, subjective norms, and attitude toward behaviour explain and shape intention (Ajzen,1991; Liu et al., 2019; Ferdianto et al., 2025). In the entrepreneurial context, TPB is particularly relevant because starting a new venture is generally considered a planned and intentional behaviour rather than a spontaneous action. Since perceived behavioural control refers to individuals' perceived ability to perform a behaviour successfully, the model also provides a theoretical basis for linking entrepreneurial intentions with self-efficacy (Ajzen, 1991). Therefore, researchers often connect Bandura's Social Cognitive Theory with Ajzen's Theory of Planned Behavior. In Ajzen's TPB, perceived behavioral control is conceptually similar to self-efficacy in Bandura's SCT and is a key predictor of entrepreneurial intentions (Liao et al., 2022). Thus, entrepreneurial intentions are central predictors of entrepreneurial behaviour. TPB provides a strong framework for explaining these intentions, while its connection with self-efficacy highlights the relevance of SCT in understanding how students develop confidence and motivation to pursue entrepreneurship. The literature suggests that entrepreneurial intentions are shaped by both educational and psychological factors, with entrepreneurial self-efficacy playing an important role in translating entrepreneurship education into stronger entrepreneurial motivation.

2.2. Entrepreneurial Education (EE)

University students' entrepreneurial intentions are shaped by a range of educational, psychological, personal, and contextual factors. These include entrepreneurial education, prior entrepreneurial experience, perceived behavioral control, subjective norms, personality-related characteristics, and broader environmental influences (Xanthopolou & Sahinidis, 2024). Education is one of the main determinants of entrepreneurial intentions, particularly in higher education

(Xanthopolou & Sahinidis, 2024). It can be delivered through formal and informal learning activities with the aim of developing the knowledge, skills, attitudes, and competencies needed to foster entrepreneurial behaviour (Ahmed et al., 2020; Nguyen & Nguyen, 2023). However, entrepreneurship educational programmes may vary across institutional and cultural contexts. Ranging from theoretically oriented courses that emphasize knowledge acquisition to practically oriented courses that emphasize experiential learning and simulating ventures. (Piperopoulos & Dimov, 2015). From the perspective of Social Cognitive Theory, individuals' behaviour is influenced by the interaction between personal factors, environmental conditions, and cognitive mechanisms, particularly self-efficacy (Bandura, 1986). In entrepreneurship research, this perspective suggests that education does not necessarily influence entrepreneurial intentions directly but rather through psychological mechanisms, such as entrepreneurial self-efficacy. Liguori et al. (2018) highlight self-efficacy as a key factor in understanding why individuals develop entrepreneurial intentions. In line with this view, studies based on Social Cognitive Career Theory show that perceived educational support can strengthen entrepreneurial self-efficacy and outcome expectations, which in turn may encourage stronger entrepreneurial intentions (Duong et al., 2024; Cui & Gu, 2024). Similarly, Praswati et al. (2022) found that entrepreneurship education significantly affects entrepreneurial intentions when mediated by self-efficacy, highlighting the importance of students' confidence in translating educational experiences into entrepreneurial motivation.

Therefore, Social Cognitive Theory provides a strong theoretical foundation for explaining how entrepreneurship education may influence entrepreneurial intentions by strengthening students' belief in their ability to perform entrepreneurial action.

2.3. Entrepreneurial Self-Efficacy (ESE)

Self-efficacy, according to Bandura, refers to an individual's belief in their capacity to execute the actions required to achieve a specific outcome. Building on this definition, entrepreneurial self-efficacy (ESE) can be understood as the extent to which individuals believe they are capable of successfully starting and managing a new venture. It reflects confidence in identifying opportunities, managing uncertainty, mobilizing resources, and taking calculated risks (Nowinski et al.,2019; Wu et al., 2022). Wang et al.(2023) further argue that self-efficacy shapes how ambitious individuals are in setting goals, how much effort they invest when facing obstacles, and how long they persist before giving up. In the entrepreneurial context, this form of confidence is particularly important because entrepreneurial action is often characterized by risk, ambiguity, and uncertainty.

Previous research suggests that entrepreneurship education can strengthen ESE by exposing students to learning experiences that build entrepreneurial confidence. Li & Islam (2021), in their research study, showed a positive and direct relationship between entrepreneurship education and both entrepreneurial self-efficacy and entrepreneurial intentions. Moreover, entrepreneurial self-efficacy played a strong mediating role, suggesting that students' intentions can be increased by strengthening their confidence. A practical and experiential approach can provide mastery experiences, where successful task completion reinforces students' belief in their own entrepreneurial ability.

Being in an environment of successful entrepreneurs provides vicarious learning, enabling students to see entrepreneurship as an attainable career path. In addition, feedback and mentorship can function as social persuasion, while educational activities that prepare students to manage failure and uncertainty may reduce anxiety and strengthen self-belief (Boldureanu et al., 2020; Taneja et al., 2023).

2.4. The Relationship between Entrepreneurial Education and Entrepreneurial Intentions (EE-EI)

Whether there is a positive direct relationship between EE and EI is a question of wide interest among researchers. Several studies suggest that greater exposure to entrepreneurial education can strengthen student entrepreneurial intentions. EE is helping students to understand business processes and to reduce the uncertainty often associated with starting a new venture (Fan et al., 2024; Malathi & Venugopal, 2025; Nguyen & Nguyen, 2023). In line with this, Wang et al. (2023) in their study suggest that well-structured educational programmes can play an important role in encouraging students to consider entrepreneurship as a future career path, concluding that EE significantly increases EI. Pérez-Macías et al. (2023) suggest that active learning methods can strengthen the relationship between EE and EI. However, several research studies showed that the effect of entrepreneurship education on entrepreneurial intentions is not always consistent. Bae et al. (2014) argue that the effect of EE on EI is relatively modest and may diminish when controlling for pre-existing intentions. Nabi et al. (2017) further found that mixed findings can come from differences in course design, teaching methods, context, student background, and prior entrepreneurial exposure. Intriguingly, some research findings concluded non-significant or even negative effects. Moreover, Silesky-Gonzalez et al. (2024) found that EE significantly influences perceived behavioural control but does not directly stimulate entrepreneurial intentions. Similarly, Piperopoulos & Dimov (2015) demonstrate that the impact of self-efficacy on intention depends on course orientation. These findings indicate that

EE may function not only as a motivator but also as a mechanism that shapes entrepreneurial intentions.

Because findings on the direct relationship between entrepreneurship education and entrepreneurial intentions remain mixed, scholars have increasingly focused on investigating entrepreneurial self-efficacy as a possible mediator that links EE and EI. Moreover, Wang et al. (2023) and Wu et al. (2022) suggest that self-efficacy serves as the primary transmission mechanism, concluding that once entrepreneurial self-efficacy is accounted for, the direct effect of EE on EI is not significant. Similarly, Mei et al.(2020) confirm that self-efficacy plays a significant mediating role in entrepreneurial decision-making, reinforcing the importance of confidence-based cognitive processes.

Other relevant studies suggest that the relationship between entrepreneurship education and entrepreneurial intentions may operate through partial or sequential mediation mechanisms. According to Yousaf et al. (2021), EE through a sequential pathway enhances ESE, which subsequently shapes entrepreneurial attitudes and stronger entrepreneurial intentions. This framework was extended by alertness and opportunity recognition, as additional variables-mediators, showing that they mediate the relationship between EE and EI. Overall, the evidence suggests that ESE represents a key psychological mechanism through which individuals develop confidence to think and act as entrepreneurs.

Further, research findings suggest different mediators and moderators that shape EI. For example, entrepreneurial attitude is a particularly important construct that functions in the same way or even more strongly than self-efficacy (Al-Qadasi et al., 2024; Taneja et al., 2023). Similarly, entrepreneurial competence and capacity have been shown as important mediators of that relationship.

2.5. Country contexts

Entrepreneurship education is increasingly viewed as an important approach for encouraging entrepreneurial intentions in both Ireland and North Macedonia. It is an important way to improve students' employability after graduation and support wider economic development. In the Republic of Ireland, entrepreneurship education is linked to innovation policy and national economic regeneration. Additionally, there is a need to develop indigenous enterprises despite the country's historical dependence on foreign direct investments. O'Connor et al. (2012) argue that higher education institutions should contribute to increasing entrepreneurial culture among graduate students in the Republic of Ireland. However, they stated the "credibility gap" between policy expectations and the practice in reality. They pointed out the gap in the measurement of entrepreneurial education and the final "production" of graduate entrepreneurs.

Regarding the development of university-based entrepreneurship programs and collaborative initiatives, Ireland's positive practices are visible. According to Coleman et al. (2010), the Accelerating Campus Entrepreneurship initiative is designed to promote entrepreneurial graduates and presents a multi-institutional approach. Similarly, Fleming (1999) found that graduates who were exposed to entrepreneurship activities support a stronger business-ownership orientation. Further on, RezaeiZadeh et al. (2017) key entrepreneurial competences, such as productive thinking, motivation, interpersonal skills, and leadership, should be included in educational curricula. In line with these findings, we can conclude that entrepreneurship education can positively shape entrepreneurial awareness, entrepreneurial aspirations, and perceived feasibility of venture creation.

Nevertheless, the approach is not without limitations. Although Ireland's entrepreneurship system makes investments in enterprise policy and third-level initiatives, it is often described as insufficiently coordinated and fragmented. Cooney & Murray (2018) argue that Ireland is still heavily dependent on FDI, despite the expansion of SME support and incubation infrastructure. They noted that Ireland historically has a lack of a strong indigenous entrepreneurial culture. Further, O'Driscoll (2019) argues that youth start-up activities in Ireland are underperforming compared to other European countries. His suggestions are in the direction of developing autonomy, creativity, and broader entrepreneurial competencies through entrepreneurship education. Therefore, the Irish context consists of strong institutional initiatives but gaps in early-stage entrepreneurial culture, measurable outcomes, and coherence.

Entrepreneurship education in North Macedonia appears to be more explicitly embedded in national curriculum reform. Following the policy decisions in 2014 and World Bank support, North Macedonia in 2016 introduced a compulsory and progressively evaluated Entrepreneurship and Innovation Curriculum (Penaluna et al., 2020). This was defined as a positive move because entrepreneurship education became available to all students across primary and secondary education, which was not the case before. Topuzoska & Imailoska (2023) further emphasise that entrepreneurship-related content was integrated into several ninth-grade subjects, indicating an interdisciplinary approach.

At the university level, the past evidence shows that, in general, there is a positive relationship between entrepreneurship education and entrepreneurial intentions. Several research studies concluded that educational environment, university atmosphere, support systems, and favorable business climate are the main drivers of entrepreneurial intentions among Macedonian students (Temova et al., 2021; Pop-Kostova et al., 2019; Misoska et al., 2016). These findings are in line with Ajzen's Theory of Planned Behaviour, where education influences intentions by shaping attitudes, perceived

control, and social norms. However, the Macedonian context also shows that curriculum inclusion alone is not sufficient. Poleankovik et al. (2019) argue that the major challenge is youth unemployment, and stronger cooperation between universities, employers, and institutions is needed to close the gap between labour market needs and students' competencies. This indicates that entrepreneurship education exists, but its practical implementation depends on whether it develops employable, opportunity-oriented, and market-responsive skills. On the other side, non-formal education can have stronger entrepreneurial human capital than formal education in terms of constructive, experiential, and non-cognitive teaching approaches (Debarliev et al., 2020). This suggests that formal course content in education should be complemented by more practical activities such as mentoring, start-up simulations, incubation, and interaction with entrepreneurs.

The comparison of both contexts suggests facing different but complementary challenges. The Republic of Ireland demonstrates a stronger entrepreneurship ecosystem, initiatives, and higher education, while it faces weaknesses in coordination, limited youth start-up activities, and difficulties in measuring outcomes. North Macedonia, by contrast, through compulsory entrepreneurship education, shows stronger formal integration of curriculum, while challenges lie in implementation quality, labor-market alignment, and the need for more experiential and non-formal learning. North Macedonia and Ireland represent distinct but complementary European contexts for examining the relationship among EE, ESE, and EI. The two countries differ in their levels of economic development, the maturity of their entrepreneurial ecosystems, and the extent to which EE is embedded within the wider educational and institutional environment. The contrasting characteristics provide a meaningful basis for assessing whether the relationships among the study variables are consistent across different institutional, educational, and economic settings. The selection of the two countries, therefore, combines substantial contextual variation with empirical comparability, allowing the paper to explore whether the associations surrounding EE differ according to the broader national environment. The comparison further highlights that effective entrepreneurship education may extend beyond the provision of the theoretical knowledge to include competence development, practical experience, ESE, and a supportive university environment.

3. DATA AND METHODOLOGY

This study is based on a comparative dataset from the Global University Entrepreneurial Spirit Students Survey (GUESSS 2023), including responses from 254 university students from North Macedonia and 140 students from the Republic of Ireland. The data were analyzed using IBM SPSS Statistics and JASP. To ensure consistency of the measurement scales, reliability analysis was performed using Cronbach’s alpha. The

relationships between the main variables were examined using Pearson correlation analysis. To further examine these relationships, separate mediation analyses based on linear regression were conducted for the combined sample and the two country samples.

The proposed research model in Figure 1 examines the direct relationships between entrepreneurial education and entrepreneurial intentions, entrepreneurship education and entrepreneurial self-efficacy, and entrepreneurial self-efficacy and entrepreneurial intentions. It also examines the positive indirect relationship between entrepreneurship education and entrepreneurial intentions through self-efficacy.

Entrepreneurship Education is specified as the independent variable, entrepreneurial intentions as the dependent variable, and entrepreneurial self-efficacy as the mediating variable. Entrepreneurial intentions are considered a dependent variable because they represent the outcome. Entrepreneurial self-efficacy is the mediator or potential psychological factor that connects the dependent and independent variables. In the context of theoretical assumptions, the student's exposure to entrepreneurship is positively associated with their confidence in performing entrepreneurial tasks, which is subsequently associated with stronger entrepreneurial intentions.

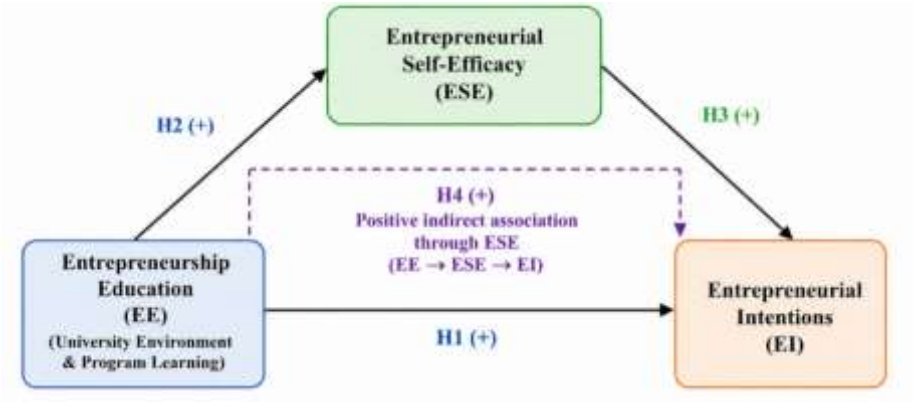


Figure 1. Research Model

Based on the proposed research model, the following hypotheses are developed:

H1: Entrepreneurship education (EE) is positively correlated with entrepreneurial intentions (EI).

H2: Entrepreneurship education (EE) is positively correlated with entrepreneurial self-efficacy (ESE).

H3: Entrepreneurial self-efficacy (ESE) is positively correlated with entrepreneurial intentions (EI).

H4: Entrepreneurship education (EE) has a positive and indirect relationship with entrepreneurial intentions (EI) through entrepreneurial self-efficacy (ESE).

Table 1 Description of Constructs, Items, and Scale Construction

	Construct/Variable; Items per construct	
	Entrepreneurship education (EE); 8 items	Interpretation of higher values
University Environment	1: The atmosphere at my university inspires me to develop ideas for new businesses. 2: There is a favorable climate for becoming an entrepreneur at my university. 3: My university encourages students to engage in entrepreneurial activities. 4: At my university, students can get entrepreneurship-related advice and guidance easily.	Higher scores indicate stronger perceived entrepreneurship education (university entrepreneurial support and entrepreneurship-related learning).
Program Learning	1: The courses and events I attended increased my understanding of the attitudes, values, and motivations of entrepreneurs. 2: The courses and events I attended increased my understanding of the actions someone has to take to start a business. 3: The courses and events I attended enhanced my practical management skills to start a business. 4: The courses and events I attended enhanced my ability to develop networks.	
	Entrepreneurial self-efficacy (ESE); 4 items	Higher scores indicate stronger perceived entrepreneurial capability and confidence in performing entrepreneurial tasks.
	1: I am convinced that I can successfully discover new business opportunities. 2: I am convinced that I can successfully create new products. 3: I am convinced that I can think creatively. 4: I am convinced that I can successfully commercialize ideas.	
	Entrepreneurial intentions (EI); 6 items	Higher scores indicate stronger entrepreneurial intentions and a stronger orientation toward starting a business in the future.
	1: I am ready to do anything to be an entrepreneur. 2: My professional goal is to become an entrepreneur. 3: I will make every effort to start and run my own business. 4: I am determined to create a business in the future. 5: I have very seriously thought of starting a business. 6: I have the strong intention to start a business someday.	

This paper examines three main constructs: Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions. All variables were derived

from items in the GUESSS questionnaire and based on established measures from the entrepreneurship literature. All items were rated on a seven-point Likert scale, with higher scores indicating higher levels of each construct. Composite scores were calculated by combining relevant items, and the internal consistency of each multi-item scale was assessed using Cronbach's alpha. Entrepreneurship education (EE) reflects students' perceived exposure to entrepreneurship learning and university support. It includes the entrepreneurial environment and the perceived learning outcome from entrepreneurship courses. Entrepreneurial self-efficacy (ESE) refers to students' confidence in their ability to perform entrepreneurial tasks, such as identifying opportunities, developing business ideas, managing entrepreneurial activities, and venture creation challenges. Entrepreneurial Intentions (EI) refer to students' intention to pursue entrepreneurship as a future career or to start a business.

Table 2 Descriptive statistics, combined sample

	N	Minimum	Maximum	Mean	Std. Deviation
ESE	386	4.00	28.00	19.7979	5.25363
EI	302	6.00	42.00	23.3841	11.09689
EE	374	8.00	56.00	37.3209	11.72307
Valid N (listwise)	289				

Table 2 presents the descriptive statistics for the main variables in the combined sample of university students from North Macedonia and Ireland. When considered on an item-average basis, ESE shows the highest average score, indicating a relatively strong perception of students' entrepreneurial capabilities. Entrepreneurship education shows a moderately positive score, suggesting that students generally evaluated their exposure to entrepreneurship education positively. In contrast, entrepreneurial intentions appear to be more moderate, while the higher standard deviation for this variable suggests greater variability among students in their intention to pursue entrepreneurial activity.

Given the comparative focus of this paper, a univariate analysis was conducted to provide a country-level overview of the main research variables. Descriptive statistics were calculated separately for Ireland and North Macedonia for EE, ESE, and EI. To further assess whether the observed differences between the two country samples were statistically significant, independent samples t-tests were performed for each variable.

Table 3 Descriptive statistics and mean differences by country

Variable	Country	N	Mean	SD	Mean Difference	t	df	p
EE	Ireland	136	40.88	9.20	5.59	4.936	349.254	< .001
	North Macedonia	238	35.29	12.52				

Variable	Country	N	Mean	SD	Mean Difference	t	df	p
ESE	Ireland	139	18.50	4.52	-2.03	-3.918	333.665	< .001
	North Macedonia	247	20.53	5.50				
EI	Ireland	115	19.12	9.84	-6.88	-5.481	300	< .001
	North Macedonia	187	26.01	11.03				

The results given in Table 3 above indicate statistically significant differences between the two country samples across all three variables. Students from Ireland reported higher levels of EE than students from North Macedonia. This difference was statistically significant, $t(349.254) = 4.936$, $p < .001$, suggesting that Irish students perceived greater exposure to entrepreneurship education. However, ESE and EI patterns were different. Students from North Macedonia reported higher ESE $t(333.665) = -3.918$, $p < .001$ and EI $t(300) = -5.481$, $p < .001$ than students in Ireland. Overall, these findings show an interesting country-level pattern. While students from Ireland reported stronger perceived EE, students from North Macedonia reported higher levels of ESE and stronger EI. This descriptive comparison provides useful background for interpreting the subsequent mediation analysis.

Table 4: Reliability Statistics, combined sample

	Cronbach's Alpha	N of Items	Reliability
Univ Env	.898	4	Good
Program Learning	.919	4	Good
ESE	.878	4	Good
EI	.960	6	Excellent

The reliability analysis given in Table 4 indicates that the constructs used in the study demonstrate satisfactory to strong internal consistency. The Cronbach's alpha values ranged from .878 for ESE to .960 for EI, indicating that the items within each scale are consistently related. These results support the use of the selected constructs for further statistical analysis.

Table 5 *Correlations*

		ESE	EI	EE
ESE	Pearson Correlation	1	.499**	.322**
	Sig. (2-tailed)		.000	.000
	N	386	300	371
EI	Pearson Correlation	.499**	1	.099
	Sig. (2-tailed)	.000		.091
	N	300	302	291

		ESE	EI	EE
EE	Pearson Correlation	.322**	.099	1
	Sig. (2-tailed)	.000	.091	
	N	371	291	374

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis shows a positive and significant relationship between entrepreneurial self-efficacy and entrepreneurial intentions, indicating that students with higher perceived entrepreneurial capabilities tend to report stronger intentions to engage in entrepreneurship. Entrepreneurship education is also positively and significantly associated with entrepreneurial self-efficacy, suggesting that students who evaluated their exposure to entrepreneurship education more favorably reported higher self-efficacy. However, the relationship between entrepreneurship education and entrepreneurial intentions is weak and not statistically significant. This suggests that entrepreneurship education may not be directly related to entrepreneurial intentions, but its role may be more relevant through entrepreneurial self-efficacy.

Table 6 Mediated regression results

							95% C I	
Sample	Type	Relationship	β	Std. error	z-value	p	Lower	Upper
Combined sample	Path	EE→ESE	0.146	0.026	5.657	< .001	0.094	0.192
	Path	ESE→EI	1.144	0.118	9.736	< .001	0.903	1.367
	Direct effect	EE→EI	-0.081	0.060	-1.352	.176	-0.208	0.028
	Indirect effect	EE→ESE →EI	0.167	0.030	5.460	< .001	0.100	0.244
North Macedonia	Path	EE→ESE	0.179	0.026	6.784	< .001	0.127	0.230
	Path	ESE→EI	1.077	0.138	7.797	< .001	0.806	1.347
	Direct effect	EE→EI	0.034	0.061	0.564	.573	-0.085	0.153
	Indirect effect	EE→ESE →EI	0.192	0.037	5.128	< .001	0.119	0.266
Ireland	Path	EE→ESE	0.005	0.017	0.271	.786	-0.028	0.037
	Path	ESE→EI	0.263	0.113	2.329	.020	0.042	0.485
	Direct effect	EE→EI	-0.005	0.022	-0.209	.834	-0.047	0.038

							95% C I	
Sample	Type	Relationship	β	Std. error	z-value	p	Lower	Upper
	Indirect effect	EE→ESE →EI	0.001	0.004	0.269	.788	-0.007	0.010

To examine how education and entrepreneurial self-efficacy shape entrepreneurial intentions, we conducted a mediation analysis in JASP. The mediation analysis provides a more detailed understanding of the relationship between entrepreneurial education and entrepreneurial intentions.

Table 6 presents the constituent paths, the direct relationship between EE and EI, and the indirect relationship through ESE. Overall results showed that ESE is the most consistent predictor of entrepreneurial intentions across the model. Results from the combined sample show that ESE was positively and significantly related to EI (β = 1.144, $p < .001$), indicating that students who perceive themselves as more capable of performing entrepreneurial tasks are more likely to express stronger entrepreneurial intentions. Combined sample results further show that EE is not directly related to EI (β = -0.081, $p = .176$). However, EE was positively and significantly related to ESE (β = 0.146, $p < .001$). More importantly, the positive indirect relationship between EE and EI through ESE was statistically significant (β = 0.167, $p < .001$). This suggests that EE may influence EI indirectly by strengthening students' ESE. These findings indicate that exposure to EE does not automatically translate into stronger EI. Instead, its relevance appears to depend on whether students develop greater confidence in their ability to take any entrepreneurial action. The importance of EE is in the role to help students to develop confidence in their entrepreneurial abilities, rather than because it directly increases their intention to become entrepreneurs.

When the analysis is conducted separately by country, the results reveal important differences. In the North Macedonia sample, EE was positively related to ESE (β = 0.179, $p < .001$), while ESE was positively related to EI (β = 1.077, $p < .001$). The direct relationship between EE and EI was not statistically significant(β = 0.034, $p = .573$). Nevertheless, the positive indirect relationship through ESE was statistically significant (β = 0.192, SE = 0.037, $p < .001$). This result supports the proposed positive indirect relationship, indicating that the indirect pathway through self-efficacy is more visible in the North Macedonia students' sample. This finding is also consistent with the descriptive results, where students from North Macedonia reported higher levels of ESE and EI.

In contrast, in the Irish sample, the relationship between EE and ESE was not statistically significant (β = 0.005, $p = .786$) or directly related to EI (β = −0.005, p =

.834). However, ESE remained positively related to EI (β = 0.263, p = .020). The indirect relationship between EE and EI through ESE was not statistically significant (B = 0.001, p = .788). Thus, the proposed positive indirect relationship was not supported in this sample. This may suggest that in the Irish context, students' entrepreneurial confidence is shaped by other factors different than entrepreneruship education.

Table 7 Summary of hypothesis testing

Hypothesis	Hypothesized relationship	Combined sample	North Macedonia	Ireland
H1	EE is positively correlated with EI.	Not supported	Not supported	Not supported
H2	EE is positively correlated with ESE.	Supported	Supported	Not supported
H3	ESE is positively correlated with EI.	Supported	Supported	Supported
H4	EE has a positive indirect relationship with EI through ESE.	Supported	Supported	Not supported

The hypothesis testing results show that ESE is positvely associated with EI across all samples (H3 supported), whereas no significant direct relationship is found between EE and EI (H1 not supported). The relationship between ESE (H4) is supported in the combined sample as well as in North Macedonia, but not in Ireland.

These analysis findings suggest that the indirect mechanism through entrepreneurial self-efficacy is more evident among university students in North Macedonia than among university students in Ireland. Since the model includes individual-level variables only, the differences found cannot be fully explained without considering broader country-level conditions. Factors such as government support for entrepreneurship, education and innovation spending, taxation, administrative procedures, access to finance, and wider business environment may influence how students perceive entrepreneurship as a feasible career path. These factors may also affect how EE is translated into ESE and EI. Additionally, cultural characteristics such as attitude toward uncertainty, risk, failure, autonomy, and career security may shape students' willingness to consider entrepreneurship. Therefore, future research should incorporate institutional, economic, educational, and cultural variables to provide a more comprehensive explanation of cross-country differences in the relationship among EE→ESE→EI.

4. CONCLUSION

This study examined the relationship among entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions among university students

in North Macedonia and Ireland. Using a mediation framework, the paper assessed whether entrepreneurship education was directly related to entrepreneurial intentions and whether an indirect relationship was present through entrepreneurial self-efficacy.

The study contributes to the ongoing discussion regarding the relationship between entrepreneurship education and university students' entrepreneurial intentions. Statistical results from the combined sample and separate samples showed no statistically significant direct relationship between entrepreneurship education and entrepreneurial intentions. Entrepreneurial self-efficacy, however, was positively and significantly related to entrepreneurial intentions in both country samples. This confirms that ESE plays a central role in explaining EI, meaning that students who feel more capable of performing entrepreneurial tasks are consistently more likely to report stronger entrepreneurial intentions, regardless of the country. Further on, in the combined sample and in North Macedonia, EE is significantly associated with ESE, which in turn is significantly associated with EE. This indicates that the relationship of EE on EI is primarily indirect, pointing to the need to consider additional factors that may influence this relationship (Bae et al., 2014; Nabi et al., 2017; Silesky-Gonzalez et al., 2024). For the North Macedonia sample specifically, once ESE is accounted for, the direct association of EE on EI becomes weak or non-significant (Wang et al., 2023; Wu et al., 2022). These findings support the argument that entrepreneurship education is most effective when it strengthens students' confidence, perceived capability, and readiness to engage in entrepreneurial activity (Mei et al., 2020; Yousaf et al., 2021). By contrast, this mediating mechanism is not supported in the Irish sample. EE is not significnatly assocated to ESE there, and its overall influence on EI is weak. This suggests that the mediating role of ESE is context-dependent and may vary across educational and national environments. The difference between the two countries can likely be explained by the broader institutional and educational contexts in which students are embedded. In North Macedonia, entrepreneurship education appears to play an important role in strengthening students' confidence in their ability to engage in entrepreneurial activity. In Ireland, by contrast, entrepreneurship education does not significantly predict either self-efficacy or entrepreneurial intentions. A pattern that may reflect a more mature Irish entrepreneurial ecosystem, in which students' entrepreneurial confidence is shaped by factors other than formal education.

To conclude, the findings indicate that the relationship between EE and EI should be interpreted with appropriate qualification. EE may not be directly related to EI to the same extent across national contexts. Instead, its relationship with EI appears to depend partly on whether it is associated with students' ESE, practical competence, opportunity recognition skills, and confidence in performing

entrepreneurial tasks. This study has some limitations. First, it focuses on individual-level variables and does not incorporate country-level characteristics that may be relevant to ESE and EI. This may include institutional support, administrative procedures, business regulations, access to finance, and cultural factors such as attitude toward entrepreneurship, uncertainty, risk, and failure. Second, the study relies on responses that may therefore be affected by individual perceptions, social desirability, or differences in how students interpret the survey items. Third, the comparison between North Macedonia and Ireland provides meaningful contextual variation, but the findings should not be generalised. For future research, longitudinal analysis should be implemented to examine how the relationship among EE, ESE, and EI develops over time. Additionally, it could also incorporate institutional, economic, educational, and cultural indicators to examine how national entrepreneurial ecosystems are related to individual-level outcomes. Also, it can be implemented with a distinction between different forms of EE, including theoretical courses, experiential learning, mentoring, entrepreneurship competition, and project-based activities.

For universities and policymakers, the central implication is that providing EE is not sufficient by itself. Programmes should be more practice-oriented, students should engage with real business challenges, and develop confidence in their ability to undertake entrepreneurial activity. This redirects attention from simply offering EE to ensuring that its design and delivery are meaningfully connected to students' entrepreneurial self-efficacy and intentions.

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