International Review of Entrepreneurship, Article #1670, 20(1): pp. 69-86.

Evaluating Mentorship-based Learning in Entrepreneurship Education

Abdul Rahman Badwan[1]
Winchester Business School, University of Winchester, UK

Jagannadha Pawan Tamvada
Southampton Business School, University of Southampton, UK

Francesco Rentocchini
Università Degli Studi di Milano, Italy

Abstract. Entrepreneurship education impacts students' entrepreneurial intentions. However, the role of teachers' mentorship in influencing students' entrepreneurial intentions has received little attention in the extant literature. This paper examines the impact of entrepreneurship education teachers' mentorship pedagogy on students' entrepreneurial intentions using structural equation modeling (SEM) analysis on data collected from 220 students studying entrepreneurship at six UK universities. The novel results presented here demonstrate the power of entrepreneurship education teachers' mentorship to effect students' attitudes, perceived behavioural control and, subsequently, their entrepreneurial intentions. The paper integrates mentorship with the theory of planned behaviour and contributes to the ongoing efforts to improve entrepreneurship education at universities.

Keywords: entrepreneurship education, entrepreneurial intentions, mentorship, theory of planned behavior.

Acknowledgment: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. We thank Dr. Andre Van Stel and the anonymous referees for their constructive comments and feedback on the paper.

1. Introduction

Interactive pedagogies enable students to be responsible for their own reality while encouraging them to be more open to store and construct new information about entrepreneurship (Prince & Felder, 2006). Extant research suggests that Entrepreneurship Education (EE) teachers' mentorship is a vital interactive

1. Corresponding author: Abdul Rahman Badwan, University of Winchester, Winchester Business School, West Downs Campus, Romsey Road, Winchester, SO22 5HT United Kingdom. Email: abdul.badwan@winchester.ac.uk

pedagogy that can boost students' engagement (Hanson, 2021; DeAngelo et al., 2016; St-Jean & Audet, 2012). Mentorship is originally based on a formal supporting relationship between novice and experienced entrepreneurs (St-Jean, 2012). However, mentorship, in an EE classroom setting, is an extra-role behaviour that is applied naturally by EE teachers when they interact with their students (DeAngelo et al., 2016). As teacher-student interactivity exists in such settings, when seen from the lens of constructivist learning theory (Krueger, 2007), the nature of mentorship in EE is likely to be shaping the entrepreneurial intentions (EI) of students (Shapiro, 2020; Nabi et al., 2018). The aim of this paper is to test the effect of EE teachers' mentorship on students' EI and its antecedents in the EE setting.

The paper makes several contributions to the EE literature. Firstly, it answers calls for future studies to explain the influence of EE teachers' teaching practices on students (Fayolle & Gailly, 2015; Piperopoulos & Dimov, 2015; Fayolle & Linan, 2014). This is because extant research has focused on investigating EE learning pedagogies such as action learning (Taylor et al., 2004), experimental learning & simulation (Hindle, 2002), opportunity-centred learning (Rae, 2003), case studies (Theroux & Kilbane, 2004), reflection and learning by doing (Cope & Watts, 2000) and business competitions (Li et al., 2003) without considering students' EI reactions to teachers' interactive practices within these pedagogies (Pennings et al., 2018).

Secondly, mentorship is assumed to take place in professional settings for entrepreneurs (Babatunde and El-Gohary, 2019; St-Jean, 2012). However, building on the emerging literature on the extra-role behaviour of teachers (DeAngelo et al., 2016), this study proposes that EE teachers can apply mentorship as an extra-role behaviour to influence EI of students. Thus, we examine the impact of EE teachers' extra-role behaviour on students in an EE classroom setting by posing these research questions: What is the effect of EE teachers' mentorship on the antecedents of students' EI? And what is the impact of EE teachers' mentorship on students' EI?

Thirdly, this paper explains the power of mentorship to influence EE students to envision entrepreneurship during EE classroom activities. This means that mentorship that stems from the teacher-student interactive relationship in the EE classroom setting, allows students to construct knowledge and new realities about entrepreneurship which will help them decide if it is a career they wish to pursue in the future.

The rest of the paper is organized as follows. The next section presents the theoretical background outlining mentorship in the EE context, and the role of mentorship for EI. The third section discusses the research methods. The fourth section presents the results of the structural equation models. The fifth section discusses the findings in the context of the extant literature and concludes the paper.

2. Literature Review

2.1. Mentorship in Entrepreneurship Education

The few studies measuring the effect of interactive learning methods in EE settings (Lorz et al., 2013) have mainly focused on the influence of business planning pedagogy on EI (Souitaris et al., 2007), the influence of SEEC (securing, expanding, exposing and challenging) learning theory on opportunity identification and EI and the effect of instructors' interaction with professional entrepreneurs (Chrisman et al., 2005). More recently, it was seen that mentors use knowledge development and socio-economic support mentoring functions in entrepreneurial programmes (Nabi et al., 2021) and apply interactive practices such as active listening, encouragement, questioning, patience, empathy, translating and action planning on students from different levels of study in EE (Hanson, 2021; Babatunde and El-Gohary, 2019). A range of studies have also uncovered similar interactive mentoring practices that EE teachers use in EE (Hanson, 2021; Nabi et al., 2018; Mueller, 2011; Yballe & O'Connor, 2000). These include challenging and encouraging students, giving feedback, reflecting, emphasizing success stories, involvement in additional projects, active debate discussions, asking thought-provoking questions, and interactive traditional knowledge transmission.

These developmental practices (Nabi et al., 2021) enable teachers to act as mentors with their students in an EE classroom setting, and they are incorporated in mentorship-based learning, which is defined as an interactive pedagogy that EE teachers use to promote students' engagement in EE learning activities (Nabi et al., 2021; Hanson, 2021; Babatunde and El-Gohary, 2019). EE teachers apply mentorship practices spontaneously during EE classroom activities. They have an organic and informal mentorship relationship with their students during classroom learning activities that aids in exploring entrepreneurship as a career option (DeAngelo et al., 2016).

2.2. Mentorship and Entrepreneurial Intentions

Although studies reveal that the Theory of Planned Behavior (TPB) is the most dominant model in EE research (Lortie & Castogiovanni, 2015; Schlaegel & Koenig, 2013), it was criticized because it ignores factors such as emotions, motivation and unconscious memories (Conner et al., 2013). Firstly, past studies demonstrated that pre-cognitive factors such as information, motivation and emotions interact together to form salient beliefs which represent perceived likely consequences of the behavior (Mitchell et al., 2007; Krueger, 2007). From this

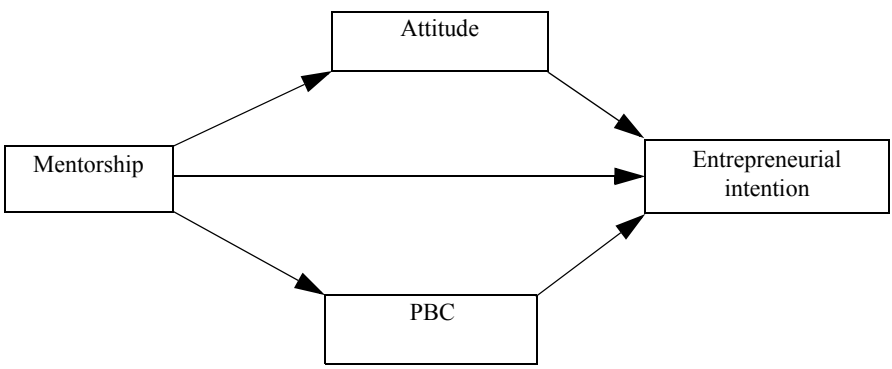
viewpoint, salient beliefs form the social cognitive elements attitude, subjective norms (SN), perceived behavioural control (PBC) and EI (Ajzen, 1991).

Furthermore, previous studies confirm the power of TPB to explain different types of EI such as creating a firm or developing an existing one (Karimi et al., 2016; Lortie & Castogiovanni, 2015). For these reasons, TPB is considered a reliable model for this study. The TPB model is formed of four factors that predict behaviour; these are attitude, PBC, SN and Intentions. Attitude is the evaluation of one's attractiveness towards the behaviour, SN is the social pressure from people that impacts one's decision to perform the behaviour, and PBC is when individuals assess their confidence and abilities to perform the behaviour. Intention is a cognitive element that consists of a behavioural goal and planned cognitive process (Drost and McGuire, 2011; Ajzen, 1991).

Regular EE teacher-student interactions during an EE classroom setting creates informal mentorship opportunities (Nabi et al., 2021; DeAngelo et al., 2016). Unlike professional mentors who aim to formally develop novice entrepreneurs (St-Jean, 2012), EE teachers' mentorship is an extra-role behaviour that happens naturally during a classroom setting (DeAngelo et al., 2016). Theoretically, this can affect students' EI through their attitude and PBC but not through their SN due to its weak correlation with EI (Nabi et al., 2021; Lortie & Castogiovanni, 2015).

During this interactive relationship, EE teachers' mentorship is expected to affect students' emotional evaluation of the idea of entrepreneurship as a career choice. This creates new salient beliefs about entrepreneurship and hence impacts students' EI through their attitudes (Zampetakis et al., 2017). Furthermore, it is likely that mentorship can improve students' self-confidence which in return effects their EI through their PBC (St-Jean & Audet, 2012). This is achieved by developing students' entrepreneurial abilities through mentorship practices during EE classroom activities which improve their self-confidence to become entrepreneurs in the future (El Hallam & St-Jean, 2016; DeAngelo et al., 2016). Figure 1 summarizes this as a simple framework.

Figure 1. Research framework



3. Research Method

3.1. Participants

EE modules were shortlisted based on the following criteria elements: i) taught contents, ii) practical activities such as business planning exercises, and iii) core management objectives that are related to EE (Nabi et al., 2018; Souitaris et al., 2007). Publicly available information about EE module contents, teaching practices and objectives was used in this study.

Table 1: Demographic control variables

Gender		Age			Prior EE		Field			Employment			Type of EE	
M	F	Up to 24	25-30	31+	Yes	No	E&I	BS	H&S	Full	Part	No	T	P
91	129	175	33	12	51	169	55	150	15	13	63	144	104	116
Prior EE: Prior entrepreneurial experience; Type of EE: Entrepreneurship Education type; E&I: Entrepreneurship and Innovation; BS: Business Studies; H&S: Health and Sciences; T: Theoretical; P: Practical														

220 students participated in this study. They were asked to evaluate their EE teacher's mentorship practices in the classroom. The study achieved more than 80% power which indicates that our sample size of 220 participants is statistically adequate (Lenth, 2001). Furthermore, the study achieved a response rate of 88.3%. Students were from six UK universities who were studying EE courses. They took between 10 to 20 minutes to complete their questionnaires, and participation was voluntary and confidential. These statistics are summarized in Table 1. Here, 'Type of EE' was first divided into three forms of EE according to Linan et al. (2011) and Fretschner & Weber (2013) but then it was developed and simplified into two types of EE following Piperopoulos & Dimov's (2015, p. 974) dichotomy as theoretical and practical EE.

3.2. Empirical Method

For the empirical analysis, we have closely followed papers that recommend 2-staged analysis, in particular Karimi et al. (2016) and Hair et al. (2006). Following this approach, we performed Exploratory Factor Analysis (EFA) to generate the latent variables. After this, we implemented SEM in two stages. Stage 1 consisted of the measurement model in which CFA is performed to test the goodness of fit and the reliability and validity of the measurement model. Stage 2 consisted of the structural model which uses the variables representing the model depicted in **Figure 1**, in line with Karimi et al. (2016). The dependent variables, the explanatory variables and the control variables are described in the next subsection.

3.3. Variables

The four latent variables generated using the EFA are given in **Table 2**. These generated factors were labeled based on the literature (Ajzen, 1991; Ensher & Murphy, 2010; Gershenfeld, 2014; Linan & Chen, 2009; Nora & Crisp, 2007).

Table 2: Factor analysis results

	Factor 1	Factor 2	Factor 3	Factor 4
F1: Mentorship – 12 items (α=.84; CR=.74; AVE=.50)				
1. Gives clear directions for assignments	**.916**			
2. Describes objectives clearly	**.872**			
3. Gives clear explanations and presentations	**.785**			
4. Has instructional materials ready	**.601**			
5. Questions me and makes me justify the decisions I make	**.820**			
6. Demonstrates professional integrity	**.750**			
7. Expects me to take critical feedback without being defensive	**.746**			
8. Challenges me to think in ways I have never thought of before	**.551**			
9. Asks me to get involved in additional projects that I would not normally do	**.725**			
10. Has suggested that I take risks in my future career	**.708**			
11. Waits for me to take the initiative to set up meetings	**.665**			
12. Expects me to know what I need to do to accomplish my career goals	**.664**			
F2: Entrepreneurial intention – 6 items (α=.95; CR=.95; AVE=.77)				
13. I am determined to create a firm in the future.		**.977**		
14. I will make every effort to start and run my own firm.		**.944**		
15. I have thought very seriously of starting a firm.		**.826**		
16. I have the firm intention to start a firm someday.		**.790**		
17. My professional goal is to become an entrepreneur.		**.769**		
18. I am ready to do anything to be an entrepreneur.		**.619**		
F3: Perceived Behavioural Control – 6 items (α=.89; CR=.87; AVE=.54)				
19. I know the necessary practical details to start a firm.			**.910**	
20. I know how to develop an entrepreneurial project.			**.808**	
21. I can control the creation process of a new firm.			**.692**	
22. To start a firm and keep it working would be easy for me.			**.691**	
23. If I tried to start a firm, I would have a high probability of succeeding.			**.686**	
24. I am prepared to start a viable firm.			**.627**	
F4: Attitude – 4 items (α=.95; CR=.95; AVE=.83)				
25. Being an entrepreneur would entail great satisfaction for me.				**.979**
26. If I had the opportunity and resources, I'd like to start a firm.				**.895**
27. A career as an entrepreneur is attractive for me.				**.875**
28. Among various options, I would rather be an entrepreneur.				**.739**
*** α = Cronbach alpha; CR = Composite reliability; AVE = Average Variance Extract**				

Dependent variables. Linan & Chen (2009) developed the Entrepreneurial Intention Questionnaire (EIQ), which contained four variables: i) EI, ii) PBC, iii) SN, and iv) Attitude. Earlier studies have found that SN is not related to students' EI (Lortie & Castogiovanni, 2015; Linan & Chen, 2009), and we also found that the same is the case in our sample. For these reasons, we only focus on attitude, PBC and EI here. **Table 2** also presents the convergent validity (AVE) and reliabilities (CR) of these variables.

Explanatory variables. Since mentorship is a mutual and challenging relationship between students and teachers (Zimmerman & Paul, 2007), we included the mentorship relational challenge scale (MRCS). MRCS was created by Ensher & Murphy (2010), which originated from the interview responses of participants who had mentorship experience. It is sourced from Scandura's (1992) mentorship functions items. Requiring commitment and resilience (α=0.91), measuring up to mentor standard (α=0.88), and career goal and risk orientation (α=0.80) are functions that define a challenging mentorship relationship (Ensher & Murphy, 2010).

Due to the lack of studies in faculty-student mentorship (Chen et al., 2016), the mentorship effectiveness scale (MES), developed by Berk et al. (2005), is applied in the survey. Their questionnaire achieved a good content-related validity and is used to examine the quality of the mentoring characteristics of faculty members.

Since past literature shows that traditional teaching practice is found in the mentorship pedagogy that transfers theoretical knowledge (Nora & Crisp, 2007), we included Evertson & Smithey's (2000) traditional teaching practice items. Their study achieved good validity and criterion-referenced reliability between 83% and 92%, indicating that evaluators' outcomes tend to be similar.

Control variables. Control variables, given in **Table 3**, are derived from Linan et al. (2011), Karimi et al. (2016) and Piperopoulos & Dimov (2015) and are included due to their role in influencing students' EI. They can provide an alternative explanation on why students intend to start entrepreneurial careers (Zapkau et al., 2015; Souitaris et al., 2007).

Table 3: Correlation matrix and discriminant validity

Variables	Mean	S. D	1	2	3	4	5	6	7	8	9	10
1. Mentorship	4.34	.51	1 **(0.71)**									
2. Attitude	4.47	1.24	.428**	1 **(0.91)**								
3. PBC	2.84	.79	.242**	.550**	1 **(0.73)**							
4. EI	3.47	1.21	.294**	.744**	.678**	1 **(0.88)**						
5. Gender	1.59	.49	.147	-.090	-.098	-.089	1					
6. Age	1.26	.55	.118	.078	.032	.160*	-.059	1				
7. Type of EE*	1.53	.50	.130**	.188*	.203**	.198**	-.126	.047	1			
8. Prior EE*	1.77	.43	-.157**	-.221**	-.291**	-.263**	.030	-.175**	-.138*	1		
9. Employment	2.60	.60	-.074	.113	-.009	.067	.082	-.249**	-.029	.050	1	
10. Field	1.84	.54	-.080	-.169*	-.081	-.132*	-.098	-.082	.129	.126	.017	1

***Squared root AVE is in bold;** **p < 0.01 level *p < 0.05 level; * Entrepreneurship Education; ** Entrepreneurial Experience

Discriminant validity was measured by comparing the square root of AVE with correlated variables in **Table 3**. The square root of AVE is higher than the correlation between variables and is consistent with Karimi et al. (2016). Following Wang & Lin (2016), we calculated the VIF and tolerance values of mentorship variable (VIF=1.225; tolerance value=0.816), attitude (VIF=1.653; tolerance value=0.605) and PBC (VIF=1.434; tolerance value=0.698). They have achieved a variance inflation factor (VIF) less than 10 and a tolerance value of more than 0.10. Thus, this study does not suffer from multicollinearity issues.

Common Method Bias (CMB) can appear in cross-sectional surveys (Jordan and Troth, 2020). To minimize this, the study applied procedural strategies by including predictors from different sources, assured participants that responses are confidential, and applied a psychological separation between predictor and criterion variables (Jordan and Troth, 2020; Esfandiar et al., 2019; Podsakoff et al., 2003). Furthermore, Harman single-latent factor and common latent variance tests in SEM achieved a percentage value of less than 50% suggesting that CMB is not an issue for this study.

4. Results

4.1. Measurement Model

The model contains 28 items that belong to four latent variables (EI, PBC, Attitude and Mentorship) that were generated through EFA, as presented in **Table 2**. The measurement model was built using AMOS 26 which was also used to test its goodness of fit. The indicators suggest our model has a strong absolute fit (χ^2=479.1; p=0.000; GFI=0.87; RMSEA=0.04; PClose=0.82), incremental fit (AGFI=0.84; TLI=0.96; CFI=0.967), and parsimonious fit of 1.44. The model

passed the construct validity in which CFI > 0.95, and RMSEA < 0.08, and χ^2/DF < 5.0 achieved the recommended threshold (Karimi et al., 2016; Asyraf & Afthanorhan, 2013).

4.2. Structural Model

Model fit. The study identified the best structural model by relying on the nested modelling trimming method (Schreiber et al., 2006). Following James et al.'s (2006) SEM mediation method, three different models were generated in **Table 4**.

Model A represents direct effects between mentorship and attitude, PBC & EI. The direct pathway was then removed between mentorship and EI in **Model B**. This was applied based on Ajzen's (1991) argument that explanatory variables can only affect EI through attitude and PBC (Zapkau et al., 2015). **Model C** shows a direct effect between mentorship pedagogy and EI without attitude and PBC. Although the model shows a strong fit, however, choosing the best model must depend on sound theoretical arguments (Schreiber et al., 2006). It will be theoretically unrealistic to omit them from TPB (Cheung & Lau, 2008; Ajzen, 1991). Based on theory and results in **Table 4**, **Model A** is the most suitable framework to generate findings.

Table 4: Model comparison

Models	Structure	2	DF	χ^2/df	RMSEA	P-close	CFI	TLI	IFI	GFI	AGFI
A	MP → ATT, PBC & EI; ATT & PBC → EI	479.1	331	1.44	.04	.81	.97	.96	.97	.87	.84
B	MP → ATT & PBC; ATT & PBC → EI	479.2	332	1.44	.04	.82	.96	.96	.96	.87	.84
C	MP → EI	181.6	125	1.45	.04	.69	.97	.97	.97	.91	.88
MP = Mentorship pedagogy; **ATT** = Attitude; **PBC** = Perceived behavioural control; **EI** = Entrepreneurial intention. → = effect											

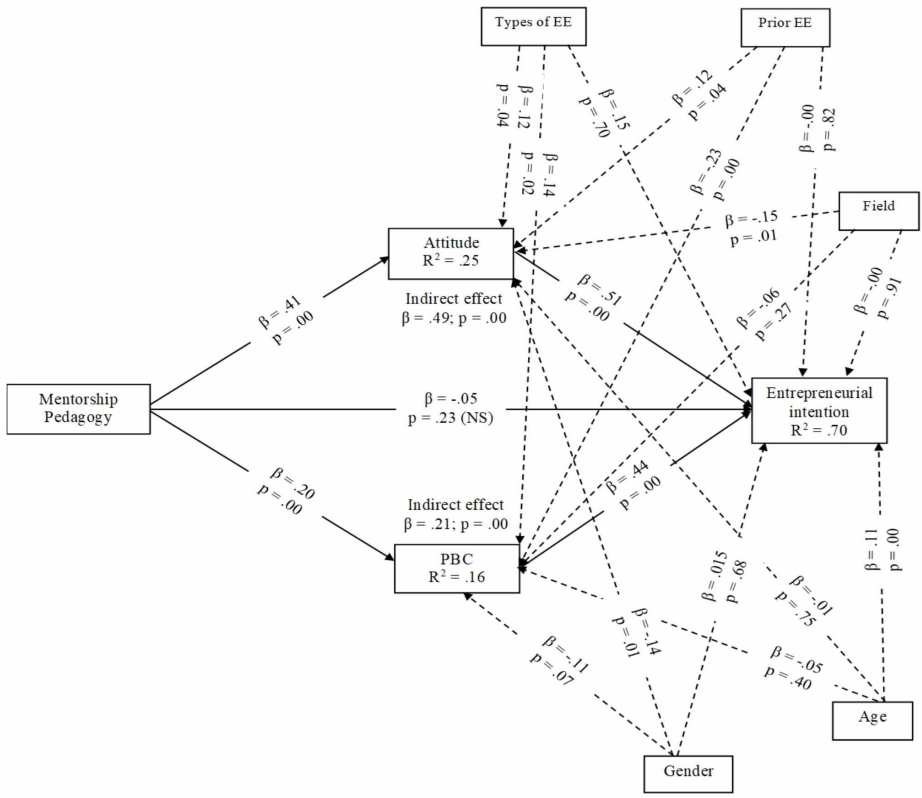
Figure 2 shows the findings for this study's main variables. It also demonstrates the results for control variables such as type of EE, gender and prior entrepreneurial experience.

Direct effects. Evidence in **Figure 2** suggests that teachers' mentorship in EE does not directly affect students' EI. However, it indicates that teachers' mentorship positively influences students' attitudes and PBC towards entrepreneurship. Furthermore, it demonstrates that students' attitudes and PBC positively affect their own EI.

Mediation effects. This study applied a bootstrapping SEM mediation procedure to simultaneously generate p-values for the hypothesized indirect effects (Hayes, 2009). This method is selected because entrepreneurial intention antecedents operate simultaneously and appear to form EI (Krueger, 2007).

Figure 2 reveals that students' attitude and PBC fully mediates the positive effect of their EE teachers' mentorship pedagogy on their EI.

Figure 2. Structural equation model and control variables outcomes



4.3. Additional Effects

Mentorship supports the delivery of theoretical and practical EE course contents. It can change students' EI by linking realistic situations to theoretical learning (Hanson, 2021). It also affects students' ability to absorb new theoretical and practical EE knowledge from their EE teachers (Nan et al., 2013; St-Jean, 2012; St-Jean & Audet, 2012). For this reason, we examine the effect size of mentorship under different types of EE on students' social cognitive factors found in TPB. Using Cohen's d, we examine the effect size for students' attitude, PBC and EI under different types of EE such as theoretical and practical EE. According to **Table 5**, the variables have a large magnitude size difference between students exposed to different types of EE (Fritz et al., 2012).[2] The significant p-value in **Table 5** confirms the large magnitude difference between the effects across students exposed to different EE types.

Table 5: Effect size and power analysis

	Theoretical (n=104)		Practical (n=116)				
Variables	**Mean (M1)**	**S. D.**	**Mean (M2)**	**S. D.**	**p-value**	**Cohen's d**	**Power**
Attitude	4.22	1.31	4.69	1.13	0.00	0.37	80%
PBC	2.67	0.78	2.99	0.77	0.00	0.41	86%
Entrepreneurial intention	3.22	1.27	3.70	1.13	0.00	0.40	84%

5. Discussion and Conclusions

The mentorship variable in **Table 2** shows that EE teachers support students to realize their career goals by offering suggestions based on the nature of entrepreneurship as a profession. Item 10, for instance, demonstrates that EE teachers are recommending students to take more risks. This is in line with EE studies (Arpiainen & Kurczewska, 2017) that emphasised the need for students to experience risk-taking at an early stage. **Table 2** also demonstrates that EE teachers impose additional tasks that nurture students' career plans and encourage them to achieve their goals (Ensher & Murphy, 2010; Nora & Crisp, 2007). Item 9, for example, indicates that EE teachers encourage students to step outside the classroom. Some studies have recommended this practice and emphasised that EE students must participate in activities beyond the classroom, such as working with professional entrepreneurs (Yu and Man, 2009). The findings in **Table 2** also suggest that EE teachers contribute to students' personal development and mental characteristics through advice, reflection and feedback (Campbell et al., 2012). This is consistent with other studies that have emphasized the need to develop students' mental properties to deal with hardships in an entrepreneurship career (Gershenfeld, 2014).

Although EE teachers' mentorship practices are similar to professional mentors' practices in business incubators, some differences are noteworthy. Firstly, most professional mentors use the role modeling method to interact with startup entrepreneurs (Ahsan et al., 2018); however, our results suggest that EE teachers merge traditional teaching methods (such as items 1-4 in **Table 2**) with interactive mentorship practices (such as items 5-12 in **Table 2**) to boost students' entrepreneurial knowledge and fulfil EE program requirements. This pedagogical adaptation changes the nature of the learning setting by modifying the nature of the interactive relationship between the teacher and students during EE classroom activities, as suggested by Yballe & O'Connor (2000). Secondly, professional mentors in business incubators aim to improve entrepreneurs' skills and develop their business projects (St-Jean, 2012); however, we find that EE teachers use

2. The effect size results were inserted in G*Power software to calculate the sample size power of each social cognitive variable. Attitude, PBC and EI achieved a power level of more than 80% and as O'Keefe (2007) and Lenth (2001) suggest, this demonstrates a sufficient sample size for this study.

mentorship to allow their students to explore entrepreneurship, and this is aligned with the purpose of EE (Fretschner & Weber, 2013).

We find that mentorship affects students' attitudes towards entrepreneurship (Figure 2). This is in line with earlier studies that suggest that EE teachers transmit positive beliefs about entrepreneurship by influencing students' emotions, thoughts, visioning capacity, knowledge capacity and mental competencies to make them consider the option of starting a business (Botsaris & Vamvaka, 2016; Linan & Chen, 2009). Thus, EE teachers play the role of influencers rather than remaining as instructors.

The paper contributes to EE pedagogy research (Lorz et al., 2013). The mentoring interaction between EE teachers' and students energizes the transformation of information to students' symbolic cognitive level. This level is responsible for constructing new data to more established knowledge about the behaviour (Krueger, 2007). This process changes students into independent learners who will grow mentally and become responsible for re-constructing entrepreneurial knowledge according to their career goals (Burns et al., 2018).

When looked through the lens of the self-determination theory, findings demonstrate that EE teachers use an interpersonal tone of support and shared communication to deliver entrepreneurial knowledge. This motivates students to achieve academic and educational outcomes and increases their academic self-efficacy. Students are more cognitively engaged with EE teachers' mentorship (Jang et al., 2016), and when teachers influence students through mentorship, universities are likely to produce more entrepreneurs. Such an outcome is in line with the Europe 2020 policy that prioritizes increasing the number of entrepreneurs (Carayannis et al., 2017).

An interactive type pedagogy allows students and teachers to work together to invent and re-invent knowledge through in-class discussions, questioning and critical thinking, and this can transform a university into a 'revolutionary' university (Guzman-Valenzuela, 2017; Etzkowitz & Viale, 2010). Our results suggest that EE teachers' mentorship efforts contribute to such a transformation. Thus, our results offer policymakers a new opportunity to create long-term impact by supporting universities to advance interactive teaching methodologies such as mentorship. In the long run, this will enable the universities to contribute and strengthen their stance in the third academic revolution (Etzkowitz & Viale, 2010).

Although unconventional, following an emerging body of literature (Karimi et al., 2016; Hair et al., 2006), we have built the measurement model by using EFA and CFA. Future studies can apply a quasi-experiment longitudinal method to show the impact rather than the influence of mentorship on students' EI. Researchers can extend this study by introducing new variables such as teachers' background profiles. They can also investigate different types of attitudes that predict entrepreneurial behaviours. Researchers can also study cognitive knowledge construction (Gaglio, 2004) and understand how mentorship supports

students to categorise new information (Krueger, 2007). Since this study did not consider the mentoring stages and intensity during an EE session due to limitations in the time horizon, future studies can explain the changes in students' EI at each stage.

In summary, this research sheds light on mentorship in an EE classroom setting as an interactive pedagogy that EE teachers use to promote students' engagement in EE learning activities, and suggests that EE teachers act as mentors.

References:

Ahsan, M., Zheng, C., DeNoble, A. and Musteen, M. (2018), "From student to entrepreneur: How mentorships and affect influence student venture launch", *Journal of Small Business Management*, 56(1): p 76-102.

Ajzen, I. (1991), "The Theory of Planned Behavior", *Journal of Organizational Behavior and Human Decision Processes*, 50(2): p 179-211.

Arpiainen, R. and Kurczewska, A. (2017), "Learning risk-taking and coping with uncertainty through experiential, team-based entrepreneurship education", *Industry and Higher Education*, 31(3): p 143-155.

Asyraf, W. and Afthanorhan, W. (2013), "A comparison of Partial Least Square Structural Equation Modeling (PLS-SEM) and Covariance Based Structural Equation Modeling (CB-SEM) for Confirmatory Factor Analysis", *International Journal of Engineering Science and Innovative Technology*, 2(5): p 198-205.

Babatunde, S. and El-Gohary, H. (2019), "Necessity of mentoring in entrepreneurship education: Reflection by practitioners", *Journal of Professional Issues in Engineering Education and Practice*, 145(1): p 1-5.

Berk, R., Berg, J., Mortimer, R., Walton-Moss, B. and Yeo, T. (2005), "Measuring the effectiveness of faculty mentoring relationships", *Academic Medicine*, 80(1): p 66-71.

Botsaris, C. and Vamvaka, V. (2016), "Attitude toward entrepreneurship: Structure, prediction from behavioral beliefs, and relation to entrepreneurial intention", *Journal of the Knowledge Economy*, 7(2): p 433-460.

Burns, M., Houser, M. and Farris, K. (2018), "Theory of Planned Behavior in the classroom: An examination of the instructor confirmation-interaction model", *Higher Education*, 75(6): p 1091-1108.

Campbell, C., Smith, M., Dugan, J. and Komives, S. (2012), "Mentors and college student leadership outcomes: The importance of position and process", *Review of Higher Education*, 35(4): p 595-625.

Carayannis, E., Grigoroudis, E., Campbell, D., Meissner, D. and Stamati, D. (2017), "The ecosystem as helix: An exploratory theory-building study of regional co-opetitive entrepreneurial ecosystems as Quadruple/Quintuple Helix Innovation Models", *R&D Management*, 48(1): p 148-162.

Chen, Y., Watson, R and Hilton, A. (2016), "A review of mentorship measurement tools", *Nurse Education Today*, 40: p 20-28.

Cheung, G. and Lau, R. (2008), "Testing mediation and suppression effects of latent variables: Bootstrapping with structural equation models", *Organizational Research Methods*, 11(2): p 296-325.

Chrisman, J., McMullan, E. and Hall, J. (2005), "The influence of guided preparation on the long-term performance of new ventures", *Journal of Business Venturing*, 20(6): p 769-791.

Conner, M., Godin, G., Sheeran, P. and Germain, M. (2013), "Some feelings are more important: Cognitive attitudes, affective attitudes, anticipated affect, and blood donation", *Health Psychology*, 32(3): p 264-272.

Cope, J. and Watts, G. (2000), "Learning by doing—An exploration of experience, critical incidents and reflection in entrepreneurial learning", *International Journal of Entrepreneurial Behavior and Research*, 6(3): p 104-118.

DeAngelo, L., Mason, J. and Winters, D. (2016), "Faculty engagement in mentoring undergraduate students: How institutional environments regulate and promote extra-role behavior", *Innovative Higher Education*, 41(4): p 317-332.

Drost, E. and McGuire, S. (2011), "Fostering entrepreneurship among Finnish business students: Antecedents of entrepreneurial intent and implications for entrepreneurship education", *International Review of Entrepreneurship*, 9(2): p 83-112.

El Hallam, H. and St-Jean, E. (2016), "Nurturing entrepreneurial learning through mentoring", *Journal of Developmental Entrepreneurship*, 21(2): article 1650012.

Ensher, E. and Murphy, S. (2010), "The mentoring relationship challenges scale: The impact of mentoring stage, type, and gender", *Journal of Vocational Behavior*, 79(1): p 253-266.

Esfandiar, K., Sharifi-Tehrani, M., Pratt, S. and Altinay, L. (2019), "Understanding entrepreneurial intentions: A developed integrated structural model approach", *Journal of Business Research*, 94: p 172-182.

Etzkowitz, H. and Viale, R. (2010), "Polyvalent knowledge and the entrepreneurial university: A third academic revolution?", *Critical Sociology*, 36(4): p 595-609.

Evertson, C. and Smithey, M. (2000), "Mentoring effects on proteges' classroom practice: An experimental field study", *Journal of Educational Research*, 93(5): p 294-304.

Fayolle, A. and Gailly, B. (2015), "The impact of entrepreneurship education on entrepreneurial attitudes and intention – Hysteresis and persistence", *Journal of Small Business Management*, 53(1): p 75-93.

Fayolle, A. and Linan, F. (2014), "The future of research on entrepreneurial intentions", *Journal of Business Research*, 67(5): p 663-666.

Fretschner, M. and Weber, S. (2013), "Measuring and understanding the effects of entrepreneurial awareness education", *Journal of Small Business Management*, 51(3): p 410-428.

Fritz, C., Morris, P. and Richler, J. (2012), "Effect size estimates: Current use, calculations and interpretation", *Journal of Experimental Psychology: General*, 141(1): p 2-18.

Gaglio, C. (2004), "The role of mental simulations and counterfactual thinking in the opportunity identification process", *Entrepreneurship Theory and Practice*, 28(6): p 533-552.

Gershenfeld, S. (2014), "A review of undergraduate mentoring programs", *Review of Educational Research*, 84(3): p 365-391.

Guzman-Valenzuela, C. (2017), "Universities, knowledge and pedagogical configurations: Glimpsing the complex university", *Educational Philosophy and Theory*, 50(1): p 5-17.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006), *Multivariate Data Analysis* (6th ed.). Upper Saddle River, NJ: Prentice-Hall.

Hanson, J. (2021), "Best practices for mentoring in arts entrepreneurship education: Findings from a delphi study", *Entrepreneurship Education and Pedagogy*, 4(2): p 119-142.

Hayes, A. (2009), "Beyond Baron and Kenny: Statistical mediation analysis in the new millennium", *Communication Monographs*, 76(4): p 408-420.

Hindle, K. (2002), "A grounded theory for teaching entrepreneurship using simulation games", *Simulation and Gaming*, 33(2): p 236-241.

James, L., Mulaik, S. and Brett, J. (2006), "A tale of two methods", *Organizational Research Methods*, 9(2): p 233-244.

Jang, H., Kim, E. and Reeve, J. (2016), "Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model", *Learning and Instruction*, 43: p 27-38.

Jordan, P. and Troth, A. (2020), "Common method bias in applied settings: The dilemma of researching in organizations", *Australian Journal of Management*, 45(1): p 3-14.

Karimi, S., Biemans, H., Lans, T., Chizari, M. and Mulder, M. (2016), "The impact of entrepreneurship education: A study of Iranian students' entrepreneurial intentions and opportunity identification", *Journal of Small Business Management*, 54(1): p 187-209.

Krueger, N. (2007), "What lies beneath? The experiential essence of entrepreneurial thinking", *Entrepreneurship Theory and Practice*, 31(1): p 123-138.

Lenth, R. (2001), "Some practical guidelines for effective sample size determination", *The American Statistician*, 55(3): p 187-193.

Li, J., Zhang, Y. and Matlay, H. (2003), "Entrepreneurship education in China", *Education and Training*, 45(8/9): p 495-505.

Linan, F. and Chen, Y. (2009), "Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions", *Entrepreneurship Theory and Practice*, 33(3): p 593-617.

Linan, F., Rodriguez-Cohard, J. and Rueda-Cantuche, J. (2011), "Factors affecting entrepreneurial intention levels: A role for education", *International Entrepreneurship and Management Journal*, 7(2): p 195-218

Lortie, J. and Castogiovanni, G. (2015), "The Theory of Planned Behavior in entrepreneurship research: What we know and future directions", *International Entrepreneurship and Management Journal*, 11(4): p 935-957.

Lorz, M., Mueller, S. and Volery, T. (2013), "Entrepreneurship education: A systematic review of the methods in impact studies", *Journal of Enterprising Culture*, 21(2): p 123-151.

Mitchell, R., Busenitz, L., Bird, B., Gaglio, C.M., McMullen, J., Morse, E. and Smith, J. (2007), "The central question in entrepreneurial cognition research", *Entrepreneurship Theory and Practice*, 31(1): p 1-27.

Mueller, S. (2011), "Increasing entrepreneurial intention: Effective entrepreneurship course characteristics", *International Journal of Entrepreneurship and Small Business*, 13(1): p 55-74.

Nabi, G., Walmsley, A. and Akhtar, I. (2021), "Mentoring functions and entrepreneur development in the early years of university", *Studies in Higher Education*, 46(6): p 1159-1174.

Nabi, G., Walmsley, A., Linan, F., Akhtar, I and Neame, C. (2018), "Does entrepreneurship education in the first year of higher education develop entrepreneurial intentions? The role of learning and inspiration", *Studies in Higher Education*, 43(3): p 452-467.

Nan, L., Hui, G., Yang, S and Lizhi, L. (2013), "Research on factors affecting knowledge transfer in mentoring process", *Mediterranean Journal of Social Sciences*, 4(10): p 80-86.

Nora, A. and Crisp, G. (2007), "Mentoring students: Conceptualizing and validating the multi-dimensions of a support system", *Journal of College Student Retention*, 9(3): p 337-356.

O'Keefe, D. (2007), "Post hoc power, observed power, a priori power, retrospective power, prospective power, achieved power: Sorting out appropriate uses of statistical power analyses", *Communication Methods and Measures*, 1(4): p 291-299.

Pennings, H., Brekelmans, M., Sadler, P., Claessens, L., Van der Want, A. and Van Tartwijk, J. (2018), "Interpersonal adaptation in teacher-student interaction", *Learning and Instruction*, 55: p 41-57.

Piperopoulos, P. and Dimov, D. (2015), "Burst bubbles or build steam? Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions", *Journal of Small Business Management*, 53(4): p 970-985.

Podsakoff, P., MacKenzie, S., Lee, J. and Podsakoff, N. (2003), "Common method biases in behavioral research: A critical review of the literature and recommended remedies", *Journal of Applied Psychology*, 88(5): p 879-903.

Prince, M and Felder, R. (2006), "Inductive teaching and learning methods: Definitions, comparisons and research bases", *Journal of Engineering Education*, 95(2): p 123-138.

Rae, D. (2003), "Opportunity centered learning: An innovation in enterprise education?", *Education and Training*, 45(8/9): p 542-549.

Scandura, T. (1992), "Mentorship and career mobility: An empirical investigation", *Journal of Organizational Behavior*, 13(2): p 169-174.

Schlaegel, C. and Koenig, M. (2013), "Determinants of entrepreneurial intent: A meta-analytic test and integration of competing models", *Entrepreneurship Theory and Practice*, 38(2): p 291-332.

Schreiber, J., Nora, A., Stage, F., Barlow, E. and King, J. (2006), "Reporting Structural Equation Modeling and Confirmatory Factor Analysis results: A review", *Journal of Educational Research*, 99(6): p 323-338.

Shapiro, A. (2020), "Constructivism and mentoring", In: Irby, B.J., et al. (Eds.) (2020), *The Wiley International Handbook of Mentoring: Paradigms, Practices, Programs, and Possibilities*. Hoboken, NJ, USA: John Wiley & Sons, Inc., p 65-78.

Souitaris, V., Zerbinati, S. and Al-Laham, A. (2007), "Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources", *Journal of Business Venturing*, 22(4): p 566-591.

St-Jean, E. (2012), "Mentoring as professional development for novice entrepreneurs: Maximizing the learning", *International Journal of Training and Development*, 16(3): p 200-216.

St-Jean, E. and Audet, J. (2012), "The role of mentoring in the learning development of the novice entrepreneur", *International Entrepreneurship and Management Journal*, 8(1): p 119-140.

Taylor, D., Jones, O and Boles, K. (2004), "Building social capital through action learning: An insight into the entrepreneur", *Education and Training*, 46(4/5): p 226-235.

Theroux, J and Kilbane, C. (2004), "The Real-Time Case Method: A new approach to an old tradition", *Journal of Education for Business*, 79(3): p 163-167.

Wang, Y. and Lin, Y. (2016), "Determinants of internet entrepreneurship intentions among business school students", *International Journal of Information and Education Technology*, 6(10): p 754-758.

Yballe, L. and O'Connor, D. (2000), "Appreciative pedagogy: Constructing positive models for learning", *Journal of Management Education*, 24(4): p 474-483.

Yu, C. and Man, T. (2009), "Social interaction and the formation of entrepreneurial characteristics", *Journal of Workplace Learning*, 21(8): p 595-613.

Zampetakis, L., Kafetsios, K. and Moustakis, V. (2017), "Using emotional persuasion for changing attitudes towards entrepreneurship: An interpersonal perspective", *Journal of Business Venturing Insights*, 7: p 50-54.

Zapkau, F., Schwens, C., Steinmetz, H. and Kabst, R. (2015), "Disentangling the effect of prior entrepreneurial exposure on entrepreneurial intention", *Journal of Business Research*, 68(3): p 639-653.

Zimmerman, B. and Paul, D. (2007), "Technical communication teachers as mentors in the classroom: Extending an invitation to students", *Technical Communication Quarterly*, 16(2): p 175-200.