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FACULTY OF BUSINESS, LAW AND ART

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The adoption of mentorship and its influence on students' cognitive psychology: A case of entrepreneurship education

by

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ABSTRACT

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Doctor of Philosophy

THE ADOPTION OF MENTORSHIP AND ITS INFLUENCE ON STUDENTS' COGNITIVE PSYCHOLOGY: A CASE OF ENTREPRENEURSHIP EDUCATION

By AbdulRahman Badwan

The call for universities to play a role in boosting the economic growth caused an education revolution. This led to the rise of entrepreneurial universities that introduced entrepreneurship education to sustain the third mission. Previous studies in entrepreneurship learning argued that entrepreneurial pedagogy methods did not change during the third academic revolution; however, recent research confirms that educators are applying blended mentorship pedagogy to respond to the hybrid nature of entrepreneurship education and to remain engaged with students during entrepreneurship sessions. The fact that past evidence shows that entrepreneurship education impacts students' semantic cognition directed this thesis to research the interactive relationship between educators and students by focusing on the influence of mentorship pedagogy on students' cognitive antecedents.

Reviewing past studies supported this research to establish its positivism philosophical stance and generate hypothesised frameworks. To test research models, data were collected from students who were enrolled in UK entrepreneurship education courses; these data were subjected to analysis

through a structural equation modelling process Findings show that educators' mentorship pedagogy is influencing students' attitudes, perceived behavioural control and entrepreneurial intentions. Results also demonstrate that educators' mentorship pedagogy is supporting the knowledge contents of theoretical and practical entrepreneurship education to affect students' cognition. Finally, the thesis reveals the different impacts of traditional teaching, psychosocial functions and career-related mentorship functions on students' cognitive factors.

This thesis sheds light on an interactive teaching method within the framework of entrepreneurship education. Furthermore, the research extends the field of entrepreneurship learning by explaining the nature of the active relationship between educators and students in entrepreneurship sessions. It also reveals the interaction between the components of entrepreneurship education and educators' blended mentorship pedagogy.

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DECLARATION OF AUTHORSHIP

I, AbdulRahman Badwan declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

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I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. Parts of this work have been published as:

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Signed: AbdulRahman Badwan .....

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Definitions and Abbreviations

TPB	Theory of Planned Behaviour
PBC	Perceived Behavioural Control
SEM	Structural Equation Modelling
EFA	Exploratory Factor Analysis
CFA	Confirmatory Factor Analysis
PCA	Principle Component Analysis
RMSEA	Root Mean Square Error of Approximation
TLI	Tucker-Lewis index
VIF	Variance Inflation Factor
KMO	Kaiser-Meyer-Olkin
AVE	Average Variance Extracted
CR	Composite Reliability

Chapter 1: Introduction – An overview of the thesis

1.1 Background

A revolution that answers the call for change causes a transformation in education which improves the way academic fields interact together, prepare students to develop communities and change learners and teachers' perspective of education (O'Brien et al, 2013).

The first academic revolution started as a single helix model. It transformed universities from teaching to research institutions. Most economies relied on inventors' tacit knowledge which was difficult to codify. Also, there was little collaboration between universities and industries for knowledge creation purposes. The academic revolution then progressed to the double helix model. In this stage, universities started using both teaching and research for the purpose of socio-economic development. In addition, universities started to work with industries on technical issues and presented their new knowledge in publication formats. Finally, the cooperation between universities, industries and governments to foster economic growth through innovation formed the third stage of academic revolution which is called the triple-helix model (Etzkowitz, 2008; Etzkowitz and Viale, 2010).

Entrepreneurial universities started to surface as a mechanism of the third academic revolution to contribute to socio-economic growth. They mainly relied on researchers to innovate and generate new knowledge (Abreu et al, 2016; Etzkowitz and Viale, 2010). Two of the core elements of an entrepreneurial university are entrepreneurship eduation and entrepreneurial learning. (Jansen et al, 2015). While funding feasible research projects remains a significant task of entrepreneurial universities, the influence of their 'third mission' on educators' pedagogy practices in entrepreneurship education remains unclear (Heinonen and Hytti, 2010). In other words, did the triple-helix model cause an education revolution in the third academic revolution? Since a revolution changes the nature of education (O'Brien et al, 2013) then it is expected that teaching students in the third academic revolution will be unique in entrepreneurial universities (Heinonen and Hytti, 2010).

Entrepreneurial universities integrate the dimensions of a 'teaching university' that aims to change students into enterprising individuals by influencing and configuring their cognitive mindsets (Fayolle and Gailly 2008) and a 'research university' that focuses on the academic side of entrepreneurship (Heinonen and Hytti, 2010). At the core of this integration, entrepreneurship education (Jansen et al, 2015) is taught to students about three different worlds; the *entrepreneu*r world which focus on describing the characteristics of the entrepreneur, the *process* world which aims to explain the procedure of creating a business in a linear mode, and the *cognitive* world that aims to teach students about how individuals perceive entrepreneurship (Neck and Greene, 2011). Among these outlooks, the cognitive world attracted increasing attention from scholars due to the failure of past research to provide significant outcomes from an entrepreneurial personality perspective (Mitchell et al, 2002; Neck and Greene, 2011).

Influencing students' entrepreneurial cognitive process should be a priority for educators in entrepreneurship education (Kirby, 2006). In this regard, an education revolution begins by influencing individuals' cognition which is termed an 'axial revolution' (O'Brien et al, 2013). According to Mitchell et al (2002, p. 96), 'The field of cognitive psychology describes individuals mental process when they interact with other people which lead to the formation of social cognitive theory that explains how people cognition is being influenced through interaction'. There are three layers of cognition in the human mind; the semantic, the symbolic and the neurological levels (Krueger, 2003; Sarasvathy, 2001; Simon, 1995). Researching entrepreneurial intentions can push the fields of cognitive psychology and entrepreneurship into new areas (Krueger, 2003). 'Intention' is found in the semantic layer of cognition (Krueger, 2003; Sarasvathy, 2001). A human intention lies within the roots of cognitive psychology and instantly appears before a certain behaviour is conducted (Barbosa et al, 2007). Furthermore, intentions consist of a behavioural goal and planned process that are established within individuals' minds (Krueger and Carsrud, 1993). Originally, intention is a planned behaviour (Barbosa et al, 2007) based on the beliefs that the behavioural outcome is desirable and feasible (Krueger, 2003; Segal et al, 2005).

Entrepreneurship education has a central role in affecting students' entrepreneurial intentions (Shinar et al, 2014). While many studies investigated the impact of entrepreneurship education on intentions to start a business, they still overlooked the ability of educators to effect students' semantic cognition (Hindle et al, 2009). This brief introduction is a starting point for this thesis

and will provide a deeper explanation on the effect of specific pedagogy on students' cognitive process towards entrepreneurship (Mitchell et al, 2002).

1.2 Main idea and research problem

Although the traditional idea of schooling is based on knowledge transfer from teachers to students (Collins and Halverson, 2010), the aim of entrepreneurship education is different from that of any other educational field. Unlike management education that teaches students to have the necessary skills to supervise and control an established business, entrepreneurship education is defined as an 'actionable theory' form of education which combines theoretical and practical content that develops students' personality and allows them to acquire an entrepreneurial mindset and start-up competencies to cognitively and practically plan and create a firm (Currie and Knights, 2003; Neck et al, 2014; Taks et al, 2014; Urban, 2006).

The blended nature of entrepreneurship education caused confusion among scholars over how to define and explain its teaching methods (Mwasalwiba, 2010). Although scholars (Heinonen and Hytti, 2010; Heinonen and Poikkijoki, 2006) explained that traditional teaching, participative approaches, working life methods and imitating entrepreneurs are some of the most used pedagogies by educators in entrepreneurship education, it still has its unique teaching method that separates it from other management fields. This method is described as *blended learning* in entrepreneurship education (Maritz et al, 2011).

Blended learning in higher education is defined as a pedagogy that combines traditional teaching practices with e-learning methods (Fook et al, 2016). Although blended learning is assumed to add technologically-enhanced and digital media styles of learning to face-to-face traditional teaching methods (Adam and Nel, 2009), entrepreneurship education applies blended learning in a different way. Entrepreneurship courses combine theoretical and conceptual teaching practices which supports students to gain basic knowledge and analyse 'real life' business scenarios (Matlay, 2005; Peterman and Kennedy, 2003). Furthermore, entrepreneurship education pedagogy practices encourage students to be more participative and interactive in classrooms (Abaho et al, 2015; Taks et al, 2014). From this viewpoint, previous studies (Leffler and Svedberg, 2005; Haase and Lautenschlager, 2011; Taks et al, 2014) found that educators are facilitating entrepreneurial knowledge and contents by combining guidance and feedback with traditional teaching to respond to the blended nature of entrepreneurship education. Such practices are described as mentorship

(Feldon et al, 2014; Lutz et al, 2015; Stewart and Knowles, 2003; Sullivan, 2000) which appears under different pedagogy forms in entrepreneurial learning such as reflection (Neck et al, 2014) and cognitive apprenticeship (Shen et al, 2012).

Past research discussed that students are more engaged in entrepreneurship education classes due to educators' adoption of a mentoring behaviour (Fiet, 2000; Lutz et al, 2015; Taatila, 2010; Taks et al, 2014). Educators are transforming their roles from instructors to mentors in order to balance between the blended nature of entrepreneurship education and fulfilling academic school requirements (Linan et al, 2008; Powell, 2013). Furthermore, educators' mentorship pedagogy complements traditional teaching (Galbraith and James, 2004) by mixing traditional teaching with active learning practices such as reflection and feedback during students' learning processes (Zachary, 2002).

In general, a mentor is an individual who possess knowledge that teaches and directs mentees towards a goal (Swap et al, 2001). However, the difference between teaching and mentoring in entrepreneurship education is that teaching enables educators to transfer knowledge to students but with slight classroom interaction while mentorship combines traditional teaching with personal and professional development practices that allows educators to actively interact with students during the class to develop their cognitive mindset towards entrepreneurship (Cooper et al, 2004; Galbraith and James, 2004; Linan et al, 2008; Lutz et al, 2015; Mertz, 2004; Nora and Crisp, 2007).

There are several research issues that need to be addressed in this thesis. Past research in entrepreneurial learning focused on investigating entrepreneurship learning pedagogies (Lourenco and Jones, 2006) such as action learning (Taylor, 2004), experimental learning (Hindle, 2002; Robertson and Collins), apprenticeship (Shen et al, 2012), opportunity-centred learning (Rae, 2003), case studies (Theroux and Kilbane, 2004), reflection and learn by doing (Cope, 2003; Cope and Watts, 2000) and business competitions (Li et al, 2003) without taking into consideration students' cognitive reaction to teachers' interactive practices in these pedagogies (Pennings et al, 2018).

A learning pedagogy consists of a curriculum which contains the content of what is being taught, methodology that explains how teaching is done and socialising techniques that increase students' skills for the designated career goal (National Research Council, 2000). Researching a pedagogy does not only include examining the content of curricular materials but also evaluating its

methodological impact on students' cognitive abilities (Segall, 2004). Educators' interaction effects and their relationship to students' semantic cognitive process in entrepreneurship education are rarely examined (Fitzsimmons and Douglas, 2011). Studies can no longer ignore the role of lecturers as active social influencers who can shape students' entrepreneurial mindsets in the axial revolution (Hindle et al, 2009; O'Brien et al, 2013).

The impact of educators' interactive pedagogy methods such as mentorship on students' semantic cognition in entrepreneurship education demands immediate attention (Pittaway and Cope, 2007; Barbosa et al, 2007; Crisp and Cruz, 2009; Sanchez, 2012). Educators who adopt a mentoring behaviour promote a pedagogical dialogue which creates mutual involvement with their students during the learning process. This dialogue intensifies educators' interactive practices such as questioning, commenting, re-thinking issues, and reflexivity (Haneda et al, 2016). These forms of practices allow students to relate their learning outcomes to their prior knowledge which results in the construction of new beliefs and knowledge about entrepreneurship (Bosser and Lindahl, 2017; Krueger, 2007). To extend past studies, this research focuses on teachers' mentorship interactive methodological pedagogy which is a core yet understudied factor in entrepreneurial learning that plays a role in changing students' cognitions towards entrepreneurship (Blenker et al, 2014).

Past studies that tried to examine the impact of external factors on students' cognitions i) did not rely on established semantic cognitive theoretical frameworks, ii) had weak integration between educational psychology and entrepreneurship education, iii) did not challenge current research trends, iv) concluded their implications by relying on educators who measure the impact of their own teaching methods, and v) researched (Brigham et al, 2007; Delmar and Wiklund, 2008; Dimov, 2007; Henley, 2007; Obschonka et al, 2010; Watchravesringkan et al, 2013; Wiklund and Shepherd 2003) the direct effect of external variables on students' cognitions without considering its antecedents (Fayolle, 2013). This indicates that there is a need to combine external education areas with cognitive psychology to extend the field of entrepreneurship education and cognitive psychology. Since the aim of this study is to explain the impact of a specific dimension within entrepreneurship education on entrepreneurial cognitions instead of the overall effect of entrepreneurship education (Oosterbeek et al, 2010), this research opens an in-depth analysis on the relationship between entrepreneurial mindset (Fayolle and Klandt 2006) and educators'

interactive methods (Heinonen and Poikkijoki, 2006; Heinonen and Hytti, 2010) such as mentorship pedagogy in the field of entrepreneurship education.

Since previous studies examined the effect of entrepreneurship education on students' psychology (Blenker et al, 2014) and this research shows that mentorship exists in entrepreneurship education as a blended learning form between active and traditional pedagogies, is it then sufficient to conclude its effectiveness on students' complex semantic cognition towards entrepreneurship? Furthermore, blended learning in the form of a mixture of e-learning and traditional teaching impacts students' semantic cognitive factors in entrepreneurship education (Adam and Nel, 2009; Maritz et al, 2011) however, this author contends that there is a lack of clarity in the impact that mentorship has as a form of blended learning that combines traditional teaching with interactive practices to inform students' intentions to create businesses. It is also not clear whether this form of blended pedagogy impacts other semantic cognitive elements in students' minds towards entrepreneurship.

Mentorship is a recently discovered yet understudied (St-Jean and Mathieu, 2015) pedagogy in entrepreneurship education (Mars et al, 2008; Miyasaki, 2014) that transforms lecturers into faculty mentors who are capable of delivering the theoretical and practical aspects of entrepreneurship by not only transmitting information but also by influencing students' semantic cognition, knowledge and skills to create a firm (Abaho et al, 2015; Albornoz, 2008; Clouse and Goodin, 2002; Feldon et al, 2014; Ferreira et al, 2012; Hartshorn and Hannon, 2005; Hindle, 2007; Krueger, 2003; Neck et al, 2014; Sarasvathy, 2004; Shen et al, 2012).

The author contends that instead of adopting an extreme approach to entrepreneurial learning pedagogy research, future studies should recognise the blended nature of entrepreneurship education that links instructive with constructive pedagogy practices which is found in different types of entrepreneurial learning (Lourenco and Jones, 2006). In the context of this research, this is the mentorship pedagogy.

1.3 Research questions, aims and objectives

1.3.1 Thesis research question and aim

Thesis research question: What is the impact of educators' mentorship pedagogy practices on students' semantic cognitive process in entrepreneurship education?

Thesis research aim

Mentorship as a hybrid pedagogy is applied by educators on the learning of students in entrepreneurship education. However, this pedagogy is empirically understudied and further tests are needed to verify its influence on students' entrepreneurial cognitions (Fayolle et al, 2006). Furthermore, the blended nature of mentorship has the potential to support different forms of entrepreneurship education to deliver its impact on students' cognition, and also has the potential to influence the nature of the entrepreneurial course itself (Fayolle and Degeorge, 2006; Kubberoed and Hagen, 2015; Lorz et al, 2013). Therefore, the aim of this thesis is to test the relationship between exposure to mentorship and students' semantic cognitive process and assess how this relationship supports different forms of entrepreneurship education factors to impact students' cognitions.

1.3.2 Thesis research objectives

- To examine the ability of a theoretical cognitive framework to explain the relationship between mentorship and entrepreneurial intentions.
- To test the effect of educators' mentorship pedagogy on students' cognitive antecedents in entrepreneurship education.
- To evaluate the ability of educators' mentorship practices to support the impact of the nature of entrepreneurship education on students' cognitive factors.
- To test the different forms of mentorship on students' cognitive antecedents'.

1.3.2 Chapter 3 - Research questions, aim and objectives

Sub-research Questions

- What is the strength of effect of educators' mentorship pedagogy on students' attitude and perceived behavioural control?

- What is the nature of the relationship between mentorship pedagogy and entrepreneurial intentions in entrepreneurship education?

Research Aim: Due to the reliability of the theory of planned behaviour, it is used as the backbone of for the theoretical framework for this research. However, to fulfill the` first two objectives of the thesis, the author's critical review is extended towards the fields of entrepreneurial intentions and mentorship in entrepreneurship education to generate a research framework and a main target for this study. Therefore, the aim of this chapter is test the potential effect of educators' mentorship pedagogy on students' cognitive antecedents and entrepreneurial intentions in entrepreneurship education. Furthermore, this study aims to explain the interactive relationship between educators' mentorship method and students' cognitive factors.

Sub-research Objectives

- To provide evidence of the relationship between attitude and perceived behavioural control with entrepreneurial intentions.
- To compare the strength of effect of educators' mentorship pedagogy on students' attitudes and perceived behavioural control.
- To explain the roles of attitude and perceived behavioural control as mediator variables in the relationship between educators' mentorship pedagogy and students' entrepreneurial intentions.

1.3.3 Chapter 4 - Research questions, aim and objectives

Sub-Research Questions

- What is the influence of the nature of entrepreneurship courses on students' intentional antecedents'?
- What is the nature of the relationship between educators' mentorship method and the nature of entrepreneurship courses to influence students' intentional antecedents'?

Research Aim: To achieve the third objective of the thesis, this chapter examines the role of educators' mentorship method to drive the influence of the nature of entrepreneurship courses on students' cognitive antecedents and entrepreneurial intentions. The paper conducts a critical literature review of the different types of entrepreneurship education and mentorship practices that

are applied by educators in theoretical and practical courses. Arguments from the review suggest that the nature of the entrepreneurship course is related to teachers' mentorship method and it indirectly influences students' cognitive antecedents and entrepreneurial intentions.

Sub-research Objectives

- To examine the influence of the nature of entrepreneurship courses on students' cognitions.
- To explain the nature of the relationship between the content of entrepreneurship education and students' cognitive antecedents' through educators' mentorship pedagogy.

1.3.4 Chapter 5 – Research questions, aim and objectives

Sub-Research Questions

- How do mentorship functions differ in terms of their effect on students' entrepreneurial intentions?
- To what extent do mediated cognitive variables change the direction of influence of different mentorship functions on students' entrepreneurial intentions?

Research Aim: To achieve the fourth objective of the thesis, the review shows that different mentorship functions have different effects in entrepreneurship education. In addition, testing each function will reveal the best practice of mentorship and will provide an opportunity for this study to expand the potential influence of its theoretical framework. Therefore, the aim of this chapter is to compare the strength of direct and indirect influences of different mentorship functions on students' cognitive outputs in entrepreneurship education.

Sub-research Objectives

- To compare the level of influence of different mentorship functions on students' entrepreneurial intentions.
- To explain the impact direction of career-related, psychosocial and teaching functions on students' semantic cognitive outputs.

1.4 Research contribution

This thesis contributes in different areas of entrepreneurship. This research builds on the question 'can entrepreneurship be taught?' (Henry et al, 2005) by asking 'can educators influence students' entrepreneurial intentions?' It contributes to the notion that entrepreneurs are made and not born (Henry et al, 2005) by explaining the power of educators to mould students' attraction to entrepreneurship and their confidence in their abilities to perform entrepreneurial activities (Segal et al, 2005; Krueger, 2003).

Past studies demonstrate that educators in entrepreneurship education are modifying their teaching methods to increase their interactions with students and change their entrepreneurial intentions (Heinonen and Poikkijoki, 2006). Classroom interpersonal interaction is the first building block of the teacher-student relationship and it contributes to students' cognitive learning outcomes (Pennings et al, 2018). It is also a significant measure of students' behavioural engagement (Cooper, 2014). Educators' engagement with students during classroom teaching, discussion and activities allows students' to reflect on their responses, replace current negative thoughts about entrepreneurship as a behaviour, and improve creativity through critical thinking, which is a core requirement of an entrepreneurship career (Eggers et al, 2017; Nguyen et al, 2016). Researching students' cognitive minds is starting to conquer the field of entrepreneurship education as it represents the first stage of the entrepreneurial process (Neck and Greene, 2011). Furthermore, the review above reveals how faculty members apply mentorship practices to students; however, for this discovery to pass the 'so what' test (Fiet, 2000), this research will work towards revealing the power of influence of mentorship on students' semantic cognitive process in the teacher-student relationship realm. Testing the impact of mentorship on the cognitive process and its elements will reveal the functionality (Autio et al, 2001; Shepherd and Wiklund, 2009) of the interactive process between the educator and students during entrepreneurship education sessions.

Studying the level of effect of entrepreneurial pedagogies on students' cognitive process will allow this thesis to create a conceptual framework that will become a springboard for future researchers to continue assessing this phenomenon (Blenker et al, 2014). The researcher also argues that testing a specific pedagogy on students' cognition extends Alberti et al's (2004) original framework that divided the components of entrepreneurship education into five categories. This will direct future research to explain the strength of impact of one component on the other. In this

regard, the relationship between mentorship method as a blended learning format of the pedagogy component in entrepreneurship education and other factors such as types of knowledge content, goals and context can be further explained by analysing the functionality between them and students' semantic cognition. Lorz et al's (2013) systematic review shows that very few studies depended on theoretical intentional frameworks to operationalise their variables with external factors. The next chapters of the thesis respond to this challenge by critically reviewing previous intentional models and justifying the reason behind choosing the theory of planned behaviour (Ajzen, 1991) as the backbone of this study. The research will generate testable models that will expand the theory of planned behaviour into new fields and develop new arguments (Lorz et al, 2013) in the field of entrepreneurship education.

Previous findings (Fayolle and Linan, 2014; Franke and Luthje, 2004; Peterman and Kennedy, 2003; Souitaris et al, 2007) found that entrepreneurship education does effect students' intentions to start a firm. This is inconclusive; therefore, further studies need to explain whether there are any specific dimensions in entrepreneurship classrooms such as pedagogies (Lorz et al, 2013) that are playing a role in influencing students' intentions and cognitive antecedents (Linan and Fayolle, 2015; Von Graevenitz et al, 2010). Therefore, in response to this, this study builds upon previous findings and makes efforts to answer the calls from Fayolle et al (2006) and Fayolle and Linan (2014) to test the effect of entrepreneurial teaching on entrepreneurial intentions prerequisites.

Allen et al's (2008) review reveals that 73.9% out of 173 studies conducted research on mentorship in the US. This current thesis challenges this statistic and extends previous studies by starting a new chapter in the fields of mentorship and entrepreneurial intention in UK entrepreneurship education courses. Although mentorship is assumed to be applied in business incubators only (Cohen and Hochberg, 2014), this research displays mentorship (Mars et al, 2008; Miyasaki, 2014) as a 'Schumpeterian creative destruction in pedagogies' (Gibb, 2002, p.259) deployed in entrepreneurship education programmes.

Since modern economies are relying on increasing the number of entrepreneurs, the study of entrepreneurial intentions is a priority in entrepreneurship research (Krueger, 2003). This research will support educators to realise the best teaching practices that should be applied during their educational sessions. In addition, it will bring together business school directors and researchers to build effective teaching methods that will not only influence students' intentions to create firms

but will also positively reflect on departments' and business schools' contribution indices (Fayolle, 2013). Researching the effect of pedagogies on entrepreneurial intentions will strengthen universities tasks in the third academic revolution (Etzkowitz and Viale, 2010; Heinonen and Hytti, 2010) and indirectly boost the economic growth (Krueger, 2003; Krueger et al, 2000; Mitchell et al, 2002). Since the triple-helix model causes a change in how educational institutes, government and industry function (Chen et al, 2016), then universities can increase their influence in the national innovation system (Wong et al, 2007) by linking their interactive teaching methods such as mentorship with their third mission as part of the triple-helix model (Hofer and Potter, 2010).

This research will support entrepreneurial universities to continue their pedagogy revolution (Chen et al, 2016) in entrepreneurship education. Furthermore, it will encourage educators to integrate their traditional teaching practices with interactive methods that can change students' cognitive psychology about entrepreneurship (Hytti and O'Gorman, 2004). Universities mainly evaluate the effectiveness of entrepreneurship education programmes based on the number of business start-ups after graduation; however, this does not show the true impact of entrepreneurship education (Von Graevenitz et al, 2010). Testing the impact of mentorship on students' semantic cognitive process supports business schools to choose or avoid interactive teaching strategies that can either increase or decrease the number of graduate entrepreneurs. Furthermore, this research will enable programme leaders to assess the internal factors of entrepreneurship education at an early stage to improve the core construct of the programme. A cautious inspection and development of entrepreneurial pedagogies will encourage students to engage in entrepreneurial activities and thus produce potential innovative entrepreneurs (Canziani et al, 2015).

This research directs educators' attention towards changing students' entrepreneurial mindset (Blenker et al, 2012) which is the starting point of an axial education revolution (O'Brien et al, 2013). Introducing mentorship as a potential pedagogy will modify the entrepreneurial learning process and enable educators to participate in curriculum design (Blenker et al, 2012; Vanevenhoven, 2013). Interactive methods such as mentorship allow educators to teach the 'science' knowledge of entrepreneurship and improve students 'arts' ability such as innovation and creativity (Heinonen and Poikkijoki, 2006; Lutz et al, 2015). Finally, this study responds to

the challenge of linking entrepreneurial behaviour which is influenced by the cognitive process with learning techniques in entrepreneurship education (Gibb, 1996).

1.5 Overview of methodology

This section summarises the methodological process that is explained in chapter 2 and implemented in chapters 3, 4 and 5. The argument that little academic work has expended efforts to explain the philosophical perspective of entrepreneurship education (Fayolle, 2013) created an opportunity for this thesis to explain the philosophy of cognitive psychology in entrepreneurship education. Many studies (Engle et al, 2010; Fretschner and Weber, 2013; Karimi et al, 2014; Kautonen et al, 2015; Linan and Chen, 2009; Ngoc and Huu, 2016; Prabandari and Sholihah, 2015) followed a positivism perspective by observing and measuring semantic cognitive outputs mathematically. Examining individuals' intentions objectively and numerically through surveys is a modified behaviourism method (Diesing, 1966) and it can be hypothetically related to observed variables such as educators' entrepreneurial pedagogies (Fayolle and Linan, 2014).

Students' entrepreneurial intentions are mainly influenced by their semantic cognitive process and can be examined by referring to previously established intention models that reveal the cognitive factors (Elfving, 2008; Hamidi et al, 2008; Krueger, 2003; Looi and Lattimore, 2015; Sarasvathy, 2001, 2004). Ajzen's (1991) theory of planned behaviour is the adopted intention model throughout the study due to its reliability in studying the semantic cognitive process (Krueger et al, 2000; Lortie and Castogiovanni, 2015; Schlaegel and Koenig, 2013).

Mentorship is an interactive pedagogy in entrepreneurship education that plays a role in influencing students' semantic cognitive outputs and it can be measured objectively (Berk et al, 2005; Ensher and Murphy, 2010; Kram, 1985; Ragins et al, 2000; Scandura, 1992). From a processional interactionism perspective (Elfving et al, 2009), the relationship between educators' mentorship method and students' cognitive factors within the teacher-student functionalist interaction area is based on an objective ontology (Diesing, 1966; St-Jeanand Mathieu, 2015). Therefore, this interactionism reflects a positivism philosophical stance.

The research implements a deductive reasoning approach that studies objective variables in the relationship between mentorship pedagogy and semantic cognitive process and aims to either accept or falsify the impact of exogenous on endogenous variables in our theoretical models (Ali and Birley, 1999; Charreire and Durieux, 2001; Saunders et al, 2012). In this regard, a quantitative

research method that builds on the argument of positivism and explains objective realities in a deductive manner is adopted to achieve the objectives of this study (Charreire and Durieux, 2001) and build on previous findings that discovered mentorship in entrepreneurship education.

Mentorship pedagogy that is being deployed naturally by educators during an entrepreneurship education course is difficult to manipulate for experimental purposes (Shadish et al, 2002). Our study uses a non-experimental survey research strategy (Saunders et al, 2012) that focuses on testing the influence mentorship as a non-manipulative variable (Johnson, 2001; Fretschner, 2014) on students' cognitive factors in entrepreneurship education instead of measuring the change of endogenous elements through quasi-experiments (Fretschner, 2014). Furthermore, cross-sectional design is implemented to confirm the relationship and effect between variables that are still in their infancy stages and that need further empirical work (Johnson, 2001; Lodico et al, 2006; Mann, 2003; Wilson et al, 2007). A stratified random sampling was applied to divided entrepreneurship education into stratums (Kothari, 2004; Royer and Zarlowski, 2001). Chapter 3 does not rely on the stratums but rather focused on establishing the potential effect of mentorship on students' intention cognitive elements in entrepreneurship education in general (Wilson et al, 2007). Chapter 4 extends the findings of chapter 3 and focuses on the relationship between the nature of entrepreneurship courses, mentorship pedagogy, and students' cognitive processes.

Chapters 3, 4 and 5 apply a non-experimental procedure (Johnson, 2001) and use structural equation modelling (SEM) to strengthen the correlational and causal comparative research measures (Johnson, 2001: Martella et al, 1999; Rideout and Gray, 2013; Shumacker and Lomax, 2010). The theoretical frameworks were built from gaps in the literature and survey instruments were derived from previous studies in mentorship and entrepreneurship education. Moreover, a hybrid process that combines exploratory and confirmatory factor analyses to build the measurement and structural models was applied (Matsunaga, 2010; Williams et al, 2010) to generate the results for chapters 3, 4 and 5.

1.6 Structure of the thesis

This research follows a three-paper PhD model. Chapter 2 was added to provide detailed explanations of the research methodology. The following sub-sections explain the work that was done in each stage of the thesis to give a clear picture of what to expect in the upcoming chapters. The chapters are organised as the following:

Chapter 1: This chapter provided a brief background of the study that explains the formation of the academic revolution and the concept of an entrepreneurial university. The chapter also identified the axial revolution and how cognitive psychology specifically intentions is related to the education revolution. The section explained the origins of the research problem and how it was developed to influence this study to identify the overall research gap. The main thesis research question was formulated from the research problem and previous review of the literature. The overall thesis aims and objectives were clarified to proceed on to the next stages. In addition, the research contribution was briefly discussed from theoretical and practical perspectives.

Chapter 2: This chapter focuses on explaining the groundworks of the methodological applications used in this study by following Saunders et al (2012) research onion. The chapter starts by explaining the study's philosophical stance and its research reasoning. Next, it justifies the choice of a mono-quantitative method and a survey research strategy. The section also explains the research strategy technique that was justified according to past studies in entrepreneurship education. In addition, the sampling method, data collection and statistical analysis are explained in this chapter. The methodology is divided into two parts: i) Chapter 2 explains the theoretical side of our methodology and ii) chapters 3, 4 and 5 reveal the technical details of this study research procedure.

Chapter 3: This chapter is the first publishable paper that aims to examine the potential effect of mentorship on students' antecedents of entrepreneurial intentions in entrepreneurship education. Reviewing past research works supported this study to identify gaps in the application of the theory of planned behaviour in UK entrepreneurship education, the limitations of past studies to test entrepreneurship education pedagogies on the antecedents of the theory of planed behaviour, and the restrictions to assessing the nature of the relationship between educators' pedagogies and students' entrepreneurial intentions. The study responded to this challenge by conducting a survey on students from six UK universities who are taking an entrepreneurship course. Structural equation modelling was applied to answer the research questions. Results indicate a strong model fit, positive direct and mediation effects between educators' mentorship pedagogy and students' intentions and cognitive antecedents. In conclusion, lecturers' mentorship pedagogy is influencing students' beliefs towards entrepreneurship and affecting their self-confidence and interest in

starting a business. This study extends the fields of entrepreneurship education and cognitive psychology.

Chapter 4: This is the second publishable paper that aims to operationalise the units of entrepreneurship education and explain the ability of educators' mentorship pedagogy to facilitate the effect of each type of entrepreneurship education on students' cognitions. The chapter reviews different mentorship practices and types of knowledge in theoretical and practical entrepreneurship courses. This provided the opportunity to examine whether mentorship pedagogy supports tacit and explicit knowledge in theoretical and practical entrepreneurship education to affect students' cognitive antecedents. The data were collected via a survey research design from students enrolled in theoretical and practical entrepreneurship classes. Piperopoulos and Dimov's (2015, p. 974) dichotomy supported the research to divide classes into different types of entrepreneurship course. A structural equation modelling analysis was used to analyse the data to generate results. The findings show that educators' mentorship pedagogy competes with the nature of entrepreneurship courses to affect students' cognitive factors and entrepreneurial intentions. Also, it shows that educators apply mentorship practices after students receive tacit and explicit knowledge which indicates the role of educators to influence students' existing cognitive and thinking structure. The chapter provides additional measurements to evaluate the effectiveness of entrepreneurship education through educators' interactive practices.

Chapter 5: This chapter compares the strength of direct and indirect influences of traditional teaching, psychosocial and career-related mentorship functions on students' cognitive outputs in entrepreneurship education. Previous chapters found that mentorship as a single variable impacts students' attitudes, perceived behavioural control and entrepreneurial intentions; however, the strength of the effect of each mentorship function on students' cognitions in an entrepreneurial educational setting was still not clear. It was found that psychosocial mentorship practices do not play a role in shaping students' cognition and mindsets. In other words, attempting to change students' personality will not influence their intentions to start a business. On the other hand, career-related mentorship is raising students' self-confidence in their own skills to create a venture while traditional teaching practices are influencing students' awareness of entrepreneurship. This study contributes to the MIND methodology, personal meaning system, and the research field of the learning environment.

Chapter 6: This is the final chapter of the thesis that reviews this study's research questions, aims and objectives. It also highlights the main theoretical and practical implications and contributions this thesis has made to extend the fields of entrepreneurship education, cognitive psychology and learning settings. Finally, it states the limitations encountered in this thesis and highlights opportunities for future studies.

1.7 Conclusion

The starting point for this thesis was a brief discussion of the gaps and research directions to start critically evaluating past research in the fields of cognitive psychology and entrepreneurship education. This thesis creates a new pathway for entrepreneurship research by combining discovered external educational elements with students' entrepreneurial intentions. The research questions, aims and objectives were clarified for the entire thesis, and for each individual paper. In the next chapters, an in-depth critical evaluation is undertaken and hypothesised relationships are identified that will be tested and confirmed against each the research aims and objectives.

Chapter 2: Research Methodology

2.1 Introduction

Science does not only develop individuals' knowledge but also changes its methods according to the research area (Diesing, 1966). Research relies on individuals' curiosity, creative thinking and investigation procedures to fulfill the objectives of a study (Kothari, 2004). Empirical research depends on i) *measurement* that supports studies to compute the elements that construct the entire relationship, ii) *research design* that draws the plan and strategies to obtain samples for the study, and iii) *analysis* which calculates scores and explains the relationship between variables (Schwab, 2005). This chapter explains the research design and measurement procedures adopted for our thesis. Furthermore, chapter 2 justifies the selected methods based on previous theoretical arguments while methodologies in chapters 3, 4 and 5 validate the technical and statistical details in the research procedure.

It is recognised that the philosophy of entrepreneurship education is not static and it changes according to the objectives of previous studies (Hannon, 2006). This chapter reveals the main philosophical paradigms that were adopted in entrepreneurship education and justifies the chosen philosophy for this stidy based on aggregated arguments. In addition, Saunders et al's (2012) research onion is used as the research guidance framework for this study to clarify each stage of the methodology construct.

2.2 Research philosophy

2.2.1 The battle between paradigms

Due to the complexity of entrepreneurship education, the entire field cannot rely on a single philosophical stance (Hannon, 2006). According to Fayolle (2013) review, past studies did not make efforts to analyse entrepreneurship education from an ontological and epistemological point of view. This creates both a challenge and an opportunity for this research to contribute to the philosophy of the phenomenon being studied in entrepreneurship education.

The presence of the human being as a core element in entrepreneurship education caused a philosophical debate between scholars in research and learning paradigms (Kyro, 2015). To this day, the main battle in philosophy is between positivism and interpretivism (Carson et al, 2001; Hanson and Grimmer, 2007). According to Saunders et al (2012), research paradigms are different based on their ontology, epistemology and axiology. Ontology looks at the nature of reality and how it is formed in the human consciousness (Pittaway, 2005; Saunders et al, 2012). Ontology is divided into i) objectivism in which reality is observed, measured and independent of the researcher (Long et al, 2000), and ii) subjectivism where there are multiple realities that can be found by interacting with individuals to seek the truth (Long et al, 2000; Saunders et al, 2006). Objectivists rely on quantitative methods that involve participants in surveys or experimental tests to generate statistical outcomes while subjectivists use qualitative techniques such as observations or interviews to uncover deeper meanings to the phenomena being studied (Diesing, 1966). Epistemology refers to the process of communicating and achieving knowledge drawn upon how we perceive acceptable reality (Long et al, 2000; Saunders et al, 2012). Finally, when researchers prefer to study a certain angle through a specific paradigm and data collection process that integrates their own values, it is defined as axiology (Saunders et al, 2012).

Research is derived from a deep philosophical explanation of the concept that is being studied (Molina-Azorin et al, 2012). Past studies were criticised due to their perception of education as a positivist linear causal process which leads to the conclusion that entrepreneurship education is a complex constructivist type of education consisting of different factors that enables students to cognitively build up knowledge (Holmgren and From, 2005). Researchers who apply a constructive approach believe that the purpose of entrepreneurship education is to support students to assemble knowledge (Krueger, 2009). The notion that received information in entrepreneurship education is constructed in the individual cognitive mind indicates thatthe teacher's role changes from teacher-centred to a facilitator of a learning-centric method (Krueger, 2007; Kyro, 2015). Researching the role of educators as facilitators of knowledge and not as an individual that transmits information only is considered as a constructivism philosophy (Leger-Jamiou, 2012). This perception of entrepreneurship education encourages researchers to explore how students construct explicit and tacit knowledge and understand the formation of the cognitive structure through an interpretive paradigm which means that reality from an ontological viewpoint is

multiple and it is embedded in each student's mind (Krueger, 2007). This requires researchers to remain part of the study and epistemologically conduct their research work by interacting with individuals who are studying entrepreneurship (Krueger, 2007; Molina-Azorin et al, 2012; Saunders et al, 2012) due to their perception of entrepreneurship education as a subjective phenomenon.

Researchers who investigated the complexity of knowledge construction such as Gaglio (2004) and Mitchell et al (2002) focused on the symbolic layer (Krueger, 2003; Simon, 1995) of the cognitive structure which includes individuals' schemata that categorises received information and established beliefs about different dimensions in the world (Gaglio and Katz, 2001; Krueger, 2003). However, their analysis neglects the levels of the cognitive mind and ignores the semantic stage where intentions are formed (Sarasvathy, 2004). These views are also perceived by the social constructivist researcher in which they aim to discover how teaching entrepreneurship knowledge is built and embedded in students' cognitive minds (Fletcher, 2007). Furthermore, social constructivists are interested to explore and represent or mirror how entrepreneurial knowledge gained from the surrounding environment and culture is constructed at the individual's symbolic cognitive level (Fletcher, 2007; Krueger, 2003). In conclusion, investigating the symbolic cognitive area needs a constructive/interpretivism paradigm to understand its complexity (Jones, 2010).

In terms of entrepreneurial intentions, Elfving (2008) researched this field from a critical realism perspective in response to the studies of Kruger (2007) and Mitchell et al (2007). Ontologically, realism considers the subject being studied as objective and independent of human thought that requires researchers to epistemologically measure it as a direct realism then uncover the truth in details through critical realism (Saunders et al, 2012). Critical realism studies the structure, mechanisms and causal powers within the researched domain (Bhaskar, 2008; Elfving, 2008). Mitchell et al (2007) explained that knowledge schemas are mechanisms of entrepreneurial behaviour while Krueger (2007) discussed that belief structures are the main trigger for venture creation behaviour. Elfving (2008) argued that previous researchers' explanations does not fit an interpretive philosophy but instead resemble a critical realism stance which motivated him to explore the characteristics and the emergence of entrepreneurial intentions, which is beyond

intentional cognitive antecedents. Elfving's (2008) findings from a qualitative case study method expand current entrepreneurial intention models by integrating motivation, goals and opportunity evaluation as triggering mechanisms that form entrepreneurial intentions. Elfving's (2008) conceptual framework created an invitation for future studies to test the impact of overlooked factors in entrepreneurship education on students' entrepreneurial intentions (Elfving et al, 2009; Fayolle and Linan 2014).

Very few studies adopted the pragmatic philosophy in entrepreneurship education. Fretschner and Weber (2013) applied a mixed method to study the effect of awareness entrepreneurship education (Linan et al, 2008) on students' entrepreneurial intentions objectively and understood the formation of students' beliefs towards entrepreneurship subjectively. Furthermore, their work builds on Elfving's (2008) findings that focused on the influence of theoretical entrepreneurship education on students' semantic cognitive level and explored how beliefs are structured within students' symbolic cognitive level (Krueger, 2003; Sarasvathy, 2004; Simon, 1995). Pragmatist researchers in entrepreneurship education are also interested in identifying the objective of entrepreneurship education by understanding and explaining it from students' perspectives due to their interaction with entrepreneurial activities during their sessions (Taatila, 2010). Furthermore, what is being learnt by students in the entrepreneurship education is considered the reality (Taatila, 2010). This indicates that entrepreneurial learning objectives change students' perceptions of the entrepreneurship world (Ardalan, 2008). Mwasalwiba's (2010) review provides a good example of a pragmatism philosophy that shows how previous researchers defined entrepreneurship education based on multiple objectives which led to confusion over its essence. However, other scholars such as Jamison (1984) and Linan et al (2008) tried to simplify entrepreneurship education objectives by categorising it according to contents and pedagogies. These studies indicate that entrepreneurship education objectives change based on the pedagogy that is being used, course implications, curricula contents and students' interactions during an entrepreneurial class (Piperopoulos and Dimov, 2015). Therefore, research studies that aim to identify entrepreneurship education objectives beyond previous works (Jamieson, 1984; Linan et al, 2008; Piperopoulos and Dimov, 2015) require a pragmatic philosophical stance to understand from multiple interpretations (Saunders et al, 2012) what defines an entrepreneurship education and how it is coined by others.

2.2.2 Suitable intentional model

Since this study aims to test the relationship between entrepreneurship educators' mentorship pedagogy and students' semantic cognitive process in entrepreneurship education, a positivism philosophical stance is adopted based on the following explanations.

Based on the previous review of adopted philosophical stances in entrepreneurship education, this study can apply a pragmatism philosophy or an interpretivism philosophy only if it considers students' symbolic cognitive level to explore how students' beliefs are constructed within each cognitive element (Krueger, 2003) and explain the different effects that a teacher can have on a student's entire cognitive structure. On the other hand, applying a critical realism philosophy will shift the objectives of this study and will require it to conceptually uncover the elements between educators' background profile and teaching methods (Fayolle and Linan, 2014) and students' entire cognitive mechanism which includes factors beyond the semantic cognitive layer. Furthermore, a critical realism philosophy explores how educators' mentorship pedagogy shape students' symbolic cognitive level because it examines the subjective complex mental processes beyond established semantic cognitive theoretical models (Elfving, 2008; Mitchell et al, 2002; Sarasvathy, 2004). Although this could be a potential contribution to the field of entrepreneurial intention, it will not fulfill the aim and objectives of this study.

An ontological positivism allows researchers to remain independent of the data and access a single reality to epistemologically obtain objective hard facts through relationship and causality by using statistical analysis (Carson et al, 2001; Long et al, 2000; Molina-Azorin et al, 2012; Saunders et al, 2012;). Entrepreneurial intentions within students' semantic cognitive level can only be explained through established theoretical frameworks that clearly reveal cognitive antecedents (Elfving, 2008; Krueger, 2003; Sarasvathy, 2001, 2004). Entrepreneurial intentions do not appear from nothing as they are always influenced by a number of factors (Looi and Lattimore, 2015). Intention is an old concept that intrigued Socrates and motivated him to think about why individuals carry out certain behaviours (Krueger, 2009). From an entrepreneurship education perspective, intention without an activating element cannot lead students towards entrepreneurial activities. It is argued that lecturers trigger students' cognitive antecedents, which affects their entrepreneurial intentions (Heinonen and Poikkijoki, 2006). This implies that intentions form in a process fashion. In this regard, the nature of a human behaviour can either be a reaction to an

external effect or a planned process that results from mental aspects (Krueger, 2009). Teachers are perceived as a social capital that can affect students' semantic cognitive elements and can direct them towards the goal of starting a business (Heinonen and Poikkijoki, 2006; Hindle et al, 2009).

Human intention is an objective factor that can be observed and measured, and have numerical values through surveys (Diesing, 1966). Observing a mental cognitive process is a modified behaviourism approach that measures semantic cognitive elements and can be hypothetically related to external observed variables (Diesing, 1966) such as an entrepreneurship educator's pedagogies (Fayolle and Linan, 2014). Entrepreneurial intentions are triggered by individual's semantic cognitive antecedents (Hamidi et al, 2008). Since individuals' behaviours are determined by their semantic cognitive elements, then this study can be undertaken objectively through surveys (Diesing, 1966). Many studies (e.g., Engle et al, 2010; Fretschner and Weber, 2013; Karimi et al, 2014; Kautonen et al, 2015; Linan and Chen, 2009; Ngoc and Huu, 2016; Prabandari and Sholihah, 2015) implemented a positivism philosophy approach due to the belief that the semantic cognitive process can be expressed and measured conceptually and mathematically.

Semantic cognitive process such as Bird's intentional theory sparked the movement to use intentional models with external research areas however, it lacks other specific components that contribute in explaining the process from cognitive antecedents to intentions and behaviour (Boyd and Vozikis, 1994). Since Bird's original model remains questionable due to a deficiency in its empirical confirmation and lack of use by scholars, few studies (Ajzen, 1991; Boyd and Vozikis, 1994) attempted to modify Bird's model (Fayolle and Linan, 2014). Ajzen's (1991) TPB continued the journey of Bird's original model (1988) by adding PBC as a cognitive variable while Boyd and Vozikis (1994) proposed self-efficacy as an additional explanatory variable in Bird's model that determines the strength of entrepreneurial intention and the probability that it will turn into an action. According to past studies (Schlaegel and Koenig, 2013; Guerrero et al, 2008; Krueger, 2009; Krueger et al, 2000), TPB and Entrepreneurial Event (EE) intentional are the only used intentional models in entrepreneurship research. This is because the cognitive antecedents of TPB and EE prove to have a strong impact and explanatory power on entrepreneurial intentions (Krueger et al, 2000). Latest studies (Van Gelderen, 2008; Fayolle et al, 2006; Shook et al, 2003) have confirmed that TPB is the most suitable intentional model that confirms the relationship

between cognitive antecedents and different forms of entrepreneurial intentions such as creating a firm, developing an existing one or recognizing an opportunity. Furthermore, meta-analysis study (Lortie and Castogiovanni, 2015) shows that TPB factors positively effect entrepreneurial intentions. Although EE is considered a strong intentional model however, it is the second most used theory in entrepreneurship education research. This is beacause EE theory did not successfully predict entrepreneurial intentions due to contradictory findings from the same data (Schlaegel and Koenig, 2013; Peterman and Kennedy, 2003; Krueger et al, 2000).

Although this might indicate that TPB is the most suitable intentional model, choosing the best intentional models remains a challenge (Fayolle and Linan, 2014). It is argued that TPB factors such as normative and control beliefs does not predict cognitive antecedents (Sniehotta et al, 2014; French and Hankins, 2003). This argument contradicts with the nature of the human mindset. In order to build cognitive antecedents that can lead to an entrepreneurial intention, the mindset has to go through the symbolic stage which is responsible in creating the normative, behavioural and control beliefs about the entrepreneurial behaviour (Krueger, 2003; Mitchell et al, 2002; Simon, 1995). These beliefs form the antecedents' attitude, subjective norms and perceived behavioural control which leads to an entrepreneurial intention (Fletcher, 2007; Sarasvathy, 2004). Scholars (Sniehotta et al, 2014; Sniehotta, 2009) also argued that TPB is not sufficiently strong to be applied in experimental research studies. This is a limited conclusion as TPB was implemented in many robust and experimental studies in entrepreneurship education. Past studies analysed the explanatory power and effects of the components of TPB on entrepreneurial intentions under different universities (Van Gelderen et al, 2008), students from different cultures (Linan and Chen, 2009) and different field of study (Tkachev and Kolvereid's, 1999). These studies demonstrated that TPB is a robust model that works among different groups. Other studies proved that TPB works in experimental research. These studies (Sihombing, 2012; Godsey and Sebora, 2010; Wu and Wu, 2008; Souitaris et al, 2007) compared control groups that experienced normal conditions with experimental groups that experienced a new treatment.

Latest studies (Lortie and Castogiovanni, 2015; Ajzen, 2015; Conner, 2015; Ogden, 2015; Rhodes, 2015) confirms the validity and strength of TPB to explain entrepreneurial intentions. These studies explained that retiring TPB is a negative idea but linking the theory to factors outside the semantic cognition such as motivation and personality factors (Elfving, 2008; Sarasvathy, 2004)

or to external environmental this mental elements (Elfving et al, 2009) is the way to keep TPB alive. In this regard, the next chapters will theoretically link TPB with learning factors in entrepreneurship education.

Ajzen's (1991) theory of planned behaviour (TPB) is the intentional model that is used in chapters 3, 4 and 5 due to its strong reliability and ability to predict entrepreneurial intentions (Fayolle et al, 2006; Krueger et al, 2000; Li, 2007; Linan and Chen, 2009; Lortie and Castogiovanni, 2015; Schlaegel and Koenig, 2013; Wu and Wu, 2008). The theory of planned behaviour (Ajzen, 1991) shows that students' entrepreneurial intention is based on their attitude, subjective norms (SN) and perceived behavioural control (PBC). According to Ajzen (1991) and Krueger et al (2000), attitude explain students' attraction towards starting a firm, SN explains that social influence such as approving or disapproving students' decision to create a business and PBC is when students evaluate their abilities to conduct an entrepreneurial activity. These semantic cognitive elements affect intentions and are mathematically measured as shown in **Table 1.**

Table 1: Theory of planned behaviour equations (Ajzen, 1991)

TPB cognitive elements	Attitude	Subjective Norms	Perceived Behavioural control
Semantic cognitive equation	$A \propto \sum_{i=1}^{n} bi\ ei$	$SN \propto \sum_{i=1}^{n} ni\ mi$	$PBC \propto \sum_{i=1}^{n} ci\ pi$

According to Ajzen's (1991) work, salient beliefs (b) are multiplied by subjective evaluation (e); normative belief (n) is multiplied by motivation to comply with individuals (m), and control belief is multiplied by perceived power (p) of the control factor. The resulting products are summed over salient beliefs (n) for attitudes, salient referent beliefs (n) for SN, and control beliefs (n) for PBC. While beliefs in general can be explored through an interpretivism approach, beliefs about a specific goal can be measured by cooperating with participants to complete questionnaires (Botsaris and Vamvaka, 2014; Linan and Chen, 2009) about their personal beliefs and intentions towards entrepreneurship (Baron and Ward, 2004). It is concluded that Ajzen's (1991) work improved the scientific method (Diesing, 1966) employed to capture students' intentions. Based on previous arguments, attitude, SN and PBC as core cognitive elements are always within

students' semantic cognitive level but can be influenced and changed through beliefs within each element.

2.2.3 Interactionism between mentorship and intentions

This study extends Socrates' question of "why individuals conduct a certain behaviour" (Krueger, 2009) into "what is the strength of effect of entrepreneurship educators' mentorship method on students' semantic cognitive antecedents?" Previous studies (Krueger, 2003, 2007; Mitchell et al, 2007) focused on how educators can support students to construct knowledge at the symbolic cognitive level while other studies (Garalis and Strazdiene, 2007; Karimi et al, 2014; Oosterbeek et al, 2010; Robinson et al, 1991; Souitaris et al, 2007) researched the effect of entrepreneurship education on students' entrepreneurial intentions. Testing the effect of educators' mentorship pedagogy on students' cognitive intentional process through a positivism philosophical stance combines the realms of semantic cognitive psychology and entrepreneurial pedagogy in entrepreneurship education. Furthermore, the influence of the interaction between teachers' pedagogy and students' cognitive mental structure have been explored in a subjective manner (Krueger, 2003, 2007; Mitchell et al, 2007) but very few studies have reviewed the interaction effects of teachers' pedagogy on students' intentional antecedents from an objective positivist way (Fayolle and Linan, 2014; Fitzsimmons and Douglas 2011). From an ontological point of view, previous debate about the best pedagogy method (Canziani et al, 2015; Chrisman et al, 2005; Cooper et al, 2004; DeTienne and Chandler, 2004; Gartner and Vesper, 1994; Henry et al, 2005; Mueller, 2011; Souitaris et al, 2007) to influence students towards entrepreneurship call for future studies to examine the impact of a specific pedagogy on students' entrepreneurial intentions (Fayolle and Linan, 2014; Gibb, 2002) from a positivism philosophy viewpoint (Diesing, 1966).

In terms of interactionism, Pittaway and Tunstall (2016, p. 192) explained it as the 'interaction between individuals and their surrounding environment". Cognitive interactionism explains how intention is formed from the symbolic level — where beliefs are constructed, to the semantic level — where individual intention appears from cognitive elements (Pittaway and Tunstall, 2016). This term reflects the work of Ajzen (1991), Bird (1988) and Shapero (1982) on intentional cognitive models. Processional interactionism focuses on the external environmental factors that influence an individual's cognitive process toward an entrepreneurial activity (Elfving et al, 2009).

Processional interactionism was seen in the works of Greenberger and Sexton (1988), Learned (1992) and Naffziger et al (1994). These researchers built conceptual frameworks that show the process from inputs such as personality, backgrounds and vision to mechanistic functions such as external support, schemata and intention process, to outputs such as entrepreneurial behaviours. Their work is also an example of an entrepreneurial process model (Baron, 2007). These models reveals that the human cognition structure is a part of a large system (Kyro, 2015) and are presented as a functionalist paradigm (Pittaway and Tunstall, 2016). Functionalism perceives the phenomenon being studied as objective and regulative that explains the entire order of a system (Burrell and Morgan, 1982; Saunders et al, 2012). If this study adopts the functionalism paradigm from a cognitive interactionism perspective, then it will need to take into consideration the entire functional mental system from the symbolic cognitive level to the semantic level and ignore the impact of external influences such the mentorship pedagogy. On the other hand, if this study implements the functionalism philosophy from a processional interactionism point of view, then it will focus on all the external and internal elements that are involved in the interaction process between the teacher and the student.

According to previous theoretical findings and arguments, zooming in on the mentorship pedagogy and students' entrepreneurial intentions as specifics in the entire teacher-student interaction reflects a positivist philosophical stance. Furthermore, Mentorship is an interactive pedagogy technique (Heinonen and Hytti, 2010; Heinonen and Poikkijoki, 2006; Saunders et al, 2012) that has been measured and observed on endogenous variables by previous studies (Berk et al, 2005; Bouquillon et al, 2005; Ensher and Murphy, 2010; Evertson and Smithey, 2000; Kram, 1985; Nora and Crisp, 2007; Pellegrini and Scandura, 2005; Ragins et al, 2000; Scandura, 1992). Mentorship is a recently discovered pedagogy in entrepreneurship education that shapes students' semantic cognitive elements in a positivist manner (Abaho et al, 2015; Feldon et al, 2014; Hartshorn and Hannon, 2005; Hindle, 2007; Neck et al, 2014; Sarasvathy, 2004) within a functionalist philosophical area that represents the objective relationship between the educator and students. In conclusion, the aim of cognitive psychology is to analyse individuals' cognitive outputs when they interact with people (Mitchell et al, 2002). Furthermore, educators' mentorship pedagogy and students' semantic cognition are objective positivists' phenomena that can be statistically measured (Diesing, 1966; Gibb, 2002; Fayolle and Linan, 2014; St-Jeanand Mathieu, 2015).

2.4 Research approach

A deductive approach resembles the scientific research that aims to explain causal relationships between variables found and justified from gaps in the literature review (Saunders et al, 2012). Researchers using this method generate hypotheses to form a theoretical framework that sets the premises of the research to begin statistically measuring the effects between exogenous and endogenous variables (Ali and Birley, 1999; Blaikie, 2010; Crockett, 2012). Furthermore, the deductive research technique studies objective variables (Diesing, 1966), develops an instrument in the form of a questionnaire (Ali and Birley, 1999), and aims to either accept or falsify the relationships and effects between variables (Saunders et al, 2012). On the other hand, inductive research focuses on exploring subjective phenomena by collecting information from a small number of participants to generate a conceptual framework (Saunders et al, 2012). An inductive approach mainly applies an interpretivism philosophical stance that aims to understand the phenomenon being studied from individuals' perceptions while deductive reasoning mainly implements a positivist philosophy that explains objective elements in the area being studied (Leitch et al, 2010). In addition, the deductive method starts by acknowledging a general universal law and ends by explaining specifics while the inductive method moves from an unobserved reality to a universal law (Charreire and Durieux, 2001).

Although Henry et al (2005) argued that subjective approaches do not represent the population and that participants' responses may not reflect their honest opinions, previous studies (Elfving, 2008; Krueger, 2007; Mitchell et al, 2002) used the inductive approach and were able to reveal hidden factors in the individual symbolic cognitive area that, to this day, contributes to the field of entrepreneurship. If this study focuses on the schemata area of the cognitive mind (Gaglio and Katz, 2001; Krueger, 2003) then it can adopt inductive reasoning by interviewing students to understand how knowledge is constructed at their symbolic level or it can explore this area from the educator's perspective to reveal the pedagogy methods that help students to establish beliefs from the information they receive during their entrepreneurship education course (Charreire and Durieux, 2001; Kruger, 2007; Sarasvathy, 2004; Simon, 1995).

This study employs the deductive reasoning approach based on the notion that semantic cognition and mentorship pedagogy are measurable objective phenomena. Furthermore, the process of

interaction from educators' mentorship method to students' entrepreneurial intentions is perceived as a theoretical model that consists of a set of hypotheses (Charreire and Durieux, 2001). Hypotheses established from Ajzen's (1991) intentional model discussed above model theory (Ajzen, 1991) contain endogenous cognitive variables that are connected with mentorship as an exogenous variable in entrepreneurship education (Abaho et al, 2015; Ensher and Murphy, 2010; Fayolle and Linan, 2014; Hindle, 2007; Neck et al, 2014). This association forms a structural equation model that allows this study to test the variables at the same time and considers mediation as a potential explanation in the framework (Charreire and Durieux, 2001). Hypotheses are derived from previous studies to propose possible relationships between variables within the theoretical framework (Charreire and Durieux, 2001). Chapters 3, 4 and 5 follow a deductive reasoning approach in order to create a theoretical framework that contains hypotheses derived from gaps in the literature review.

2.5 Methodological choice

Qualitative design methods in entrepreneurship and intention research studies have pushed the fields into new areas that enabled quantitative studies (e.g., Fretschner and Weber 2013; Karimi et al, 2014; Piperopoulos and Dimov, 2015) to explain the relationship between entrepreneurship education and individual intentions. This supported educators to recognise the best practices in entrepreneurship programmes. Chandler and Lyon (2001) and Gustafsson (2009) argued that future studies should focus on testing causal effects between explored variables in entrepreneurship research. In this regard, Blenker et al's (2014) systematic review in entrepreneurship education shows that only 29% of previous studies applied a quantitative design method while 52% implemented a qualitative method. This indicates that although entrepreneurship education factors such as the type of the course, pedagogies, objectives and contents have been explored, they still need statistical explanations (Blenker et al, 2014).

The quantitative method is linked to positivism, functionalism and radical structuralism that study objective realities in a deductive manner to explain relationships between variables through statistical analysis, while the qualitative method is based on interpretivism, social constructivism and radical humanism that explores subjective realities grounded on an inductive reasoning by

interacting with individuals through interviews (Burrell and Morgan, 1982; Long et al, 2000; Saunders et al, 2012). Qualitative researchers base their study on the notion that multiple realities are embedded in individuals which requires an in-depth exploration from specifics to general propositions whereas quantitative researchers generate hypotheses from knowledge gaps and aim to explain specific effects and relationships (Molina-Azorin et al, 2012). Furthermore, research studies based on realism and pragmatism can integrate quantitative and qualitative approaches through the mixed methods approach (Saunders et al, 2012). Fretschner and Weber's (2013) study utilised mixed method research to test the effect of awareness entrepreneurship education on students' entrepreneurial intentions and discovered how beliefs in students' attitudes and perceived levels of behavioural control are constructed. Elfving (2008) applied multi-method qualitative research to expose the dimensions beyond established intentional models. Since this current study adopts a positivism philosophy and a deductive approach, then a mono-quantitative method (Saunders et al, 2012) that analyses the data through a statistical procedure (Molina-Azorin et al, 2012) is chosen as the foundation of the research analysis.

The decision on whether to use quantitative or qualitative research approaches relies on whether the research objectives and aims focus on building theoretical propositions or testing variables in a model (Charreire and Durieux, 2001). This research works towards testing a set of hypotheses within the relationship between mentorship pedagogy and students' semantic cognitive process in entrepreneurship education. Previous research studies revealed that mentorship is deployed by educators in entrepreneurship education classes and can have the potential to affect students' cognitive psychology towards entrepreneurship (Fayolle and Linan, 2014; Hartshorn and Hannon, 2005; Hindle, 2007; Lutz et al, 2015; Mars et al, 2008; Miyasaki, 2014; Stewart and Knowles, 2003). If this study adopts a qualitative research, it will follow an inductive reasoning that either enables the researcher to interact with students to reveal the mentorship practices they learned during their entrepreneurship sessions or interview educators to discover the types of mentorship functions they applied during the class. The nature of the relationship between mentorship and semantic cognition process is an objective modified behaviourism that is mathematically and numerically measured (Diesing, 1966; Elfving et al, 2009; Fayolle and Linan, 2014). Furthermore, the direction between mentorship pedagogy and students' semantic cognitive process reflects a processional interactionism which is an objective relationship that requires a quantitative research

to build on previous studies that discovered mentorship in entrepreneurship education. Therefore, a quantitative research is the most suitable approach forthis study. Chapters 3, 4 and 5 explain the technical process of the quantitative method that is adopted herein.

2.6 Research strategy and time horizon

A research strategy aids studies to answer their research questions and fulfill their objectives (Saunders et al, 2012). Since this study is built on positivism, deductive reasoning and quantitative research, then it will either follow a survey design, experimental method or a case study strategy (Saunders et al, 2012; Schwab, 2005).

In terms of experimental research, Fretschner's (2014) systematic review shows that previous studies in entrepreneurship education have applied Ajzen's (1991) theory of planned behaviour by using a quasi-experimental research design to study students' semantic cognitive outputs before and after enrolling in an entrepreneurship course. Some studies used one experimental group with a pre-post research design while other research studies included experimental and control groups with either a post-test or a pre-post-test design (Fretschner, 2014). In this regard, participants who are labelled as control groups are exposed to normal circumstances while participants who are labelled as experimental groups receive a treatment (Kothari, 2004).

Most scholars who researched the impact of entrepreneurship education on intentions distributed surveys to students before the programme started and after it ended (Reichardt, 2009; Fretschner, 2014). Souitaris et al (2007) included students who enrolled on science and engineering programmes and divided them into an experimental group that received entrepreneurship contents as the treatment and control group participants that were not exposed to entrepreneurship material. Their study shows that students from the experimental group reported higher attitudes and entrepreneurial intentions than students from the control group. Karimi et al (2014) also utilised a quasi-experimental research by distributing the questionnaire before and after the entrepreneurship programme using one-group pre-post design. Their study reveals that students' cognitive antecedents changed after the course. Another study conducted by Siu and Lo (2011) shows that cultural factors and social norms play roles in impacting students' entrepreneurial intentions. They

used a single-shot post-test quasi-experiment without a control group (Fretschner, 2014) and compared the results to those from a group with no treatment. Fretschner and Weber's (2013) study did not include a control group but applied a pre-post design to measure the impact of awareness entrepreneurship education to reveal that this type of course raises students' attitudes, perceived behavioural control and intentions towards starting a firm. Ramayah et al (2012) implemented a post-test quasi-experiment to reveal that the cognitive elements of intentions improve within students who have prior entrepreneurial experience in experimental groups than is the casse with students without any form of experience. Sanchez (2013) found that entrepreneurship education changes entrepreneurial intentions by following a pre-post-test quasi-experiment that includes an experimental and control groups.

Overall, entrepreneurship education studies that utilise quasi-experiment designs aim to examine the change of semantic cognitive elements (Krueger, 2007; Sarasvathy, 2004) instead of testing the influence of an external variable on the intention cognitive antecedents (Fretschner, 2014). Furthermore, quasi-experiments are deployed for variables that have a record of in-depth statistical research and their constructs are previously measured in different studies (MacCallum and Austin, 2000; Wilson et al, 2007).

The aim of this research is to analyse the influence of mentorship pedagogy on students' semantic cognitive process as a potential relationship found from previous findings. True experiments are difficult to use for this study because entrepreneurship sessions are either core subjects or elective courses (Fretschner, 2014). If the aim of this research was to test the impact of entrepreneurship education on entrepreneurial intentions, then a quasi-experiment would suffice. However, adopting a quasi-experiment research design to examine the influence of mentorship pedagogy on students' semantic or intention cognitive processes would impose some barriers. Choosing a programme due to the availability of mentoring as an institutionalised factor can only be done in business incubators (Cohen and Hochberg, 2014) because mentorship in entrepreneurship education is naturally deployed by educators in response to the course behavioural objectives (Albornoz, 2008; Clouse and Goodin, 2002; Hartshorn and Hannon, 2005; Hindle, 2007; Krueger, 2003; Lutz et al, 2015; Mars et al, 2008; Neck et al, 2014; Sarasvathy, 2004). Students enrolling on an entrepreneurship course would find it difficult to differentiate mentorship from other

pedagogies due to the lack of knowledge in entrepreneurship education (Kirk, 2009; Testa and Frascheri, 2015). Therefore, utilising a quasi-experiment would divert this study away from its objectives and will impose some difficulties in separating students into experimental and control groups. Furthermore, this research tests mentorship that happens naturally between the educator and students during an entrepreneurship class (Lutz et al, 2015; Mars et al, 2008) and does not aim to create an entrepreneurship mentorship programme to test the proposed variables as described in chapters 3, 4 and 5 as this could be a case of a true experiment (Johnson, 2001; Kirk, 2009).

Since mentorship pedagogy occurs naturally during an entrepreneurship education course, it is difficult to manipulate (Shadish et al, 2002). Non-manipulative variables are mainly studied in a non-experimental fashion by focusing on the influence of one variable on another (Fretschner, 2014; Shadish et al, 2002). This study applies a non-experimental survey research strategy that follows a deductive reasoning approach (Saunders et al, 2012). Blenker et al's (2014) systematic review shows that non-experimental surveys were the most commonly applied strategies in quantitative entrepreneurship education studies. A non-experimental strategy is divided into correlational research that aims to study relationships between variables and causal comparative research that compares the effect of one variable on another from different groups (Johnson, 2001). From an educational research perspective, variables involved in non-experimental research occur naturally (Johnson, 2001). This is aligned with previous research that revealed mentorship pedagogy naturally occurs in entrepreneurship courses. Non-experimental survey techniques are used for this research as the purpose is not to manipulate the study's exogenous variables or randomly allocate students to different groups (Johnson, 2001) but to examine the influence of educators' mentorship methods on students' semantic cognitive process in entrepreneurship education.

The strongest technique that aids non-experimental methods such as correlational or causal comparative methods is the structural equation modelling (SEM) (Johnson, 2001; Martella et al, 1999). Earlier studies rarely used SEM to test the effect of specific elements in entrepreneurship education such as pedagogies on students' cognitive outputs (Rideout and Gray, 2013). Blenker et al's (2014) systematic review shows that only one study applied a SEM technique. It is a necessary requirement to apply a SEM process to improve the effectiveness of this study's use of non-experimental methods (Lodico et al, 2006; Pearl, 1995; Shumacker and Lomax, 2010).

Since this study does not observe changes but rather analyses the influence of mentorship on cognitive antecedents, it adopts a cross-sectional design (Shumacker and Lomax, 2010). Unlike longitudinal studies that collect data at different times through methods such as repeated measures (Saunders et al, 2012; Schwab, 2005), cross-sectional designs use questionnaires to collect the data at a single point in time (MacCallum and Austin, 2000; Schwab, 2005). This study applies a cross-sectional design to test new variables that were qualitatively discovered but are still considered at their early stage and need further quantitative empirical verification (Allen et al, 2008; Mann, 2003; Wilson et al, 2007). It is argued that studies at their early stages such as this research must first apply a quantitative, non-experimental and cross-sectional research design before implementing any experimental procedures to establish relationships between exogenous and endogenous variables in SEM (Allen et al, 2008; Johnson, 2001; Lodico et al, 2006; Shumacker and Lomax, 2010). Moreover, mentorship research applying a cross-sectional method allows us to capture the current interaction and the highest point of the mentoring relationship between the educator and students (Bouquillon et al, 2005). Chapters 3, 4 and 5 explain the technical methodological details of the chosen strategies. Furthermore, the chapters explain the exogenous variables taken from Berk et al (2005), Ensher and Murphy (2010) and Evertson and Smithey, 2000), endogenous variables from Linan and Chen (2009) and control variables as alternative explanations in our SEM model (Johnson, 2001) in the questionnaire found in the appendix section.

2.7 Research procedures

2.7.1 Research ethics

Quantitative and qualitative research studies should consider research ethics practices before starting the data collection. Ethical obligations are necessary in every stage of the research study due to the involvement of the researcher in individuals' daily lives (Miller and Brewer, 2003). Therefore, ensuring good ethical practices will lead to better results and a successful relationship between participants and the researcher (Miller and Brewer, 2003). This study was approved by the Ethics and Research Governance Online (ERGO) at the University of Southampton. Supporting documents requested by the ERGO committee were provided. In terms of research access, permission was acquired from gatekeepers (Saunders et al, 2012) at each university to physically and virtually distribute the questionnaire to students. However, most of the

questionnaires were distributed physically due to low response rate from students who completed an internet survey (Saunders et al, 2012). Lecturers' allowed the researcher to briefly present the study to students. After gaining approval, participation information sheet, consent form, the questionnaire, the debriefing form and other necessary documents were given to all participants during their entrepreneurship classes. The researher also completed ethical and risk-assessment forms for the ERGO team. Although the questionnaire contains a section designated for lecturers, it was not used for the study due to sample size gap between the lecturers and students. Participant information sheets with consent forms were used for this study to gain permission from students to participate, and to inform them that the study is voluntary and they may withdraw at any time without any risks. Furthermore, the participant information sheet contained information about the research, participants' rights, who will access the data and how long will it take to complete the survey (Saunders et al, 2012). The study did not face any issues with sensitivity (Saunders et al, 2012) as the gatekeepers and students were cooperative. Anonymity and confidentiality were maintained throughout. Anonymity assures participants that their personal data will not be identified by the researcher while confidentiality ensures participants that other individuals will not have access to their personal data (Miller and Brewer, 2003). Anonymity and confidentiality were mentioned and clarified to students in the consent form, participation information sheet, introductory page of the questionnaire and the debriefing document. The debriefing form briefly explained the study to the students and provided them with the contact information for the researcher's supervisors and the ERGO support officer.

2.7.2 Sampling strategy

Sampling supports researchers to study specific elements in the population (Royer and Zarlowski, 2001). Choosing a sampling technique mainly depends on the nature and objectives of the study (Saunders et al, 2012). In this regard, non-experimental research studies such as correlational and causal comparative adopt a random sampling strategy (Shadish et al, 2002). Since this current research employs deductive reasoning, quantitative method and a survey research design, a simple random or probability sampling is the chosen method to address the research questions (Saunders et al, 2012; Schwab, 2005). Simple random sampling selects participants from a specific area in a random fashion (Teddlie and Yu, 2007). Probability sampling focus on a specific target (Shadish et al, 2002) which, in the case of this research are students taking entrepreneurship education courses. Fourteen entrepreneurship courses were identified based on Mwasalwiba's (2010)

systematic review of entrepreneurship education. According to the syllables and descriptions of the 14 entrepreneurship courses such as “Entrepreneurship Thought and Action”, “Entrepreneurial Business Management”, “Managing High Growth Businesses” and “Business Model Development”, pedagogy practices like reflection, interaction, debates, discussions, role-play exercises and activity seminars were integrated with traditional teaching methods such as lecturing. According to previous studies ((Cooper et al, 2004; Feldon et al, 2014; Fiet, 2000; Galbraith and James, 2004; Linan et al, 2008; Lutz et al, 2015; Mars et al, 2008; Mertz, 2004; Miyasaki, 2014; Neck et al, 2014; Shen et al, 2012; Stewart and Knowles, 2003; Sullivan, 2000; Taatila, 2010; Taks et al, 2014; Zachary, 2002), these practices are described as mentorship. Entrepreneurship education courses were divided into stratums (Kothari, 2004; Royer and Zarlowski, 2001) based on the dichotomy of Piperopoulos and Dimov (2015, p. 974) and previous findings and knowledge from the literature (Kothari, 2004). After generating entrepreneurship education groups, students were selected using a simple random sampling (Royer and Zarlowski, 2001; Saunders et al, 2012). This informs chapter 3, which proceeds to verify the potential influence of educators’ mentorship pedagogy on students’ cognitive outputs (Wilson et al, 2007). Confirming the potential effect of mentorship on students’ cognitive outputs requires an additional non-experimental causal comparative test (Autio et al, 2001; Johnson, 2001; Kautonen et al, 2015; Shepherd and Wiklund, 2009). Chapter 4 took into consideration the dichotomy of entrepreneurship education according to their knowledge contents and objectives. This enabled chapter 4 to analyse the effects with the relationship between the nature of entrepreneurship courses, mentorship pedagogy, and students’ semantic cognitive outputs.

Examining overlooked predictor pedagogies such as mentorship is considered an innovation in the field of education (Mueller et al, 2006). It is argued that attempting to direct an innovative study through the sample size trap should always be avoided (Bacchetti et al, 2011). According to the literature review, examining the impact of mentorship as an entrepreneurial pedagogy on students’ semantic cognitive process in entrepreneurship education is considered as an early study. Furthermore, early studies often use small samples to produce new results and shape the future directions of research (Bacchetti et al, 2011). In terms of sample sizes, Schlaegel and Koenig’s (2013) meta-analysis shows that sample sizes varied in different studies from 62 participants collected as primary data to 32,050 individuals identified from previous secondary data. These

studies applied the theory of planned behaviour (Ajzen, 1991) to generate their findings. Fretschner's (2014) systematic review reveals that most previous cited studies in entrepreneurship education used a sample of between 29 and 211 participants. Other previous influential works achieved a sample size within the same range. Altinay et al (2012) examined students' entrepreneurial intentions in the UK by involving 205 participants, Borchers and Park (2010) evaluated students' intentions by including 190 engineering and business students, and Ferreira et al (2012) involved 74 students to test psychological and behavioural variables on entrepreneurial intentions. Plant and Ren (2010) studied the impact of motivation on semantic cognitive variables on 181 students from the USA and China, while Thompson (2009) compared entrepreneurial intentions of 181 national and international students, and Urbig et al (2012) involved 111 students from different fields and levels of study to investigate the entrepreneurial intentions and risky opportunities. Karimi et al (2014) used 205 students who were located in different entrepreneurship programmes from six different Iranian universities in order to study the effect of entrepreneurship education on intentions, and Piperopoulos and Dimov (2015) included 114 students studying different entrepreneurship courses to examine the nature of the module on students' semantic cognitive elements. Kwong and Thompson (2015) studied students' entrepreneurial intentions by including 139 business students studying entrepreneurship in different UK universities, while previous works such as Canziani et al (2015) focused on the impact of entrepreneurial pedagogies on entrepreneurial intentions by involving 119 students from six different entrepreneurial courses. Other studies such as that of Sherman et al (2008) examined different entrepreneurial pedagogies on entrepreneurial intentions of 98 students.

Very limited research studies tested the impact of a specific entrepreneurial pedagogy on students' semantic cognitive process (Blenker et al, 2014; Linan, 2007; Lorz et al, 2013; Von Graevenitz et al, 2010). The influence of pedagogies in entrepreneurship education on students' intentional cognitive variables needs to be confirmed by future studies before proceeding with any experimental or longitudinal designs as the field is still in its infancy (Duval-Couetil, 2013; Johnson, 2001; Mann, 2003; Wilson et al, 2007). Furthermore, Johnson and Bachan (2013, p. 2) argued that "small sample size is very common in the field of social psychology". Small sample studies are usually novel and can create value and opportunities for future research works to study new areas (Bacchetti et al, 2011). Large samples are sometimes costly and time consuming, and

can create problems in the reliability of the research (Royer and Zarlowski, 2001). Chapters 3, 4 and 5 explain the sample sizes for each of the studies in this research that were collected between March and May, 2016. It was difficult to collect more data due to factors beyond the researcher's control; these were academic priorities of students and educator that included teaching, assignments, revision weeks and examination periods.

The study tried to rely on online surveys at the beginning of the data collection period but the strategy was changed to a physical data collection method due to very low response rates from online surveys. After a shift in the data collection strategy, the response rate was 88.3%. Due to the challenges involved in physical data collection, this study also relied on the required sample size that is deemed sufficient to conduct statistical analysis methods such as structural equation modelling (Byrne, 2010; Hoelter, 1983; Shumacker and Lomax, 2010). Furthermore, the sample size of this research is higher than that of previous studies that focus on analysing the influence of an entrepreneurial pedagogy on students' entrepreneurial intentions (Canziani et al, 2015; Sherman et al, 2008). Although the sample size was estimated during the pilot study using the software G*Power (O'Keefe, 2007) on the first 100 participants only to achieve a range between 128 and 266 of the required sample size at an 80% power level, Bacchetti et al (2011) warned new studies not to follow sample size requirements based on priori-power analysis. Determining the sample size by using a priori-power technique in a pilot study provides an inaccurate effect size and can either push researchers to collect more unnecessary data or limit the number of study participants (Leon et al, 2011). Nevertheless, a *post-hoc* power analysis was conducted in chapter 4 to assess the ability of the statistical t-test to generate a significant value and conclude the sufficiency of the sample size (Faul et al, 2007). Pilot studies should not conduct hypothesis testing such as generating p-values and, thus, researchers should avoid generating a required sample size through different methods such as power analysis (Leon et al, 2011). The next section discusses the statistical tools that are used for this study.

2.7.3 Statistical methods

Semantic cognitive antecedents exist and form intentions at the same time; thus, it is unrealistic to test human cognition separately through classical mediation (Baron and Kenny, 1986) methods (Krueger, 2003, 2007; MacCallum and Austin, 2000; Sarasvathy, 2001, 2004). The field of entrepreneurship education lacks simultaneous structural equation modelling assessment of

cognitive variables (Rideout and Gray, 2013). Blenker et al's (2014) systematic review also unveils the lack of the SEM method in previous entrepreneurship education studies. Since this study adopts a cross-sectional research method on a human cognitive process then structural equation modelling (SEM) is the optimal solution to generate significant results from the hypothesised model in chapters 3, 4 and 5. This study not only measures the influence of specific elements within entrepreneurship education on students' cognitions but also tests an under-studied pedagogy. Therefore, SEM is a powerful tool that clarifies the interaction between variables and allows the researcher to construct, verify and test a previously overlooked theoretical framework (Shumacker and Lomax, 2010). Furthermore, SEM takes into consideration measurement errors that aid the model construct to achieve adequate validity and reliability results (Crockett, 2012). Cross-sectional studies often use SEM to test the influence of latent variables on one another (MacCallum and Austin, 2000), particularly when the research area is still in its infancy (Duval-Couetil, 2013; Wilson et al, 2007). SEM examines complex models at the same time and provides an opportunity for researchers to test for mediation and calculate the goodness of fit of the entire hypothesised model (Prabhu et al, 2012). Also, SEM can assess the entire measurement construct among different groups and it consists of latent and observed variables that are generated from either factor or confirmatory factor analyses (MacCallum and Austin, 2000). To conduct a SEM process, researchers must i) satisfy the requirements in the measurement model, and ii) test the exogenous and endogenous variables in the structural model (Karimi et al, 2014; Shumacker and Lomax, 2010).

The measurement model is constructed through a confirmatory factor analysis (CFA) process that validates the entire construct by examining the relationship between latent and observed variables and determines the weight of factor loadings on each variable (Crockett, 2012; Karimi et al, 2014). Other scholars recommended using a hybrid approach that combines exploratory factor analysis (EFA) with CFA to create latent variables and construct them with their observed variables in the entire model (Matsunaga, 2010; Williams et al, 2010). Since the field of mentorship contains different theories that specify different functions (Gershenfeld, 2014; Kram, 1985; Nora and Crisp, 2007; Ragins and McFarlin, 1990) then a hybrid method is used for this study to generate different factors (Shumacker and Lomax, 2010) of mentorship functions through EFA and build a

measurement model by testing the relationship between latent mentorship elements with their observed variables through CFA.

CFA is one of the most important advantages of SEM (Crockett, 2012; Shumacker and Lomax, 2010; Yong and Pearce, 2013). Although R-square evaluates the model fit of the structural model, it should be supported with additional goodness of fit indices (Iacobucci, 2010). CFA aims to analyse the model fit of the entire measurement model by exploring the absolute, incremental and parsimonious fits (Hair et al, 2009). Absolute fit indices assist researchers to examine the strength of their hypothesised models by using reliable measures such as Root Mean Square Error of Approximation (RMSEA) (Hair et al, 2009). RMSEA supports researchers to confirm whether their sample size is sufficient based on a cutoff point of ($x < .08$) (Hair et al, 2009; Iacobucci, 2010; Shumacker and Lomax, 2010). It also compares the hypothesised model with a perfect fit independence model (Crockett, 2012). Incremental fit aims to compare the theoretical model with alternative saturated ones by using indices such as the comparative fit index (CFI) or Tucker-Lewis index (TLI) (Hair et al, 2009). These indices must reach ($x > .90$) to proceed with the analysis of the measurement model (Hair et al, 2009; Iacobucci, 2010; Shumacker and Lomax, 2010). Furthermore, incremental fit compares the hypothesised framework with a poorly fit one (Crockett, 2012). Parsimonious fit focuses on measuring the impact of retaining a parameter on the entire model's goodness of fit (Crockett, 2012). In this regard, the Chi-square is divided by the degrees of freedom to achieve a threshold of ($x < 5.0$) (Asyraf and Afthanorhan, 2013).

The study examines the goodness of fit of the theoretical models to achieve adequate construct validity. Although this is considered a powerful approach to validate the measurement model, a common method bias (CMB) test is also implemented with the model-fitting procedure. Carr and Sequeira (2007) suggested using CMB in cross-sectional studies to avoid validity problems. This study uses the Harman single factor and common latent factor tests to ensure that the variance is less than a threshold of 50% (Carr and Sequeira, 2007; Shirokova et al, 2015). Moreover, several extra measures are used in the process of designing the survey for this study such as acquiring predictor measures from different sources, ensuring anonymity and confidentiality for the participants, and deleting any vague questions from the questionnaire during the pilot test stage (Podsakoff et al, 2003).

The second stage of a SEM procedure is called the structural model. This stage tests the hypothesised relationships by providing standardised estimates and significant values (Cheng, 2001). Furthermore, this stage allows researchers to remove non-significant parameters based on theoretical justification (Cheng, 2001). In conclusion, this study has visually specified the model in chapters 3, 4 and 5 from the literature and established hypothesised frameworks in the measurement and structural model stages by relying on theoretical justifications, goodness of fit indices and significant paths (Crockett, 2012). Chapters 3, 4 and 5 explain and perform a detailed SEM statistical procedure. Since this research also aims to test the theoretical framework under different settings, then an effect size test will serve our study. Although effect size is used in experimental studies, non-experimental research can also apply this test to compare the magnitude difference between two or more settings (Cunningham and McCrum-Gardner, 2007). Lodico et al (2006) discussed that an independent sample t-test reveals a true difference between groups in educational studies. However, it is argued that R-square and mean differences are insufficient techniques to conclude differences in early research fields (Baguley, 2009; Duval-Couetil, 2013; Fritz et al, 2012). Therefore, Cohen's *d* is used to justify the size of the differences between groups in the study (Fritz et al, 2012). Cohen's *d* is calculated by dividing the mean difference generated from a t-test on a pooled standard deviation (Baguley, 2009). In addition, Cohen's *d* calculation is performed in the software G*Power (O'Keefe, 2007).

It is important to consider multicollinearity issues when performing SEM as it could affect the results (Field, 2009). Multicollinearity could exist between predictors that reach an R score of .9 and above in the correlation matrix, which indicates a similarity between exogenous variables (Field, 2009). This study tackles this issue in the upcoming chapters by testing the variance inflation factor (VIF) which explains the strength of the relationship between predictor variables and tolerance of value which is calculated by dividing 1 over VIF. Our tolerance of value should surpass the value of 0.10 and VIF should be less than 10 (Pallant, 2005; Wang and Lin, 2016).

2.7.3.1 Factor analysis – formation of variables

Unlike the principle component analysis (PCA) that works as a data reduction method without an *a priori* framework from the literature (Williams et al, 2010), factor analysis allows researchers to relate different latent variables according to their factor loadings (Osborne and Costello, 2009).

Furthermore, Hogarty (2005, p. 202) stated that "factor analysis is a commonly adopted method in the fields of education and psychology". In this regard, EFA will yield better results than PCA (Osborne and Costello, 2009) in generating mentorship exogenous variables.

EFA was conducted to generate variables for educators' mentorship and students' cognitive antecedents. In this EFA process, scree plots, Monte Carlo analysis and generated eigenvalues through variable rotations (Williams et al, 2010) were conducted. Unfortunately, there are no criteria to aid researchers to choose an appropriate rotation method (Hair et al, 2009) nevertheless, future studies should implement an orthogonal rotation if the aim is to decrease the number of factors or apply an oblique rotation to create meaningful theoretical latent variables (Hair et al, 2009). Although Yong and Pearce (2013) argued that oblique rotation is superior to orthogonal rotation due to a realistic degree of correlation between variables, the type of rotation in this current research depends on the strength of the relationship between factors during the EFA procedure (Williams et al, 2010). Since oblique rotation showed stronger correlation between this study proposed factors, EFA moved to the next stage. In this regard, the absolute value of item factor loadings was set to .40 to generate significant results (Hair et al, 2009; Matsunaga, 2010) since the sample size is ($n > 200$).

Results showed that proposed factors for educators' mentorship and cognitive antecedents reached reached a sufficient Kaiser-Meyer-Olkin (KMO) of more than .70 and a significant Bartlett's Sphericity of $p < .000$. The first round of EFA showed all factor loadings items under 8 different variables in **tables 2 and 3**. EFA must be performend several times to create proper variables that contains high factor loadings items. Monte Carlo analysis allowed this study to conduct EFA more than once. The Monte Carlo analysis reduced the variables to 3 factors. During this factor reduction process, many items that showed high factor loadings in the beginning in **tables 2 and 3** were decreased to less than .50. Items that are below .50 and shows cross-loadings should be removed (Karimi et al, 2014; Shumacker and Lomax, 2010; Hair et al, 2009). The finalized factors loadings items that passed the EFA reduction process are shown in **tables 4 and 5** in chapter 3.

Although there is no specific rule to justify the labels of the exctracted variables from EFA (Yong and Pearce, 2013), previous studies supported this thesis to justify the names of the latent variables. **In table 4**, Factor 3 is named "Career-related functions" based on previous studies findings (Kram,

1985; Nora and Crisp, 2007). Mentors who implement career function practices support students to realise their career goals by i) offering suggestions based on the nature of their future career, and ii) imposing additional tasks that nurture protégés' career plans and encourage them to achieve their goals (Ensher and Murphy, 2010; Nora and Crisp, 2007). Factor 2 is named "Psychosocial functions" which is a core function in mentorship that improves students' self-efficacy and contributes to their personal development and mental characteristics through advice, reflection and feedback (Ensher and Murphy, 2010; Fraser and Fisher, 1986; Kram, 1985; Ragins and McFarlin, 1990). Factor 1 is named "Teaching function" based on the arguments that transmission of theoretical knowledge is one of the core functions of mentorship in an educational setting (Anderson and Shannon, 1998; Crasborn et al, 2011; Nora and Crisp, 2007).

In table 5, the names of the variables remained the same. This is because the items that were reduced in the EFA process did not change from the original source in Linan and chen (2009) research work. Furthermore, the items that were taken from Linan and Chen (2009) study were highly valid and reliable. Their study shows that the variables passed the KMO and Bartlett's test. Their research also showed that cronbach alpha of each of the cognitive variables (attitude, PBC and entrepreneurial intention) were higher than .70. Items under the variable attitude evaluates students' strength of interest and attraction towards entrepreneurship as a designated career. PBC assess students' self-confidence in their abilities to perform an entrepreneurial behaviour. Moreover, PBC variable in **table 5** evaluates students' practical skills and entrepreneurial knowledge. Finally, the entrepreneurial intention variable in **table 5** estimates the strength of students' inclination towards the probability of deploying an entrepreneurial behaviour.

Table 2 – All factor loadings items for mentorship variables

	F1	F2	F3	F4	F5	F6	F7	F8
1.Gives clear directions for assignments	**1.108**							
2.Describes objectives clearly	**0.994**							
3.Gives clear explanations and presentations	**0.937**							
4.Has instructional materials ready	**0.733**							

5.Suggests appropriate resources	0.690				
6.Demonstrates content expertise in my area of need	0.628				
7.Provides high level of interactive instruction	0.606				
8.Accessible	0.597				
9.Paces lessons appropriately	0.556				
10.Provides rationales for lessons and concepts	0.475				
11.Motivates me to improve my work product	0.473				
Acknowledges my contributions appropriately	0.410				
Checks students understandings					
Has individualized assignments					
Demonstrates professional integrity	**0.893**				
Expects me to take critical feedback without being defensive	**0.816**				
Questions me and make me justify the decisions I make	**0.814**				
Approachable	0.726				
Challenges me to think of ways I have never thought of before	**0.628**				
Expects that he or she can trust me	0.564				
Challenges me to reach a difficult goal	0.551				
Challenges me to think clearly about my career aspirations	0.507			0.507	
Challenges me to extend my abilities	0.483				
Put me under observation	0.437				
Provides useful constructive and critiques of my work	0.426				
Answers my questions satisfactorily					
Helps in providing directions and guidance on professional issues					
Expects me to know what I need to do to accomplish mycareer goals		**0.746**			
Waits for me to take the initiative to set-up meetings		**0.742**			
Has suggested that I take risks in my career		**0.741**			
Asks me to get involved in additional projects I not normally do		**0.736**			
Is willing to go out on a limb for me in exchange for my loyalty		0.472			-0.407
Monitors student work and behavior effectively			0.901		
Manages behavior consistently			0.854		
Rewards good performance			0.584		
Pressures me in my performance by telling me not to mess up				0.755	

If I don't have the skills my mentor wants, it will create a conflict	0.746		
Feels it is important for me to see the world similarly him/her	0.676		
Strongly suggests I take his or her advice	0.515		
Relates activities to students' interests		0.770	
Considers student attention spans in lessons		0.752	
Supportive and encouraging		0.468	
Encourages me to improve certain aspects of my personality			0.611

***Retained items passed the EFA reduction process and are in BOLD;** Other items were remove during several rounds of EFA reduction process.

Table 3 – All factor loadings items for cognitive antecedents

	F1	F2	F3	F4	F5
I am determined to create a firm in the future	**0.973**				
I will make every effort to start and run my own firm	**0.957**				
I have very seriously thought of starting a firm	**0.818**				
My professional goal is to become an entrepreneur	**0.799**				
I have the firm intention to start a firm someday	**0.778**				
I am ready to do anything to be an entrepreneur	**0.644**				
I know the necessary practical details to start a firm		**0.928**			
I know how to develop an entrepreneurial project		**0.821**			
I can control the creation process of a new firm		**0.685**			
If I tried to start a firm, I would have a high probability of succeeding		**0.673**			
To start a firm and keep it working would be easy for me		**0.667**			
I am prepared to start a viable firm		**0.616**			
Being an entrepreneur would entail great satisfactions for me			**0.986**		
If I had the opportunity and resources, I'd like to start a firm			**0.898**		
A career as entrepreneur is attractive for me			**0.854**		
Among various options, I would rather be an entrepreneur			**0.726**		
Your friends				1.011	
Your colleagues				0.650	
Your close family					

People important to me	0.706
Friends or fellow students	0.573
Parents or family members	0.562

***Retained items passed the EFA reduction process and are in BOLD;** Other items were remove during several rounds of EFA reduction process.

2.7.4 Validity and reliability

Research studies that aim to test specific factors in entrepreneurship education should ensure diversity by including different participants and entrepreneurship courses (Blenker et al, 2014). Validity tests support studies to measure what they are supposed to measure while reliability calculates the precision of a measurement instrument in different settings (Field, 2009; Heale and Twycross, 2015). In terms of validity, this study adopts the convergent validity technique by examining the Kaiser-Meyer-Olkin (KMO) factor and Bartlett test of Sphericity during the EFA process (Linan and Chen, 2009). Furthermore, average variance extracted (AVE) is applied by considering the factor loading of each item on the latent variables and the error measurement (Fornell and Larcker, 1981; Zait and Bertea, 2011). Convergent validity reveals the degree of correlation between instruments within the same construct (Cunningham et al, 2001; Heale and Twycross, 2015). According to Zait and Bertea (2011, p. 218), "AVE measures the explained variance in the construct". Studies must achieve an AVE value over 0.5, 0.7 in the KMO test and a significant value less than 0.05 to pass the convergent validity test (Fornell and Larcker, 1981; Linan and Chen, 2009; Zait and Bertea, 2011). A high KMO result indicates very low diffusion between correlated measures while a significant Bartlett result allows a factor analysis to continue to generate reliable latent variables (Field, 2009). Discriminant validity checks whether items are highly correlating among each other instead of with other items from different constructs (Zait and Bertea, 2011). The square root of AVE should be higher than the correlated constructs in the correlation matrix (Fornell and Larcker, 1981; Karimi et al, 2014). Convergent and discriminant validity are also referred to as construct validity and they can be analysed in the SEM measurement model by testing the goodness of fit of the entire model (Kraimer et al, 1999). This study analyses the validity of the model by performing a convergent, discriminant and goodness of fit tests.

In terms of reliability, this research depends on the Cronbach alpha and composite reliability methods. The Cronbach alpha is the most reliable method to test the internal consistency of instruments (Heale and Twycross, 2015). Composite reliability is another method that examines the internal consistency between two groups in SEM (Chen and Singpurwalla, 1996). Items within latent variables must achieve a value of 0.7 and above to pass the Cronbach and composite reliability tests (Chen and Singpurwalla, 1996; Field, 2009). The construct of this study's measurement model was verified through a validity and reliability trial tests. The first stage revealed a sufficient convergent validity for mentorship and it achieved a KMO of .917 and a significant result ($p < .05$) in the Bartlett test. Furthermore, cognitive antecedents reached a KMO of .929 and a significant value ($p < .05$). Mentorship achieved an AVE of .53 and attitude, PBC and entrepreneurial intentions achieved AVE values of .78, .83 and .55, respectively. Mentorship achieved a composite reliability of .70, and attitude, PBC and entrepreneurial intentions reached .96, .95 and .88, respectively. The second tryout stage shows that mentorship reached a KMO of .900, ($p < .05$) in the Bartlett test of Sphericity and an AVE of .51. Cognitive variables achieved a KMO of .925, a significant result ($p < .05$) in Bartlett's test and AVE of .83, .54 and .76, respectively, for attitude, PBC, and entrepreneurial intention. All variables achieved a composite reliability of ($x > .70$). The methodology of upcoming chapters reveals the technicalities of the statistical analyses.

2.8 Conclusion

This chapter explained the basic research design and methodological approaches that are used in this study. The research adopts a positivism philosophy based on the notion that mentorship pedagogy as the exogenous variable and semantic endogenous cognitive variables can be mathematically and statistically measured in a processional interactionism fashion. This interaction forms hypothesised models that are developed from the literature (Charreire and Durieux, 2001); these are presented in the next chapters. A deductive quantitative method followed by a survey strategy is applied to support this study's non-experimental research procedure and to generate reliable results. Since semantic cognitive elements exist at the same time (Krueger, 2003, 2007 MacCallum and Austin, 2000; Sarasvathy, 2004) in the cognitive mind, then a SEM (Shumacker and Lomax, 2010) was deemed as the most suitable method for this study. Chapters 3, 4 and 5 explain the technical and statistical research methods in detail.

Chapter 3: Does educators mentoring behaviour shape students' entrepreneurial intentions?

Abstract

The entrepreneurship literature suggests that entrepreneurship education impacts students' entrepreneurial intentions. However, the role of teachers' mentorship pedagogy to influence students' cognition has received little attention in the entrepreneurship literature. This paper aims to test the impact of educators' mentorship pedagogy on students' cognitive antecedents. SEM analysis based on data collected from 221 students studying entrepreneurship at different UK universities reveals that mentorship has an impact on students' cognitive components. The study extends the literature by integrating the mentor role theory with the theory of planned behaviour. Furthermore, it contributes to the ongoing efforts to improve entrepreneurship education at universities.

3.1 Introduction

Entrepreneurial mindsets lead to more start-ups in societies (Tran and Korflesch, 2016). This form of mentality can be established by triggering individuals' entrepreneurial intentions which are found in the semantic layer of the cognitive mind (Krueger, 2003; Sarasvathy, 2001; Simon, 1995). Entrepreneurial intention (EI) is a cognitive element that is capturing researchers' interest due to its importance to the economy (Karimi et al, 2014; Testa and Frascheri, 2015). It is present before a behaviour is conducted (Barbosa et al, 2007) and it consists of a behavioural goal and planned cognitive process (Krueger and Carsrud, 1993).

Recent research suggests that students' EI can be influenced through entrepreneurship programmes (Rauch and Hulsink, 2015; Shinar et al, 2014). However, there is currently little understanding of the impact of entrepreneurship education on students' cognitive antecedents (Blenker et al, 2014). Entrepreneurship education research remains a black box and must be tested from within to estimate its effects on students (Maritz and Brown, 2013). This can be achieved by examining specific teaching pedagogy methods (Couetil, 2013; Peterman and Kennedy, 2003; Piperopoulos and Dimov, 2015; Pittaway and Cope, 2007). Research on pedagogy practices has attempted to find an optimal solution to improve entrepreneurship education (Matlay, 2005; Mwasalwiba, 2010). In particular, one strand of the literature has focused on active pedagogies. Active pedagogy is one of the core elements that distinguish entrepreneurship education from traditional education (Gorman et al, 1997). It is naturally inductive and student-centred and comes in the form of problem-based, project-based and case-based learning. It enables students to be responsible for their own learning and reality, which in turn supports them to add incoming information to their own cognitive structure (Prince and Felder, 2006).

Researchers (Eby et al, 2008; Ragins and Cotton, 1991) are beginning to perceive mentorship as a vital active method that can influence students' cognitions in entrepreneurship education (Fiet, 2000; McGowan et al, 2015; St-Jean and Audet, 2009). Mentorship in entrepreneurship is originally based on a supporting relationship between novice and experienced entrepreneurs that focuses on guiding and building the mentee's entrepreneurial skills and mindset (St-Jean, 2012; Son and Kim, 2013). However, mentorship in an educational environment links pedagogical theories to business methods, which helps in replicating the entrepreneurial world (Robinson and

Haynes, 1991) for students. In general, a mentor can be a role model or an educator who challenges and instructs individuals (Thomka, 2007; Webb et al, 2009). Although mentorship has many benefits, its effects are still not clear.

The aim of this study is to test the potential effect of educators' mentorship pedagogy on students' cognitive antecedents and EI's in entrepreneurship education. The research also aims to explain the nature of the interactive relationship between educators' mentorship method and students' cognitive factors. Finally, this study seeks to push the field of EI forward by providing an explicit and expressive definition of mentorship in entrepreneurship education. The first research question focuses on examining the impact of educators' mentorship pedagogy on students' attitudes and perceived behavioural control. This is crucial as the overall purpose of entrepreneurship education is to influence students' mindset towards entrepreneurship. The second question explores the role of cognitive factors by clarifying the nature of the relationship between educators' mentorship pedagogy and students' EI's.

The paper makes several important contributions to the entrepreneurship literature. Firstly, this study operationalises the pedagogy component of Alberti et al's (2004) entrepreneurship education model. It was able to recognise unique pedagogical factors that support entrepreneurship education to impact entrepreneurial intentions (Gielnik et al, 2017). In this regard, the theoretical framework used in this study identified educators' mentorship method as a potential pedagogy in UK entrepreneurship education. This creates a springboard for new assessments of entrepreneurship education (Blenker et al, 2014). Also, it extends previous studies about mentorship in the UK (Allen et al, 2008). Furthermore, it reveals the functionality (Autio et al, 2001; Shepherd and Wiklund, 2009) of the interactive process between educators' mentorship pedagogy and students' cognitive process during entrepreneurship education classes.

It was previously assumed that mentorship was only used in business incubators (Cohen and Hochberg, 2014); however, this research shows that educators' mentorship method is a "Schumpeterian creative destruction in pedagogies" (Gibb, 2002, p.259) in entrepreneurship education. In other words, using pedagogy practices outside the education realm modifies teaching methods (Vanevenhoven, 2013). Such research is vital to extend the theory of entrepreneurship education (Martin et al, 2013).

Secondly, the study provides evidence that mentorship is an emerging yet ignored pedagogy in entrepreneurship education research and has the potential to indirectly contribute to economic growth. In other words, an innovation ecosystem can be improved by applying a mentoring relationship style with students enrolled in entrepreneurship education that can impact their entrepreneurial cognitions which, in turn, will indirectly impact the economy (Oh et al, 2016). This consideration sparks curriculum planners' efforts to include mentorship practices in entrepreneurship education syllabus.

In summary, this study advances theoretical intentional models by explaining the role active entrepreneurial pedagogies play in influencing students' cognitive factors. The research generates testable models that will develop new arguments around the question, '*can we still teach entrepreneurship*?' (Henry et al, 2005; Lorz et al, 2013).

3.2 Literature review

3.2.1 Reviewing past research in intentions

The belief that increasing the number of entrepreneurs fuels the process of economic development has led scholars and educators to research complex models of entrepreneurial intention (Carey et al, 2010). Krueger et al (2000, pp. 412) stated that "intentions are the best predictor of planned behavior" and explained that understanding the antecedents of intentions supports us to explore the reasons behind certain actions. The difficulty encountered in perceiving unique behaviours has lead researchers to use intentional models to gain significant information about individuals' cognition (Ajzen, 1991).

Previous studies about individuals' intentions are considered highly important to entrepreneurship research (MacMillan and Katz, 1992). It supports scholars to explain why some individuals prefer entrepreneurship rather than traditional employment (Guerrero et al, 2008; Krueger, 1993).

It is noticeable from previous work that TPB and EE were used as the backbone to comprehend the relationship between personal variables and entrepreneurial intentions (Fayolle and Linan, 2014). Such studies focused on psychological variables by using TPB (Espiritu-Olmos and Sastre-Castillo, 2015) as the method to study the impact of personality traits on entrepreneurial intentions.

Other studies (Carr and Sequeira, 2007) that relied on TPB went on to explain how prior family entrepreneurial experience affects individuals' intent to create a business by treating TPB components as mediator variables. EE model was also applied to explain how background variables affect intentions. In this regard, Walstad and Kourilsky (1998) researched ethnicity with intentions by using EE to reveal to us that young African-Americans had higher entrepreneurial intentions and willingness to enroll in entrepreneurship education programmes than other groups. Espiritu-Olmos and Sastre-Castillo (2015) argued that studying personality and psychological characteristics helps in understanding how individuals' intention is stimulated into an action. Gartner (1988) stood against researching the relationship between personality and entrepreneurship because it will cause problems when when attempting to differentiate an entrepreneur from a small business owner or a manager. Therefore, Gartner (1988) suggested completely ignoring the personality dimension. Zhao et al's (2010) meta-analysis argues that individuals' personality should not be avoided in entrepreneurship research as it is a significant determinant of entrepreneurial intention. Thompson's (2009) work strongly argues that not all individuals with an entrepreneurial personality tend to form the intention to create a company and, thus, individuals who formed an entrepreneurial *intention* should not be confused with people who possess the *characteristics* of an entrepreneur. Although personality is the main researched area in the field of entrepreneurial intentions, researching personality received criticism from different scholars who questioned its validity (Fayolle and Linan, 2014).

Previous studies confirmed that entrepreneurship education and entrepreneurial intentions are directly linked to each other (Fayolle and Linan, 2014). Pittaway and Cope's (2007) systematic review approves this relationship by concluding that entrepreneurial intentions and entrepreneurship education are highly correlated. Fayolle et al (2006) expanded the use of TPB by revealing that there is a high impact of participating in entrepreneurship education on students' PBC and entrepreneurial intentions. Fayolle and Gailly (2015) discovered that entrepreneurship education has a higher impact on students' entrepreneurial intentions, attitudes, PBC and SN in the medium term. TPB studies also dominated other areas in entrepreneurship education and intentions such as comparing different groups. Franke and Luthje (2004) utilised TPB to find that German students possess lower entrepreneurial intentions than MIT students in the US due to the difference in entrepreneurship education courses. Fitzsimmons and Douglas (2011) relied on the EE model to prove that education attainment, prior entrepreneurial and work experience of

students from Australia, India, China and Thailand have significant positive relationships towards their intentions to start a business. The belief that entrepreneurship education promotes business creation changed some universities' strategic direction and they were able to transform themselves into institutes that provide specific entrepreneurial knowledge (Fayolle et al, 2006; Lanero et al, 2011; Lima et al, 2014). Although scholars in the past confirmed the power of entrepreneurship education to affect students' intentions (Fayolle and Linan, 2014; Franke and Luthje, 2004; Peterman and Kennedy, 2003), Von Graevenitz et al (2010) argued that research in entrepreneurship education remains weak and unconvincing. Lautenschlager and Haase (2011) argued that engaging in entrepreneurship education is not a prerequisite to increase the number of start-up entrepreneurs and a traditional education system does not promote creativity, entrepreneurial opportunities and problem-solving skills. Souitaris et al (2007) also confirmed that entrepreneurship education has a weak impact on students' perceived desirability and attitudes towards starting a company. Other works such as Oosterbeek et al (2010) concluded that entrepreneurship education has an insignificant effect on students' self-efficacy and entrepreneurial intentions. These arguments indicate that entrepreneurship education needs deeper analysis into its components to prove its true effect on students' intentions and fill the gap left by previous studies (Linan and Fayolle, 2015).

TPB was the most applied intentional model in terms of analsing how entrepreneurial intention is affected by regional, cultural and institutional environments (Fayolle and Linan, 2014). Such studies (Engle et al, 2010) used TPB components to compare entrepreneurial intentions from 12 different countries; while Iakovleva et al (2011) compared the antecedents of TPB from 13 countries. From institutional and cultural-level analyses, Turker and Selcuk (2009) revealed that educational support and a university system have significant impacts on some of the antecedents of TPB. Kibler (2013) also found that income and wealth in Finland moderate the relationship between TPB factors and entrepreneurial intentions. From a cultural perspective, studies have shown the impact of a new environment on individuals' intentions to form a firm. Matiz-Bulla and Hormiga's (2011) work shows that highly-skilled Colombian immigrants in Spain tend to return home to set up a business due to policy barriers and high expectations from the host country. Macro-level regulations and policies in different industries have the capacity to directly impact entrepreneurial intentions (Linan et al, 2011; Zahra and Wright, 2011). This area needs deeper

research such as investigating the culture from a macro perspective and how it plays a role in influencing intentional antecedents to create a company (Fayolle and Linan, 2014).

Entrepreneurial intention was also studied with entrepreneurial behaviour in the entrepreneurial process (Fayolle and Linan, 2014). Studies like that of Kolvereid and Isaksen (2006) shows how a longitudinal study that relied on TPB and the theory of reasoned action (TRA) explained intention to behaviour. Their results support only TRA where attitudes and SN determine entrepreneurial intentions to predict entry into self-employment. Nabi et al (2006) analysed previous work on how students transform into start-up individuals based on entrepreneurial process theories. Shirokova et al (2015) argue that intention to behaviour studies becomes challenging if researchers try to capture entrepreneurial intentions to actions at the same point in time which can create a reverse causality that will misguide researchers into thinking that intention was truly developed before the behaviour. Following up with the same participants to analyse their entrepreneurial behaviour is deemed one of most effective yet time-consuming methods (Linan and Fayolle, 2015). Baron (2007) stressed that little academic work was done to investigate entrepreneurial process models. His argument is centred on studies that examine individuals' entrepreneurial behaviours by using invalidated process models that could diminish new research areas' results. Katz and Gartner (1988) proposed that accumulation of resources and knowledge affects entrepreneurial intent while Krueger (1993) argued that entrepreneurial intention appears after the search for information and opportunities. Shook et al (2003) and Reynolds et al (2004) introduced a linear entrepreneurial process which describes the stages from intention to behaviour. It is argued that conceptual entrepreneurial process models are proven to be empirically difficult due to their complexity in explaining entrepreneurial behaviour as evidence suggests that the entrepreneurial process tends to be flexible (Thompson, 2009). However, it can be argued that such studies (Ajzen, 1991; Engle et al, 2010; Krueger et al, 2000; Linan and Chen, 2009) that treated intention not entrepreneurship as a process proved the strength of previous models, such as TPB and EE, in determining the intention to start a business. Therefore, individuals must cognitively process their intentions to become an actionable behaviour (Ajzen, 2002).

Thompson (2009) reasoned that entrepreneurial intent is central in the entrepreneurial process but cannot determine emerging entrepreneurs as they might possess intention without entrepreneurial

behaviour. Essentially, intention is a complex mental state that defines the direction of a certain behaviour (Shook et al, 2003). It can be argued that individuals with entrepreneurial personality can be differentiated from the ones who possess entrepreneurial intent. The intention to create a firm is vital to push individuals with entrepreneurial personality into becoming emerging entrepreneurs (Thompson, 2009). To advance a research in entrepreneurial process, entrepreneurial intention should be clarified from the outset. Fayolle and Linan (2014) called on researchers to clarify the definition of entrepreneurial intention. Bird (1988, p. 442) defined intention as a "state of mind influencing an individual direction towards a specific goal". The notion that creation of a new business occurs after students' entrepreneurial intentions can be considered as an expansion of the field of entrepreneurship education (Fini et al, 2009; Shane and Venkataraman, 2000) and Bird's (1988, p.442) definition of intention. Owning a business (Crant, 1996) is a misconception in the entrepreneurship literature as Thompson (2009) argued that the intention to own a business is not a form of entrepreneurial intention. However, starting a business by going through the entrepreneurial process is triggered by entrepreneurial intentions (Krueger et al, 2000). Ajzen (1991), who created one of the most reliable models in intentional studies, argued that the complexity of intentions can support behaviours to exist. In other words, once students' intention is moulded by certain components in entrepreneurship education, they will be most likely to start a business (Bae et al, 2014). The notion of intention in previous studies revealed that there is a high correlation between intention and behaviour. Studies to date in the field of entrepreneurship validated the predictive ability of entrepreneurial intention on entrepreneurial behaviour (Ajzen, 1991, Krueger et al, 2000; Shapero, 1982). This indicates that entrepreneurial intention is a core factor to explain the impact of entrepreneurship education.

Linan and Fayolle's (2014) systematic review reveals that scholars have researched entrepreneurial intention by focusing on several categories such as testing established intentional models by analysing the effect of cognitive variables on entrepreneurial intentions, the relationship between personal characteristics and intentions, the effect of entrepreneurship education on students' intentions to start a business, the impact of establishments on individuals' entrepreneurial intention, and the entrepreneurial process from cognitive antecedents to entrepreneurial action.

3.2.2 Entrepreneurial intention in entrepreneurship education research

Although many intentional models tried to explain how EI is formed in the cognitive mind, previous reviews of literature show that empirical studies tend to focus on the theory of planned behaviour (TPB) and Entrepreneurial Event Model (EEM) due to their strong explanatory power (Krueger, 2009; Schlaegel and Koenig, 2013; Shook et al, 2003). TPB and EEM represent similar cognitive antecedents (Krueger, 2009; Krueger and Brazeal, 1994; Krueger et al, 2000). However, we argue that there should be a leading theory of EI for future entrepreneurship education research to confidently rely on.

Schlaegel and Koenig's (2013) meta-analysis reveals that TPB is the most dominant model in entrepreneurship research; and in this regard, Lortie and Castogiovanni (2015) suggest that 91% of previous studies confirm the relationship between the cognitive elements of TPB. TPB has the power to predict different types of intention such as creating a firm, developing an existing one or recognising an opportunity (Carey et al, 2010; Fayolle et al, 2006; Lortie and Castogiovanni, 2015; Shook et al, 2003; Van Gelderen, 2008). Furthermore, several studies (Borchers and Park, 2010; Ferreira et al, 2012; Fretschner, 2014; Karimi et al, 2014; Kwong and Thompson, 2015; Piperopoulos and Dimov, 2015; Wilson et al, 2007) used TPB in entrepreneurship education research.

Ajzen's (1991) TPB model is formed of three cognitive factors; these are *attitude*, *perceived behavioural control* (PBC) and *subjective norms* (SN). Attitude is the evaluation of one's attraction towards the behaviour (Ajzen, 1991; Krueger et al, 2000); SN is the social pressure from people that impacts one's decision to perform the behaviour (Ajzen, 1991; Krueger et al, 2000; Lortie and Castogiovanni, 2015); and PBC is when individuals assess their confidence and abilities to perform the targeted behaviour (Ajzen, 1991; Krueger et al, 2000).

Several studies (Engle et al, 2010; Kolvereid and Stephan, 2011; Linan and Chen, 2009) compared the strength of effect of TPB components. Although their findings support its applicability, the predictive ability of cognitive factors is not the same in every environment (Karimi et al, 2014). According to Schlaegel and Koenig's (2013) work, only two studies (Altinay et al, 2012; Lucas and Cooper, 2012) tested the components of TPB in a UK setting. Moreover, TPB is the most applicable intentional model to examine students' EI (Krueger et al, 2000; Li, 2007; Linan and

Chen, 2009; Schlaegel and Koenig, 2013; Shook et al, 2003; Wu and Wu, 2008) in entrepreneurship education (Souitaris et al, 2007).

Thus, TPB serves as the backbone of this research. It is the most reliable model to explain the study's sample cognitive factors in a UK entrepreneurship education programme.

3.2.3 Mentorship in entrepreneurship education

Teaching methods in entrepreneurship education have varied in previous literature from simple lectures and presentations to group discussion and role-modelling (Henry et al, 2005). However, little academic work was conducted on the effectiveness of entrepreneurship education pedagogies on EI (Fayolle and Gailly, 2015; Lorz et al, 2013). Filling the gap in the field of entrepreneurship education requires an examination of its teaching methods (Fayolle and Linan, 2014). Also, publishing academic papers about entrepreneurial pedagogies (Duval-Couetil, 2013) improves current teaching methods, which by implication increases individuals' attitudes towards entrepreneurship (Linan et al, 2011).

Entrepreneurship education contains both traditional and active pedagogy techniques (Cooper et al, 2004; Henry et al, 2005). Pedagogy is defined as *practices that structure the teaching and learning process in education* (Loughran, 2006). Entrepreneurship education pedagogies aim to improve students' cognition through educators' interactive practices (Fayolle et al, 2016). Traditional teaching by itself is an ineffective method to change students' EI (Shepherd and Douglas, 1996).

A range of studies (Albornoz, 2008; DeTienne and Chandler, 2004; Esmi et al, 2015; Lutz et al, 2015; Mueller, 2011; Ollila and Middleton, 2011; Nabi et al, 2016; Ruskovaara and Pihkala, 2013; Yballe and O'Connor, 2000) identified specific active teaching practices (Cooper et al, 2004) that entrepreneurship educators use when they apply case studies, business planning, experimental learning and traditional teaching formats. These practices are challenging, feedback, reflection, knowledge transmission, emphasising success stories, encouraging, involvement in additional projects, active debate discussions and thought-provoking questions. In aggregate, these types of practices form the mentorship pedagogy in entrepreneurship education (Anderson and Shannon, 1998; Galbraith and James, 2004; Hartshorn and Hannon, 2005; Jacobi, 1991).

Mentorship transmits knowledge, supports students' personal development, and provides them with guidance on academic and non-academic issues (Eby et al, 2008; Jacobi, 1991; Mertz, 2004). Educators in an educational setting apply four mentorship functions during classroom sessions; these are psychological, career and goal path, academic knowledge accumulation and role modelling practices (Nora and Crisp, 2007). On the other hand, it was argued that professional and personal development practices are core functions of mentorship that improve classroom activities (Zimmerman and Paul, 2007).

3.2.4 Hypotheses

The belief that entrepreneurship education promotes business creation changed some universities' strategic directions, and they were able to transform themselves into institutes that provide specific entrepreneurial knowledge (Fayolle et al, 2006; Lanero et al, 2011; Lima et al, 2014). Previous studies (Fayolle and Gailly, 2015; Fayolle et al, 2006; Franke and Luthje, 2004; Pittaway and Cope, 2007) revealed that entrepreneurship education has a strong impact on students' EI. On the other hand, it is concluded that past research in entrepreneurship education remains unconvincing as this type of education is not a prerequisite to affect individuals' EI and increase the number of start-up entrepreneurs (Lautenschlager and Haase, 2011; Von Graevenitz et al, 2010). This was in line with the works of Souitaris et al (2007) and Oosterbeek et al (2010) that concluded a weak impact of entrepreneurship education on students' EI.

Scholars (Fayolle and Gailly, 2015; Piperopoulos and Dimov, 2015; Von Graevenitz et al, 2010) urged future studies to explain the impact of specific entrepreneurship education variables on EI. Few studies have measured the impact of interactive entrepreneurial pedagogies on behavioural and business outcomes (Lorz et al, 2013). Chrisman et al (2005) formed the guided preparation theory which is defined as the support that entrepreneurs receive from mentors and instructors, who apply interactive practices such as feedback and guidance to improve their tacit knowledge. Other scholars (e.g., Gartner and Vesper, 1994; Souitaris et al, 2007) suggest that case-studies and business planning are the most common learning pedagogies in entrepreneurship education. In this regard, Liao and Gartner (2007) discovered that business planning activities increase the probability of starting a business. DeTienne and Chandler (2004) developed and tested the SEEC (securing, expanding, exposing and challenging) theory and found that it has a direct impact on

opportunity identification and individuals' intentions to generate business and innovative ideas during entrepreneurial sessions.

Although mentorship is institutionalised during learning sessions (Ragins and Cotton, 1999), educators' mentorship practices have only been researched in a classroom environment to a very limited degree (Zimmerman and Paul, 2007). Educators' mentorship pedagogy complements traditional teaching (Galbraith and James, 2004) and blends it with active teaching practices during students' learning processes (Zachary, 2002). This fusion in teaching practices is called *blended* pedagogy and is deployed by teachers to respond to the blended nature of entrepreneurship education that combines theoretical and practical learning methods (Linan et al, 2008; Matlay, 2005; Peterman and Kennedy, 2003; Powell, 2013).

Using past arguments in pedagogy research supports this study to recognise the relationship between entrepreneurship pedagogy and EI (Verzat et al, 2017). Furthermore, examining teaching pedagogical methods is the starting point to explicitly determine the impact of entrepreneurship education (Nabi et al, 2017). The literature verifies the impact of entrepreneurship education on students' EI. It also shows that entrepreneurship educators apply mentorship pedagogy (Miyasaki, 2014) which might impact students (Verzat et al, 2017). In this regard, we hypothesise that:

H1: Educators' mentorship pedagogy has a direct influence on students' EI in entrepreneurship education.

Past studies examined the impact of entrepreneurship education on the cognitive antecedents (attitude, SN and PBC) of EI (Blenker et al, 2014). Historical studies (Kolvereid and Moen, 1997; Tkachev and Kolvereid, 1999) show that analysing the impact of students' enrolment in entrepreneurship programmes on their cognitive antecedents generates insufficient findings. This is because entrepreneurship education either magnifies or diminishes the effects on students' attitudes and PBC (Lima et al, 2015; Wilson et al, 2007). Furthermore, previous arguments indicate that deeper analysis of the components of entrepreneurship education is needed to approve its true effect on students' attitudes and PBC (Bae et al, 2014; Fayolle and Linan, 2014; Linan and Fayolle, 2015).

Research shows that mentorship in an educational setting positively impacts students' academic achievements and self-esteem (DuBois et al, 2011; Liou et al, 2016). However, mentorship can also affect individuals' cognitive antecedents' and career choice (Ragins and Cotton, 1999).

Previous studies reveal that educators' mentorship pedagogy has a direct impact on individuals' attitudes (Eby et al, 2008; Jones and Iredale, 2010; Morselli, 2017). This is because attitude as a cognitive psychological variable is influenced more in highly interactive relationships (Mitchell et al, 2002; Payne and Huffman, 2005). Mentorship style pedagogy enables educators to establish an interactive relationship with students that changes their cognitive antecedents about entrepreneurship (Barbosa et al, 2007; Cooper et al, 2004; Crisp and Cruz, 2009; Galbraith and James, 2004; Hindle et al, 2009; Linan et al, 2008; Mertz, 2004; Nora and Crisp, 2007; Sanchez, 2012). This means that mentorship as an active learning method is linked to students' level of interest or attitudes towards entrepreneurship (Ensher and Murphy, 2010; Rotgans and Schmidt, 2014).

H2a: Educators' mentorship pedagogy positively influences students' attitudes in entrepreneurship education.

Mentoring plays a role in shaping students' PBC (Jones and Iredale, 2010; Ragins and Cotton, 1999). This is because mentorship contributes in developing individuals' business skills which improves their self-confidence (BarNir, 2014; El Hallam and St-Jean, 2016). Self-confidence is a core cognitive component of self-efficacy (Ajzen, 1991). Mentorship practices allow individuals to question cognitive thoughts, which in turn enhance their self-confidence and PBC or self-efficacy (St-Jean and Audet, 2009). Individuals who gain confidence in their skills to perform an entrepreneurial behaviour benefit from a direct impact on their EI (Schenkel et al, 2014). Thus, there is a need to examine the effect of an understudied pedagogical method (Lorz et al, 2013) such as mentorship (Pittaway and Cope, 2007) on students' PBC in entrepreneurship education.

H2b: Educators' mentorship pedagogy positively impacts students' PBC in entrepreneurship education.

It is argued that any explanatory variables can only impact individuals' intentions through attitude and PBC (Ajzen, 1991). This is because students must first cognitively process the potential entrepreneurial behaviour in their semantic cognitive layer (Ajzen, 2002; Krueger, 2003; Sarasvathy, 2001; Simon, 1995). SN attracted doubt and less support from scholars in its ability to

predict EI (Lortie and Castogiovanni, 2015). Scholars (Krueger et al, 2000; Linan and Chen, 2009) did not find a significant relationship between SN and EI. However, it is confirmed that attitude and PBC are the most relevant antecedents to predict EI (Linan et al, 2011; Lortie and Castogiovanni, 2015).

To date, the indirect impact of entrepreneurship education factors has not been clearly explained (Bae et al, 2014; Schlaegel and Koenig, 2013). Attitude is strongly related to EI (Miralles et al, 2016) and it is a core determinant of students' perceptions of entrepreneurship (Othman and Ishak, 2009). Previous findings (Carr and Sequeira, 2007; Ngoc and Huu, 2016) revealed that attitude mediates explanatory variables on EI in entrepreneurship education. According to the emotions as social information (EASI) theory, emotions impacts individuals' attitudes (Zampetakis et al, 2017) and it is a psychological reaction of their evaluation of a behaviour (Van Kleef et al, 2015). This is in line with Ajzen's (1991) theory that defined attitude as the assessment of one's extent of attraction towards the behaviour. Emotional support is a vital factor of mentorship in education (Feiman-Nemser, 2001; Ghosh, 2012). Influencing students' emotions changes their beliefs, attitudes and intentions towards entrepreneurship (Mueller et al, 2011; Zampetakis et al, 2017). Based on this logic, we hypothesise that:

H3a: Attitude mediates the effect of educators' mentorship pedagogy on students' EI.

Past efforts (BarNir et al, 2011; Chen, 2010; Lima et al, 2014; Zapkau et al, 2015; Zhao et al, 2005) show that PBC or self-efficacy mediate the impact of entrepreneurship education on students' EIs. Self-efficacy is a determinant to EI (Ajzen, 2002) and it plays a role in individuals' choice of a behaviour (Zhao et al, 2005). Educators' mentorship pedagogy is capable of influencing students' EI by triggering their PBC (Gielnik et al, 2017; Heinonen and Poikkijoki, 2006). As noted previously, they do this by developing students' entrepreneurial abilities which instantly improves their self-confidence and PBC (BarNir, 2014; El Hallam and St-Jean, 2016). This relationship indicates that:

H3b: PBC mediates the impact of educators' mentorship pedagogy on students' EI.

Figure 1 illustrates the hypothesised relationships between educators' mentorship pedagogy and the antecedents of TPB.

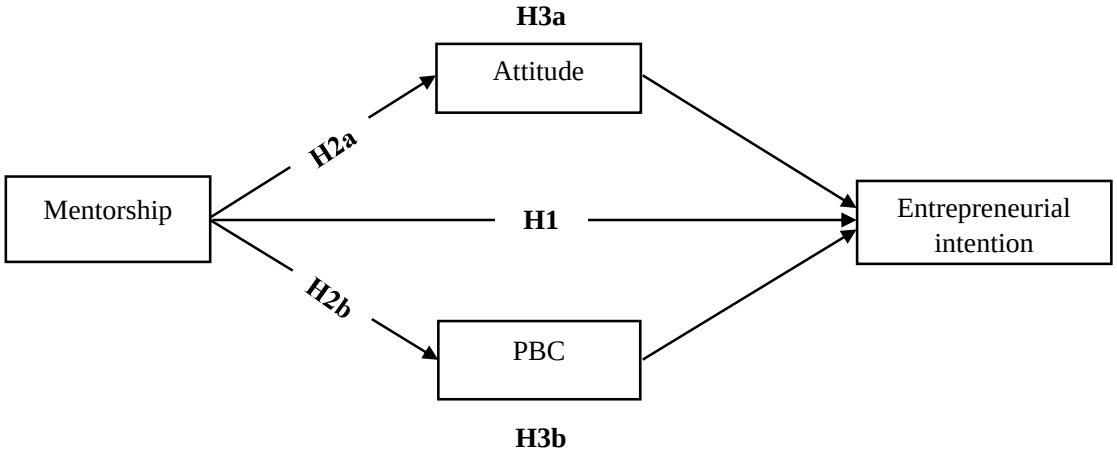

Figure 1 Research model

3.3 Research methodology

3.3.1 Procedure

Cognitive antecedents exist and form intentions at the same time; thus, it is unrealistic to test human cognition separately through classical mediation (Baron and Kenny, 1986) methods (Kreuger, 2003; 2007; MacCallum and Austin, 2000; Sarasvathy, 2001; 2004). In this regard, little academic work applied a structural equation modelling (SEM) procedure to explain a simultaneous relationship (Crocket, 2012) between specific entrepreneurship education variables, psychological mediators, and their impact on specific outputs (Rideout and Gray, 2013). Therefore, this research relies on SEM to generate results.

Since the aim of this study is to test the effect of educators' mentorship pedagogy on students' cognitive variables during entrepreneurship courses, it is difficult to manipulate (Shadish et al, 2002) educators' teaching methods. Non-manipulative variables are mainly studied in a non-experimental fashion by focusing on the influence rather than on the impact (Shumacker and Lomax, 2010) of one variable on the other (Fretschner, 2014; Shadish et al, 2002). This study applies a non-experimental survey research strategy and a correlational technique to reveal the

relationship, magnitude and direction between variables (Lodico et al, 2006). Since correlational methods are limited to explain significant effects (Shumacker and Lomax, 2010), the researcher acknowledges the role of SEM to support this study in producing reliable findings (Pearl, 1995).

3.3.2 Data and sample frame

A survey was conducted on 221 students from six UK universities who were studying 14 entrepreneurship courses. Information about course content, teaching practices and objectives were obtained from their syllabus. Sample characteristics shows that 130 students are female and 91 students are male. It also shows that 176 students were up to 24 years of age, 33 students were aged between 25 and 30, and 12 students were aged 31+ years. The data also reveal that the 169 students did not acquire entrepreneurial experience, while 51 students had engaged in entrepreneurship in the past. Students were mainly majored in business studies (150) and entrepreneurship and innovation (55). A few students majored in health and sciences (15) and only one student majored in art. The study shows that 145 students were not working; however, 63 students were engaged in part-time jobs and 13 students worked in full-time jobs. Finally, the data show that 117 students were enrolled in practical entrepreneurship courses and 104 were taking theoretical entrepreneurship courses. This study relied on Piperopoulos and Dimov's (2015, p. 974) dichotomy of entrepreneurship education and on the explanations offered by Jamieson (1984), Linan et al (2008) and Fretschner and Weber (2013) for each type of entrepreneurship education as an additional clarification.

Students rather than teachers were asked to complete the survey about their educators' mentorship practices to avoid biased responses (Berk et al, 2005). To ensure items in the questionnaire were free from issues, they were verified by a group of 12 individuals who were involved in entrepreneurship education. A few changes were made to the questionnaire such as deleting irrelevant items and improving the wording of retained questions. Some control variables were omitted due to missing values. Mean imputation technique was not used in order to avoid creating incompetent or biased results (Acock, 2005; Donders et al, 2006; Greenland and Finkle, 1995).

The data were collected between March and May 2016. A total of 267 surveys were distributed to students at the beginning of their sessions followed by a five-minute explanation of the study. Participation in the survey was voluntary and confidential. Students took between 10 and 20 minutes to complete their questionnaires. Out of 267 questionnaires, 236 students completed them

but the number was reduced to 221 usable surveys that achieved a response rate of 88.3%. It was difficult to collect more data due to factors beyond the control of the researcher such as academic priorities of students that include revision weeks and examination periods.

According to past arguments (; Byrne, 2010; Hoelter, 1983; Shumacker and Lomax, 2010) in SEM and factor analysis, the study achieved a sufficient sample size to proceed with the statistical analysis.

3.3.3 Variables' measures

Mentorship scale items are derived from three previous studies (Berk et al, 2005; Ensher and Murphy, 2010; Evertson and Smithey, 2000). TPB items were derived from the EI questionnaire (EIQ) developed by Linan and Chen (2009).

Exploratory Factor Analysis (EFA) aids in building the construct of the measurement model and removes issues such as cross-loadings (Karimi et al, 2014) while Confirmatory Factor Analysis (CFA) constructs generated variables from EFA into the measurement model (Williams et al, 2010). The researcher followed Matsunaga's (2010) hybrid process that applies EFA to generate variables for CFA to construct the measurement model for this study. EFA generated three variables for mentorship and three factors for TPB by using oblique rotation and Monte Carlo parallel analysis (Williams et al, 2010; Yong and Pearce, 2013). The absolute value was fixed at 0.40 as the sample is between 200 and 250 (Hair et al, 2009; Matsunaga, 2010) and factor loadings in EFA weigh more than .50. Tables 1 and 2 reveal the latent variables that were extracted from an EFA analysis.

3.3.3.1 Explanatory variables

Mentorship in education is considered a complex and active interpersonal relationship that requires the support of educators (Ehrich et al, 2004). Since mentorship is also a mutual and challenging relationship between students and teachers who are experts responsible for shaping students' personal and professional development processes (Zimmerman and Paul, 2007), the decision was taken to include the mentorship relational challenge scale (MRCS). MRCS is created by Ensher and Murphy (2010) which originated from the interview responses of participants who had mentorship experience. It is also created from Scandura's (1992) mentorship functions items. Requiring commitment and resilience (α=.91), measuring up to mentor standard (α=.88), and

career goal and risk orientation (α=.80) are mentorship functions that maintain an active and challenging relationship between mentors and mentees (Ensher and Murphy, 2010).

Due to the lack of studies in faculty-student mentorship (Chen, Watson and Hilton, 2016), the mentorship effectiveness scale (MES) which was originally developed by Berk et al (2005) is also used in this study's questionnaire. Their questionnaire is used to examine the quality of the mentoring characteristics and responsibility between students and faculty members. It was designed by the John Hopkins mentorship committee and it achieved high face validity from the faculty of mentorship committee; however, reliability was not measured.

Since the previous review of the literature shows that traditional teaching pedagogy is involved with mentorship that transfers theoretical knowledge (Nora and Crisp, 2007; Schockett and Haring-Hidore, 1985), the researcher decided to include Evertson and Smithey's (2000) traditional teaching items that were initially formed from interviews conducted with individuals who were mentored to develop their teaching practices. The scholars discovered that traditional teaching includes: i) arranging physical setting; ii) managing instruction; iii) establishing rules and procedures; iv) motivating students; v) managing students' behaviour, and vi) classroom climate. Evertson and Smithey's (2000) study achieved good face validity and a criterion-referenced reliability between 83% and 92%, which indicates that evaluators' outcomes are very similar (Popham and Husek, 1969).

Based on Matsunaga's (2010) hybrid factor analyses process, three latent variables were generated in **table 4** to represent the mentorship pedagogy; these are the i) teaching functions, ii) psychosocial functions, and iii) career-related functions. Although there is no specific procedure to name latent variables (Yong and Pearce, 2013), generated factors were labelled based on the literature (Ajzen, 1991; Anderson and Shannon; 1998; Crasborn et al, 2011; Ensher and Murphy, 2010; Fraser and Fisher, 1986; Gershenfeld, 2014; Kram, 1985; Linan and Chen, 2009; Nora and Crisp, 2007; Ragins and McFarlin, 1990).

Table 4 EFA results for mentorship pedagogy variables

	Factor 1	Factor 2	Factor 3
F1: Teaching functions – 4 items (α=.88)			
Gives clear directions for assignments.	**.916**		
Describes objectives clearly.	**.872**		
Gives clear explanations and presentations.	**.785**		
Has instructional materials ready.	**.601**		
F2: Psychosocial functions - 4 items (α=.82)			
Questions me and makes me justify the decisions I make.		**.820**	
Demonstrates professional integrity.		**.750**	
Expects me to take critical feedback without being defensive.		**.746**	
Challenges me to think in ways I have never thought of before.		**.551**	
F3: Career-related functions – 4 items (α=.79)			
Asks me to get involved in additional projects that I would not normally do.			**.725**
Has suggested that I take risks in my future career.			**.708**
Waits for me to take the initiative to set up meetings.			**.665**
Expects me to know what I need to do to accomplish my career goals.			**.664**
Eigenvalues (above 1 and achieved total variance of 56.5%)	**4.71**	**2.02**	**1.34**
Per cent of variance	**35.9%**	**12.9%**	**8.43%**
Tolerance ($1 - R^2$)	**.514**	**.485**	**.751**
VIF ($1 / 1 - R^2$)	**1.946**	**2.060**	**1.332**

3.3.3.2 Dependent variables

Linan and Chen (2009) developed the EIQ which contained four variables that were sufficiently reliable: i) EI (α=.94), ii) PBC (α=.89), iii) Subjective Norms (α=.77), and iv) Attitude (α=.89). In terms of convergent validity, Linan and Chen (2009) achieved (.91) on the Kaiser-Meyer-Olkin test (KMO) and ($p < .001$) on the Bartlett's test of Sphericity. A sufficient discriminant validity was achieved by confirming the correlation between the same variables in TPB (Linan and Chen, 2009). The researcher also added another section for SN (Kuttim et al, 2014) in this study's questionnaire; he previously argued that past studies (Krueger et al, 2000; Linan and Chen, 2009;

Lortie and Castogiovanni, 2015) found that SN does not directly impact students' entrepreneurial intentions and it is not considered as an exploratory antecedent of intention. Therefore, the decision was taken to focus on attitude and PBC as core factors that predict entrepreneurial intentions (Linan et al, 2011).

Based on the hybrid factor analyses process, three latent theory of planned behaviour variables were generated in **table 5**. They are i) entrepreneurial intentions, ii) perceived behavioural control, and iii) attitudes.

Table 5 EFA results for TPB variables

	Factor 1	Factor 2	Factor 3
F1: EI – 6 items (α=.95)			
I am determined to create a firm in the future.	**.977**		
I will make every effort to start and run my own firm.	**.944**		
I have thought very seriously of starting a firm.	**.826**		
I have the firm intention to start a firm someday.	**.790**		
My professional goal is to become an entrepreneur.	**.769**		
I am ready to do anything to be an entrepreneur.	**.619**		
F2: Perceived Behavioural Control – 6 items (α=.89)			
I know the necessary practical details to start a firm.		**.910**	
I know how to develop an entrepreneurial project.		**.808**	
I can control the creation process of a new firm.		**.692**	
To start a firm and keep it working would be easy for me.		**.691**	
If I tried to start a firm, I would have a high probability of succeeding.		**.686**	
I am prepared to start a viable firm.		**.627**	
F3: Attitude – 4 items (α=.95)			
Being an entrepreneur would entail great satisfaction for me.			**.979**
If I had the opportunity and resources, I'd like to start a firm.			**.895**
A career as an entrepreneur is attractive for me.			**.875**
Among various options, I would rather be an entrepreneur.			**.739**

Eigenvalues (above 1 and achieved a total variance of 71.2%)	**9.04**	**2.11**	**1.07**
Per cent of variance	**53.6%**	**10.9%**	**6.70%**

3.3.3.3 Control variables

Control variables were derived from Kim (2010), Linan et al (2011), Karimi et al (2014) and Piperopoulos and Dimov (2015) due to their effective role in influencing the relationship between variables in entrepreneurship education and intentions.

Participants also answered demographic questions. Gender, age, employment, prior entrepreneurial experience and education field represent the study control variables. They were originally derived from the studies of Kim (2010), Karimi et al (2014) and Piperopoulos and Dimov (2015). Age and education play a role in explaining students' decision to either start a paid-employment or self-employment career (Krueger et al, 2000; Zapkau et al, 2015). Prior entrepreneurial experience was included due to previous studies' (Miralles et al, 2016; Zapkau et al, 2015) confirmation of its strong impact on students' entrepreneurial intentions. Students from different educational areas who are taking entrepreneurship courses contribute to our understanding of why intentions change (Souitaris et al, 2007). Therefore, students' education field was added as one of ther control variables. Although some scholars (Souitaris et al, 2007; Tkachev and Kolvereid, 1999) argued against using gender as a control variable, it will however be beneficial to use it to check for invariance issues (Singh, 1995) in this study's model.

To ensure the analysis will not suffer from multicollinearity problems, tolerance of value and variance of inflation (VIF) tests were conducted. Tolerance of value should exceed 0.10 and VIF should be less than 10 (Pallant, 2005; Wang and Lin, 2016). Results in **table 4** show a VIF less than 10 and a tolerance value of more than 0.10. Therefore, this study does not suffer from multicollinearity issues. To sustain the direction of this study, the three exogenous variables in **table 3** were packed together in the measurement model by using a second-order factor (Shumacker and Lomax, 2010) to form one variable called "Mentorship pedagogy". **Table 6** represents the correlation between variables. Variables' bivariate correlations are less than .9 which still indicates no collinearity (Hair et al, 2009).

Table 6 Correlation matrix and discriminant validity

Variables	Mean	S. D	1	2	3	4	5	6	7	8	9	10
1. Mentorship P.	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.Nature of course	1.53	.50	.130**	.188*	.203**	.198**	-.126	.047	1			
8.Prior entrep	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 < .01 level *p < .05 level

3.3.4 Validity and Reliability

Following the work of Fornell and Larcker (1981) and Linan and Chen (2009), an exploratory factor analysis was conducted to show this study's KMO and Bartlett's tests results as the convergent validity results. In terms of items that belong to mentorship, KMO achieved a sample adequacy of .86 and Bartlett's test of Sphericity was significant at ($p < .000$). The measurement model achieved a composite reliability (CR) of .74 and average variance extract (AVE) of .50. TPB items achieved a KMO of .93 and a Bartlett's test of Sphericity of ($p < .000$). Attitude as the first element in TPB achieved a CR of .95 and AVE of .83. PBC achieved a CR of .87 and AVE

of .54. Finally, EI achieved a CR of .95 and AVE of .77. The Cronbach alpha results reveal that mentorship pedagogy is ($\alpha = .84$) which is higher than the threshold (Karimi et al, 2014), attitude achieved a score of ($\alpha = .95$), PBC scored ($\alpha = .89$), and EI Cronbach reliability is ($\alpha = .95$).

Discriminant validity was measured by comparing the square root of AVE with correlated variables (**table 6**) which shows that AVE square roots were higher than the correlated relationship between variables (Fornell and Larcker, 1981; Karimi et al, 2014). **Table 7** shows the full description of validity and reliability results in thisstudy.

A common method bias (CMB) is conducted because the study measures the phenomenon at a single point in time (Carr and Sequeira, 2007). This study followed Podsakoff et al's (2003) remedies to include predictor measures from different sources, to assure the participants that their responses are anonymous and to also ensure that predictor and criterion variables were presented in the same questionnaire but in different sections. Furthermore, Harman single-latent factor tests achieved a percentage value less than 50% (Byrne, 2010; Carr and Sequeira, 2007; Podsakoff et al, 2003; Shirokova et al, 2015) which indicates that common method bias is not an issue for this study.

Table 7 Validity and Reliability of the model

Variables	Reference	items	α	CR	AVE
Mentorship pedagogy (MP)	(Berk et al, (2005), Ensher and Murphy (2010), Evertson and Smithey (2000)	12	.84	.74	.50
Attitude	Linan and Chen (2009)	4	.95	.95	.83
PBC	Linan and Chen (2009)	4	.89	.87	.54
EI	Linan and Chen (2009)	4	.95	.95	.77

3.4 Results

3.4.1 – SEM

Following Karimi et al's (2014) analysis procedure and Hair et al's (2009) process, SEM was conducted through two stages; i) measurement model evaluation and ii) structural model assessment.

3.4.1.1 – Measurement model

The model contained 28 items that belong to four explanatory and dependent variables. AMOS 24 was used to test the goodness of fit of our measurement model. Indicators suggest the model has a strong absolute fit (x^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 > .95, RMSEA <.08 and x^2/DF < 5.0 achieved the recommended threshold (Asyraf and Afthanorhan, 2013). Furthermore, mentorship pedagogy as the second-order factor explained the following explanatory variables. Mentorship pedagogy explains "teaching functions" by (R^2 = 75%), "psychosocial functions" by (R^2 = 50%) and "career-related functions" by (R^2 = 26%). These outcomes indicate that the latent variable, 'mentorship pedagogy', used in this study successfully represents the three explanatory mentorship functions in entrepreneurship education (Hair et al, 2009; Shumacker and Lomax, 2010).

3.4.1.2 – Structural model

The study identified the best structural model to generate results by relying on the process of nested modelling. A trimming method was used to test the goodness of fit of alternative hypotheses with different pathways from the explanatory to dependent variables. The fit indices of alternative pathways were confirmed by relying on previous arguments in the literature (Schreiber et al, 2006).

Following James' (2006) SEM mediation method, three different models were generated. **Model A** is the baseline framework that hypothesises a direct effect of mentorship pedagogy on students' attitudes, PBC, and entrepreneurial intentions (Eby et al, 2008; Lima et al, 2014; Ragins and Cotton, 1999). It also hypothesises an indirect effect of mentorship on entrepreneurial intentions through attitude and PBC (BarNir et al, 2011; Carr and Sequeira, 2007; Lima et al, 2014; Ngoc and Huu, 2016). According to **table 8**, this model achieved a strong model fit and surpassed most of the cutoff points (Schreiber et al, 2006). **Model B** was trimmed by removing the direct pathway of mentorship pedagogy on entrepreneurial intentions. This was applied according to Ajzen's (1991) argument that explanatory variables can only impact intentions through attitude and PBC (Zapkau et al, 2015). The model achieved a strong goodness of fit. **Model C** shows a direct effect between mentorship pedagogy and entrepreneurial intentions without attitude and PBC as the study mediator variables. Although the model shows a very strong fit, choosing the best model must also depend on sound theoretical arguments (Schreiber et al, 2006). Attitude and PBC may

be considered as suppressor variables that reduce the power of the baseline model; however, it will be theoretically unrealistic to omit them as these mediator variables always exist in the cognitive mind (Ajzen, 1991; Cheung and Lau, 2008; MacKinnon et al, 2000).

Based on theory and goodness of fit results, it is concluded that the baseline hypothesised model which scored a strong absolute fit (x^2=479.1; p=0.00; GFI=0.87; RMSEA=0.04; PClose=0.81), incremental fit (AGFI=0.84; TLI=0.96; CFI=0.97) and parsimonious fit of 1.44 is the most suitable framework to generate results in **figure 2**.

Table 8 Model comparison

Models	**Structure**	**X^2**	**df**	**X^2/df**	**RMSEA**	**p-close**	**CFI**	**TLI**	**IFI**	**GFI**	**AGFI**
Model A*	MP → ATT, PBC & EI; ATT & PBC → EI	479.1	331	1.44	.04	.81	.97	.96	.97	.87	.84
Model B	MP → ATT & PBC; ATT & PBC → EI	479.2	332	1.44	.04	.82	.96	.96	.96	.87	.84
Model C	MP → EI	181.6	125	1.45	.04	.69	.97	.97	.97	.91	.88

*Original model

MP = Mentorship pedagogy; ATT = Attitude; PBC = Perceived behavioural control; EI = Entrepreneurial intention

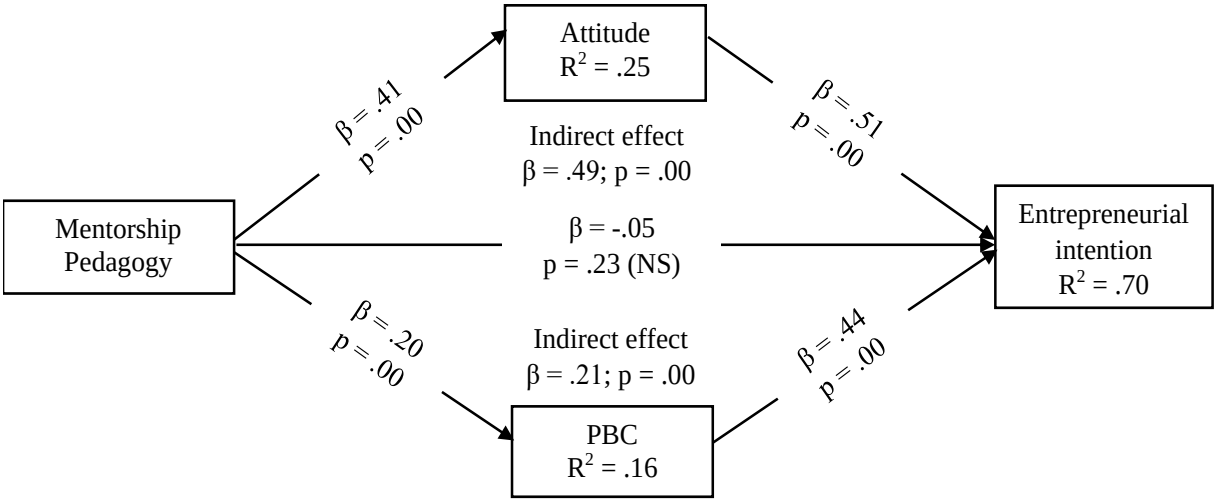

Figure 2 Structural model results

Students' attitudes (β = .51, p = .00) and PBC (β = .44, p = .00) positively impact their EI. This indicates that students' core cognitive factors play a key role in shaping their own intentions to start a business. Our model shows that educators' mentorship pedagogy has a non-significant influence on students' EI. This means that there is no evidence to claim the direct effect between these two variables. Therefore, H1 of this study is rejected. However, findings show that educators' mentorship pedagogy positively affects students' attitudes (β = .41, p = .00) and PBC (β = .20, p = .00) towards entrepreneurship. This means that educators have the power to influence students' perceptions of entrepreneurship career and confidence to create a firm. Therefore, H2a and H2b are accepted.

The structural model explains 70 % of EI, 25% of attitudes and 16% of PBC. The value of a dependent variable will achieve a substantial level (R^2 > 67%) if it is only explained by many exogenous variables, but if it is explained by one exogenous variable then a moderate result (R^2 < 67%) is acceptable (Chin, 1998; Henseler, Ringle and Sinkovics, 2009). In this regard, the R-square values in this study's variables achieved "substantial" and "moderate" levels.

In terms of control variables, type of session significantly affects students' attitudes (β = .12, p = .04 and PBC (β = .14, p = .02) towards entrepreneurship. In addition, students' field of study

negatively impacts their attitudes (β = -.15, p = .01), and students' prior entrepreneurial experience negatively affects their attitudes (β = -.12, p = .04) and their PBC (β = -.23, p = .00), Students' gender negatively influences their attitudes (β = -.14, p = .01) and students' age positively affects their EI (β = .11, p = .00).

Discovering the nature of the relationship between variables is an additional contribution (Daniel et al, 2014; Fayolle and Linan, 2014) of this study. Mediators play the role of explanatory and dependent variables to provide further explanations for conceptual models (Wu and Zumbo, 2007). Although Baron and Kenny's (1986) approach has been widely used in mediation studies, it has major flaws. Fritz and MacKinnon (2007) found that this approach generates low statistical power and needs a sample size of (N > 20,000) to achieve a power of 80%. Furthermore, Baron and Kenny's (1986) method does not detect true indirect effect, tests each path in the model separately, and ignores the overall goodness of fit of conceptual models (Gunzler et al, 2013; Hayes, 2009).

Other scholars applied the product coefficient approach to verify Baron and Kenny's process (1986); however, this is deemed as an insufficient method due to its inability to provide significant values (Hayes, 2009). It is important to note that cognitive elements operate in the human mind at the same time to form intentions towards a behaviour (Krueger, 2003; 2007; MacCallum and Austin, 2000; Sarasvathy, 2001; 2004). Therefore, utilising a bootstrapping procedure in SEM is the best option in this study to generate p-values for the hypothesised indirect effects (Hayes, 2009; MacKinnon, 2007; Shrout and Bolger, 2002).

The results in **figure 2** reveal that students' attitude mediates the positive effect of their educators' mentorship pedagogy on their EI (β = .49, p = .00 < .05). Students' PBC also mediates the positive influence of their educators' mentorship pedagogy on their own EI (β = .21, p = .00 < .05). It can be concluded that full mediation is present due to a non-significant direct effect of educators' mentorship pedagogy on students' EI (β = -.05, p = .23 > .05). Therefore, H3a and H3b are accepted.

3.5 Discussion

Although previous research confirmed the existence of mentorship in higher education (Crisp and Cruz, 2009), only limited studies have attempted to test the influence of mentorship practices (Bae et al, 2017; St-Jean and Mathieu, 2015; St-Jean, 2012; Mueller et al, 2011) on cognitive variables. The study shows that mentorship as a core practice in business accelerators (Cohen and Hochberg, 2014) is applied by educators along with traditional teaching during entrepreneurship education sessions. Applying a business incubation pedagogy method in entrepreneurship courses is a form of pedagogical adaptation (Yballe and O'Connor, 2000) to entrepreneurial learning that changes the nature of the learning process and promotes an interactive relationship between the educator and students during classroom activities (Lobler, 2006; Ollila and Middleton, 2011). The findings emphasise that mentorship does not mean the total avoidance of traditional teaching; rather it combines inductive and deductive styles of teaching where the teacher transmits entrepreneurial knowledge but also facilitates learning and allows students to engage in the process of self-discovery in entrepreneurship education (Liou et al, 2016; Nabi et al, 2017; Prince and Felder, 2006).

This study shows that group mentorship can work in entrepreneurship education. Group mentorship is based on a simultaneous method which means that educators apply mentorship practices and engage in a synergetic relationship with students at the same time and in the same place (Huizing, 2012; Kroll, 2016).

The findings validate past studies' (Bullough et al, 2013; Krueger, 1993; Linan et al, 2011; Lorz et al, 2013; Nora and Crisp, 2007) theoretical arguments about the potential impact of entrepreneurship teaching methods such as role modelling and mentorship on individuals' cognitive elements. In this regard, the study indicates that mentorship can change students' perceptions and behavioural beliefs (Ajzen, 1991; Fretschner and Weber, 2013) towards the idea of becoming an entrepreneur. It also shows that teachers can assist students to exercise good judgement on their skills to perform an entrepreneurial behaviour (Krueger et al, 2000).

The influence of educators' mentorship pedagogy on students' cognitive variables has a deeper meaning to it. Mentorship practices applied by educators in entrepreneurship courses are capable of altering students' emotions, thoughts and visioning processes of specific entrepreneurial behaviours (Botsaris and Vamvaka, 2014; Breckler and Wiggins, 1989; Fernandes and Proenca,

2013; Linan and Chen, 2009). Moreover, the results demonstrate that mentorship impacts students' control beliefs such as their knowledge capacity, competencies and recognition of opportunities (Ajzen, 1991; Conner and Armitage, 1998; Linan and Chen, 2009). This demonstrates that educators are transmitting both entrepreneurial knowledge and positive beliefs about entrepreneurship (Linan and Chen, 2009).

In terms of mediation, the results are in line with Ajzen's (1991) and Soomro and Shah's (2015) arguments about TPB in which exogenous variables can only affect EI through cognitive antecedents. In this regard, the findings show that educators' mentorship pedagogy is only able to influence students' EI through their attitudes and PBC.

It is noticeable from the results that, when educators apply mentorship practices, they become influencers rather than simply lecturers during entrepreneurship courses (Kram, 1985; Krueger et al, 2000). Therefore, results show that students consider their educators to be influential individuals who can approve or disapprove (Ajzen, 1991) of their decision about an entrepreneurial activity. In other words, entrepreneurship teachers' will need to influence students' first so that they can establish their intention towards entrepreneurship.

The study concludes that, due to the existence of educators' mentorship practices, students' evaluation of their attraction towards the venture creation behaviour will have a greater impact on their motivation to start a business than when they attempt to assess their own ability. This means that there is still the possibility that students who perceive entrepreneurship as a difficult behaviour will still implement it if it remains attractive to them. Therefore, students' attitudes and PBC are also playing a role in shaping their entrepreneurial intentions.

Finally, the study explains that mentorship as a blended learning pedagogy (Fook et al, 2016) supports educators to achieve entrepreneurship education programme goals (Fretschner and Weber, 2013; Linan et al, 2008). It is concluded that educators are transforming their roles from instructors to mentors in order to strike a balance between the blended nature of entrepreneurship education and fulfilling academic school requirements (Linan et al, 2008; Powell, 2013).

3.6 Implications

The research has several theoretical implications. This study answers scholars' calls (Duval-Couetil, 2013; Fayolle and Linan, 2014; Lorz et al, 2013) to examine the effect of pedagogies on

students' EI, and, more importantly, to validate the applicability of TPB in studying rare entrepreneurial pedagogies (Fayolle and Gailly, 2015) in a UK entrepreneurship education context. According to Allen et al's (2008) review, the faculty-student form of mentorship has rarely been studied, which is another reason for this research to provide evidential information about the potential impact of mentorship as a new entrepreneurship pedagogy that is currently being implemented in entrepreneurship education.

In terms of past theories, this study extends the mentor role theory (Kram, 1985) by adding the traditional teaching as a third element of the theory. It also afforded the mentor role theory an opportunity to be implemented from an organisational environment to an educational setting. Also, the literature does not illustrate an established framework that aids future studies to examine mentorship functions in education settings (Nora and Crisp, 2007); therefore, this research is a springboard for future studies to apply Kram's (1985) mentor role theory and the conceptual framework to test the effect of mentorship on intentions. Furthermore, the nature of the relationship between educators and students in entrepreneurship education can be explained through the lens of mentoring enactment theory (Kalbfleisch, 2007) which indicates that the relationship is based on flexibility and educators' facilitating ability during active tasks in entrepreneurship education. This research also extends existing conceptual frameworks (Greenberger and Sexton, 1988; Learned, 1992; Naffziger et al, 1994) by integrating TPB as a cognitive interactionism (Pittaway and Tunstall, 2016) with educators' mentorship practices to form a processional interactionism (Elfving et al, 2009).

Only a few academic works have tried to reveal the impact of pedagogies in entrepreneurship education (Blenker et al, 2014; Couetil, 2013; Nabi et al, 2017). This study shows that mentorship pedagogy is an act of change in entrepreneurship education. This kind of change is termed the 'perspectival approach revolution' which means to introduce new methods in education and change the roles of teachers (O'Brien et al, 2013). Thus, this study reveals that lecturers' mentorship functions are part of an education revolution. Also, the integration of external education areas with cognitive psychology extends the current status of the field of entrepreneurship education (Fayolle, 2013).

In terms of practical implications, the study shows that entrepreneurship programmes can become a learning experience for educators that will encourage them to acquire specific abilities to support

their students to think and perform entrepreneurially (Mueller et al, 2011; Solomon, 2007). Teachers' mentorship experience improves their mentoring strategies and their teaching philosophy (Hobson et al, 2009); it also improves their pedagogical knowledge and facilitation skills in supporting students to gain tacit knowledge (Hudson, 2013) in entrepreneurship education. Policy makers can take advantage of this study's findings to institutionalise the concept of mentorship in entrepreneurship education and create training programmes to enhance educators' mentoring abilities (Deepali and Chaudhary, 2017). Furthermore, these shifts in pedagogy methods change the educational institute culture which shifts them from being a platform that transforms knowledge into a place where they help students to realise their goals and ambitions (Liou et al, 2016).

3.7 Limitations and future studies

It is important to study the effect of mentorship pedagogy on EI on samples from different types of entrepreneurship education (Piperopoulos and Dimov, 2015). Including different samples can strengthen this research (Shirokova et al, 2015); therefore, we encourage future studies to collect data from other universities, business incubators and entrepreneurial societies which provide practical workshops for students and professionals.

This study utilised a cross-sectional method. Future efforts can apply pre- or post-quasi-experiments to confirm a more accurate impact of mentorship on students' EI. Future research can use this research conceptual framework for the purposes of longitudinal studies (Karimi et al, 2014). In addition, future researchers are encouraged to examine both mediation and moderation effects on students' cognitive process in entrepreneurship education (Fayolle and Linan, 2014).

Theoretically, researchers are encouraged to consider the following suggestions. i) Since this research is limited to TPB only, then it is suggested that scholars use Shapero's (1982) entrepreneurial event model. ii) Researchers can also continue this study by introducing new variables such as educators' background variables (Fayolle and Linan, 2014; Karimi et al, 2014). iii) Researchers can also investigate different types of attitude that predict cognitive outcomes (Botsaris and Vamvaka, 2014; Fernandes and Proenca, 2013). iv) The final suggestion is that researchers explore how mentorship practices support students to structure knowledge and beliefs at the symbolic cognitive level (Krueger, 2007; Sarasvathy, 2004). In other words, the author

invites future researchers to investigate the complexity of knowledge construction (Gaglio, 2004; Mitchell et al, 2002) and discover how blended pedagogy supports students to categorise new information in their schemata (Fook et al, 2016; Gaglio and Katz, 2001; Krueger, 2003).

It is perceived that traditional entrepreneurship programmes rely on deductive teaching methodologies such as lecturing that do not achieve course outcomes. On the other hand, scholars concluded that experimental entrepreneurship learning classes support the development of students' skills (Scott et al, 2016). These claims are not fully tested (Matlay and Carey, 2007) and, therefore, it would be useful to compare the effects in the conceptual model in theoretical and practical entrepreneurship courses.

3.8 Conclusion

This study was able to confirm the positive impact of educators' mentorship pedagogy on students' cognitive factors. Educators spark new beliefs in students' cognitive minds which in turn form their entrepreneurial intentions. Educators' blended active and traditional teaching practices also trigger a challenging mentoring relationship with students. This unique relationship allows educators to inscribe new knowledge in their students' schemata. Overall, the study reveals the role of educators to change students' mindsets about entrepreneurship.

This study sheds light on the scientific relationship between the fields of entrepreneurial learning and entrepreneurial intentions. Ajzen's (1991) TPB supported this study to link both fields and extract a new model that extends the framework of entrepreneurship education (Maritz et al, 2013). This study's findings and past arguments (Adam and Nel, 2009; Fook et al, 2016) helped the research to define mentorship in entrepreneurship education as a blended learning pedagogy that combines active and traditional teaching practices to influence students' cognitions about entrepreneurship.

Chapter 4: The ability of teachers' mentorship method to drive the impact of the nature of entrepreneurship courses on students' cognition

Abstract

Previous studies identified the components of entrepreneurship education. It supported this research to identify the relationship between teachers' mentorship method and the nature of entrepreneurship courses. The purpose of this study is to examine the role of educators' mentorship method to drive the influence of the nature of entrepreneurship courses on students' cognitive antecedents' and entrepreneurial intentions. SEM analysis based on data collected from students' who were enrolled in UK entrepreneurship programs show that teachers' mentorship method acts more as a competitive factor than as a supporting component to impact students' cognitive antecedents' and entrepreneurial intentions. Furthermore, it demonstrates that educators' mentorship practices are used after students receive tacit and explicit knowledge. The study extends the mechanism of entrepreneurship education components, students' learning process and knowledge accumulation methods from different entrepreneurship contents.

4.1 Introduction

Universities introduced entrepreneurship education programmes due to the belief that it will improve students' entrepreneurial abilities. It is agreed that entrepreneurship education aims to influence individuals' cognitive skills so they can become entrepreneurs (Fayolle et al, 2006). However, latest studies found that there is a lack of clarity in the relationship between the components of entrepreneurship education and students' cognitive reaction (Cruz et al, 2009; Huber et al, 2014). Few studies explained how entrepreneurship education components are mechanised together to impact students' cognitive minds (Maritz and Brown, 2013; Henry, 2005). To examine this area, researchers must isolate the factors that collectively construct an an entrepreneurship education (Maritz and Brown, 2013) to be able to provide a deeper analysis of how educational components in entrepreneurship education influence students' mental process (Saeed et al, 2013).

The main component in entrepreneurship education that is igniting a conflict between scholars is the method of content delivery (Neck and Greene, 2011) or — as described by Loughran (2006) — its pedagogy. One reason is because teaching methods that are borrowed from management education are not able to fully deliver insightful entrepreneurial information (Cooper et al, 2004; Fiet, 2000). Scholars started to focus on this area as a specific component of entrepreneurship education (Hagg and Kurczewska, 2016). This new direction in entrepreneurship research was sparked from learning theories (Revans, 1982; Kolb, 1984) that influenced many educational courses to turn into actionable sessions. Attempting to change traditional pedagogies into a more interactive one's improves the effectiveness of entrepreneurship education programmes (Hagg and Kurczewska, 2016; Rideout and Gray, 2013; European Commission, 2008). Since student engagement remains vital in entrepreneurship education, interactive pedagogies are the most suitable methods to achieve course objectives (Balan and Metcalfe, 2012). In this regard, it is argued that teachers must adopt a mentoring behaviour to be able to link academic learning to real business issues (Robinson and Haynes, 1991).

It was found that educators applied mentorship as an interactive learning method (Nora and Crisp, 2007). Originally, mentorship in an educational context is a complex, active and challenging two-way relationship where teachers have the responsibility to provide support and guidance to students rather than just implementing passive learning (Ehrich et al, 2004Ensher and Murphy,

2010; Zimmerman and Paul, 2007). Recently, mentorship in educational sessions is taking the form of group mentoring which applies a simultaneous interactive relationship with students that focuses on personal growth and career skills (Kroll, 2016).

While mentorship can be observed in business incubators and accelerators (Cohen and Hochberg, 2014; Rasmussen and Sorheim, 2006), little academic work has examined the mentoring relationship between teachers and students in an educational environment (Allen et al, 2008) or researched how the relationship between this type of pedagogy with other components in different entrepreneurship education courses impacts students' interests (Cohen and Hochberg, 2014; Lutz et al. 2015; Kubberoed and Hagen, 2015; Rasmussen and Sorheim, 2006).

Pedagogies are responsible in delivering entrepreneurship courses contents to students (Maritz and Brown, 2013). Understanding how entrepreneurial pedagogies function with knowledge contents aids researchers to explain the true effect of entrepreneurship education (Bechard and Gregoire, 2005). Knowledge is derived from entrepreneurship course contents (Johannisson, 1991) and very few studies have investigaged its impact on students' cognitions (Dohse and Walter, 2012; Linan and Fayolle, 2015; Miralles et al, 2016; Pittaway and Cope, 2007).

The relationship between teachers' hybrid mentorship-traditional teaching active method and the nature of entrepreneurship courses remains vague (Kubberoed and Hagen, 2015; Roxas, 2014; Sommer and Haug, 2011; Stewart and Knowles, 2003; Zepke and Leach, 2010). Therefore, this study questions this relationship and the role it plays in impacting students' cognitive antecedents and entrepreneurial intentions (Billet, 1996; Linan et al, 2008; Maritz and Brown, 2013).

This paper makes several important contributions to entrepreneurship education research. Firstly, prior studies show that entrepreneurship education has not reached its maturity (Katz, 2008) and other pedagogies beyond case studies and business planning (Gartner and Vesper, 1994; Souitaris et al, 2007) are still to be examined in depth (Carey and Matlay, 2010; Lorz et al, 2013). Practitioners struggled to introduce a learning method that blends traditional and active teaching practices which aims to improve students' entrepreneurial behaviours and capabilities (Kirby, 2007). Mentorship as a blended pedagogy is overlooked in entrepreneurship research (Pittaway and Cope, 2007). It changes entrepreneurship education from the traditional type of education into a progressive education that promotes student-centred learning (Neck and Corbett, 2018). This

form of education has a direct impact on students' cognitive antecedents and it supports teachers to construct new entrepreneurial knowledge in students' mindsets (Krueger, 2007). Furthermore, mentorship does not only promote the student-centred learning approach, but also integrates instruction and construction teaching methods (Lourenco and Jones, 2006).

Secondly, explaining the relationship between the nature of entrepreneurship courses and teachers' mentorship behaviour provides clarity on how mentorship supports the filtering of course contents, which is then transmitted to students' cognitive minds (Ismail et al, 2018; Linan et al, 2013; Nan et al, 2013; Roxas, 2014). This process encourages students to own their learning process and become proactive in their interactions with their teacher during an entrepreneurial session (Neck and Corbett, 2018).

The research examines the role of the educator's mentorship method in driving the influence of the nature of entrepreneurship courses on students' cognitive antecedents and entrepreneurial intentions.To achieve this, two research questions are posed: *What is the influence of the nature of entrepreneurship courses on students' intentional antecedents*? and *What is the nature of the relationship between educators' mentorship method and the nature of entrepreneurship courses to influence students' intentional antecedents?* The study first explains the nature of entrepreneurship education and how its components theoretically link to students' cognitions. The study also clarifies the theoretical mechanism behind the relationship between mentorship in theoretical and practical entrepreneurship courses and their knowledge content. Out of this, two hypotheses are generated. Data was collected from students who were enrolled in 14 different entrepreneurship courses and tested by using a structural equation modelling method. Next, the study presents the results, followed by a discussion. Finally, limitations and implications for the field are stated.

4.2 Literature Review

4.2.1 The nature of entrepreneurship education

Previous studies tried to explain the nature of entrepreneurship education by defining its objectives as i) a programme that moulds students' entrepreneurial intentions and skills, ii) a platform to grasp opportunities and learn about innovation, and iii) a place to conduct an entrepreneurial behaviour

(Mwasalwiba, 2010). Other scholars (Co and Mitchell, 2006; Fretschner and Weber, 2013; Hytti and O'Gorman, 2004; Jamieson, 1984) simplified the definition of entrepreneurship education into three categories: i) "*About*" entrepreneurship aims to enhance students' awareness of the field and as an alternative career choice by transferring theoretical knowledge about establishing and running a business; ii) "*For*" entrepreneurship transmits practical skills through applied exercises that improve students' abilities to create a successful business; and iii) "*In*" entrepreneurship focuses on growing nascent entrepreneurs' businesses by training them on business and management development. Simply, entrepreneurship education either aims to change students' attitudes and mindsets through "awareness" education that provides sufficient information about owning a business or develops students' entrepreneurial skills through "education for start-up" courses by using active start-up practices (Fretschner and Weber, 2013; Linan et al, 2008). In general, entrepreneurship education aims to transmit entrepreneurial knowledge and develop students' skills to support them in creating and supervising different businesses (Jones and Iredale, 2010; Packham et al, 2010; Rasmussen and Sorheim, 2006).

The nature of entrepreneurship education can be better explained by focusing on three analytical levels; they are contents, objectives and targets (Tixier et al, 2018). Out of the three areas, entrepreneurship education content is the major component that clarifies each type of entrepreneurship education (Fayolle and Degeorge, 2006; Lorz et al, 2013). That is because contents reveal the type of knowledge that labels an entrepreneurship course as either an awareness session or a practical session (Linan et al, 2008). Originally, Johannisson (1991) characterised contents into five levels that support individuals to develop entrepreneurial knowledge; these are: i) *Know-why* which is an inborn competency such as confidence, motives and attitudes towards entrepreneurship; ii) *Know-how* which is the practical ability that individuals gain from practical contents and field experience, iii) *Know-who* which refers to individuals' networking skills; iv) *Know-when* which are innate abilities such as alertness and intuition that are developed from opportunity management experience, and v) *Know-what* which is the level where information and facts expand individuals' knowledge. The know-why and know-when learning processes develop students' entrepreneurial spirit by establishing their entrepreneurial mindsets and behaviours while know-what, know-how and know-who learning processes improve students' practical capabilities from engaging in entrepreneurial activities in entrepreneurship education (Fayolle, 2008).

Piperopoulos and Dimov (2015) simplified Johannisson's (1991) entrepreneurial learning taxonomy by dissecting the nature of entrepreneurship education into theoretical and practical entrepreneurship courses. Students who participate in practical entrepreneurship courses learn by carrying out real-life entrepreneurial activities and adopting an entrepreneurial behaviour such as pitching business ideas to investors, business planning, team working and engaging in business simulations (Fayolle, 2008; Piperopoulos and Dimov, 2015). Practical entrepreneurship courses that adopt a 'learning by doing' method enable students to gain tacit knowledge in the form of experience (Fayolle, 2008; Nonaka, 1994). Explicit knowledge can be viewed as readable data and information from past records (Becerra-Fernandez and Sabherwal, 2001; Nonaka, 1994). This type of clear and readable knowledge can be observed more in theoretical or 'awareness' entrepreneurship courses that provide core information such as owning a small business, entrepreneurial personality, and opportunity recognition (Fayolle, 2008; Linan et al, 2008; Piperopoulos and Dimov, 2015). Overall, entrepreneurial knowledge is connected to entrepreneurial learning methods in the entrepreneurship education structure and it is formed of *tacit* knowledge that is mainly found in practical entrepreneurship courses and *explicit* knowledge that is found in theoretical entrepreneurship classrooms (Davidsson and Honig, 2003; Fayolle, 2008).

4.2.2 Entrepreneurship course contents and cognitive factors

Behavioural intention is an immediate predictor of an actual behaviour (Ajzen, 1991). According to Lanero (2011), the Entrepreneurial Event Model (Shapero, 1982) was mostly utilised in past studies. However, it can be argued that the theory of planned behaviour (TPB) developed by Ajzen (1991) is the most applied framework due to its predictability power and reliability to explain entrepreneurial intentions (Lortie and Castogiovanni, 2015; Schlaegel and Koenig, 2013). Different studies (Linan and Chen, 2009; Krueger et al, 2000 Li, 2007; Wu and Wu, 2008) have proved that TPB has a strong likelihood to predict entrepreneurial intentions in different fields such as venture creation, growing a firm and opportunity recognition (Shook et al, 2003; Fayolle et al, 2006; Van Gelderen, 2008; Lortie and Castogiovanni, 2015). TPB includes three antecedents of intentions; i) *attitudes* which explains individuals' evaluation of and attraction towards the behaviour (Ajzen, 1991), ii) *subjective norms* (SN) which represents the social influence on the individual by referent groups such as close people such as the family members and friends (Ajzen,

1991; Krueger et al, 2000) and iii) *perceived behavioural control* (PBC) that describes individuals' assessment of their own skills to conduct the behaviour (Ajzen, 1991). These three elements form intentions and they reflect how far individuals would go to perform a specific behaviour (Ajzen, 1991). Furthermore, it is found that SN plays the role of an explanatory variable for attitude and PBC and has a weak relationship with students' entrepreneurial intentions (Krueger et al, 2000; Linan and Chen, 2009; Lortie and Castogiovanni, 2015). Therefore, SN is excluded from this study's analysis.

The type of entrepreneurship education which is defined according to the nature of its knowledge contents and objectives influences individuals' cognitive factors and entrepreneurial intentions (Luthje and Franke, 2003; Maritz et al, 2013; Pihie et al, 2013; Sanchez, 2012). Entrepreneurship education contents provide greater knowledge to students which will offer a greater awareness about entrepreneurship as a potential career option (Linan et al, 2013; Linan, 2004). This increases students' clarity about the entrepreneurial process and removes cognitive obstacles (Roxas, 2014; Weber, 2012). Furthermore, students with a greater awareness about entrepreneurship and what it entails also have a clearer attitude towards it (Fayolle, 2005; Linan, 2008; Souitaris et al., 2007).

Entrepreneurial knowledge content that is being taught to students also influences their self-confidence in their skills to create start-ups (Roxas, 2014). Findings explain that entrepreneurial knowledge contents that assist students to become familiar with the entrepreneurial environment increases their PBC cognitive factor which is responsible for transforming entrepreneurial beliefs to behaviour (Linan, 2008; Weber, 2012; Yaghoubi Farani et al, 2017). Furthermore, past research suggests that the nature of entrepreneurship education that provides both tacit and explicit entrepreneurial knowledge positively affects students' entrepreneurial intentions (Sommer and Haug (2010; Linan, 2004). In other words, gaining entrepreneurial knowledge from theoretical and practical contents influences students' attitudes and PBC which indirectly impact their intentions to start a business (Ajzen, 2002; Yaghoubi Farani et al, 2017). Overall, the nature of entrepreneurship education — which is either theoretical or practical, — influences students' awareness of entrepreneurship as a potential career (Fretschner and Weber, 2013; Linan, 2007). It also affects their confidence in their abilities and intentions to perform an entrepreneurial activity (Audet, 2004; Carr and Sequeira, 2007; Kakouris, 2015; Krueger and Brazeal 1994; Linan et al,

2008; St-Jean and Mathieu, 2015). Therefore, these justifications inform this study's first hypothesis:

H1: The nature of entrepreneurship education directly impacts students' a) attitudes, b) PBC and c) entrepreneurial intentions.

4.2.3 Adoption of a mentoring behaviour

4.2.3.1 Mentorship in theoretical and practical entrepreneurship education

A mentorship pedagogy that is intentionally integrated with entrepreneurship education curriculum leads to a fundamental change in the definition of entrepreneurship education (Kubberoed and Hagen, 2015; Mwasalwiba, 2010). Nora and Crisp (2007) conceptualised mentorship elements that are used in higher education. The first element is the psychological function that concentrates on honest support, feedback and encouragement to help individuals to face specific fears and build self-confidence in individuals' abilities (Kram, 1985; Schockett and Haring-Hidore, 1985). The second element is the goal setting and career route function that evaluates students' strengths and weaknesses and supports them to realise their goals (Kram, 1985). The third element is the academic knowledge assistance that improves students' intellectual level through traditional teaching, constructive criticism and ability to face challenging assignments (Schockett and Haring-Hidore, 1985). Role model is also a core element of mentorship in which students learn from their teachers' experience and achievements (Nora and Crisp, 2007).

Mentorship practices that were discovered by Nora and Crisp (2007) in educational settings were found in theoretical entrepreneurship education. According to Ollila and Middleton (2011) findings, educators are supporting learning by integrating traditional teaching practices with interactive mentorship practices (Anderson and Shannon, 1998; Galbraith and James, 2004) such as focusing on students' success stories, supporting them to realise positive visions (Yballe and O'Connor, 2000), reflection (Akinboye and Pihie, 2014), and encouraging mistakes. Nabi et al (2016) on the other hand, discovered that the theoretical inspiration method based on mentorship practices such as thought-provoking questions and pushing students to generate new ideas was used by educators on first-year students taking entrepreneurship courses. Furthermore, apart from entrepreneurs and business owners, previous studies (Kennedy et al, 2003; Nauta and Kokaly,

2001) show that students are perceiving their teachers as role models due to their adoption of mentorship practices that are changing students' mindsets about entrepreneurship. This is in line with the arguments of Nora and Crisp (2007) and Ragins and McFarlin (1990) about the implementation of role modelling by educators.

In terms of practical entrepreneurship education, some studies (such as Canziani et al, 2015; Dewey, 2010; Mason and Arshed, 2013; Sherman et al, 2008) confirmed that experiential learning is the most applied method in practical entrepreneurship education. Cooper et al (2004) explained that the most effective experiential learning is to allow students to actively and directly get involved with entrepreneurial businesses that will foster special skills such as problem-solving abilities. Lahn and Erikson's (2016) study reveals that utilising experimental learning during practical courses automatically transforms teachers into mentors which improves the effectiveness of the session and aids in creating an active learning environment that helps students in practical projects. Moreover, teachers who adopt a mentoring behaviour during practical entrepreneurial courses replace the entrepreneurs' role as advisers for students (Lahn and Erikson, 2016) and change traditional teaching into a dynamic way of learning which resembles business incubators that introduce real case-study situations (Cohen and Hochberg, 2014; Heinonen and Poikkijoki, 2006).

Referring to the works of Kram (1985), Nora and Crisp (2007) and Ensher and Murphy (2010), interactive practices such as feedback, goal-setting and reflection that support the objectives of experiential learning (Canziani et al, 2015) are considered as mentorship practices. Mueller's (2011) findings argue that student-orientation learning, practical knowledge and business planning are methods used by educators in entrepreneurship education. Practical knowledge is a form of tacit knowledge (Fayolle, 2008; Nonaka, 1994) and it is found in practical entrepreneurship education which is facilitated by business planning and idea creation exercises (Nabi et al, 2016; Piperopoulos and Dimov, 2015) that uses pedagogy methods such as active learning, student-orientation self-directed learning and simulations (Piperopoulos and Dimov, 2015). Student-orientation learning contains supporting practices that are implemented by teachers during practical entrepreneurship courses such as feedback, reflection, interactive and conversational practices (Mueller et al, 2011). These practices are part of mentorship functions found by a range

of researchers (Anderson and Shannon, 1998; Galbraith and James, 2004; Kram, 1985; Kubberoed and Hagen, 2015; Nora and Crisp, 2007).

4.2.3.2 Learning entrepreneurship contents via mentorship

The question remains: *Why is mentorship better than other traditional pedagogy methods to deliver entrepreneurship education contents to students?* Students nowadays prefer obtaining information from other sources over traditional teaching. This information acquisition technique is becoming a better option for them to understand entrepreneurship education contents (Fiet, 2000; Lautenschlager and Haase, 2011). Traditional teaching by itself is an impractical knowledge transmission method and must be executed along with teacher-student interactive practices to change students' cognitive antecedents' and entrepreneurial intentions, and produce more entrepreneurial student graduates (Gibb, 1996; Hartshorn and Hannon, 2005; Henry and Lewis, 2018; Shepherd and Douglas, 1996).

Although it is argued that the type of entrepreneurship courses contents affect educators' teaching methods (Maritz et al, 2013), previous reviews show that mentorship as an interactive pedagogy exists with both theoretical and practical entrepreneurship knowledge contents. Educators adopting a mentoring behaviour influence the knowledge transfer to students which affects their absorption of tacit and explicit knowledge from entrepreneurship education contents (De Carolis and Saparito, 2006; Nan et al, 2013). Unlike traditional teaching such as lecturing and instructive methods that are becoming inadequate for students to fully understand entrepreneurship topics, adoption of mentoring practices in classrooms allows students to convert, adapt and re-create entrepreneurial knowledge according to their career goals (Cooper et al, 2004; Nan et al, 2013; Peterman and Kennedy, 2003).

Mentorship is a powerful technique which supports the delivery of theoretical and practical knowledge contents. It changes students' cognitive factors by linking realistic situations to theoretical learning (Robinson and Haynes, 1991; Stewart and Knowles, 2003; Sullivan, 2000; Zepke and Leach, 2010). Furthermore, previous studies (Canziani et al, 2015; Mason and Arshed, 2013; Mueller, 2011; Sherman et al, 2008) concluded that mentorship practices from different entrepreneurship courses have a direct effect on students' entrepreneurial intentions. Overall, the nature of entrepreneurship courses does impact students' cognitive antecedents (Fretschner and

Weber, 2013; Miralles et al, 2016; Piperopoulos and Dimov, 2015) and the previous review shows that mentorship practices are found in both theoretical and practical types of entrepreneurship education. Since past studies concluded that theoretical contents increase educators' usage of traditional teaching methods and practical contents are found more in experiential courses (Taatila, 2010; Maritz et al, 2013) and mentorship does affect students' cognitions, then this study proposes that mentorship adapts to the nature of entrepreneurship education to influence students' intentional factors.

H2: Educators' mentorship method mediates the relationship between the nature of entrepreneurship education and students' cognitive factors.

The following model visualises the hypothesised relationships between proposed variables according to the previous review.

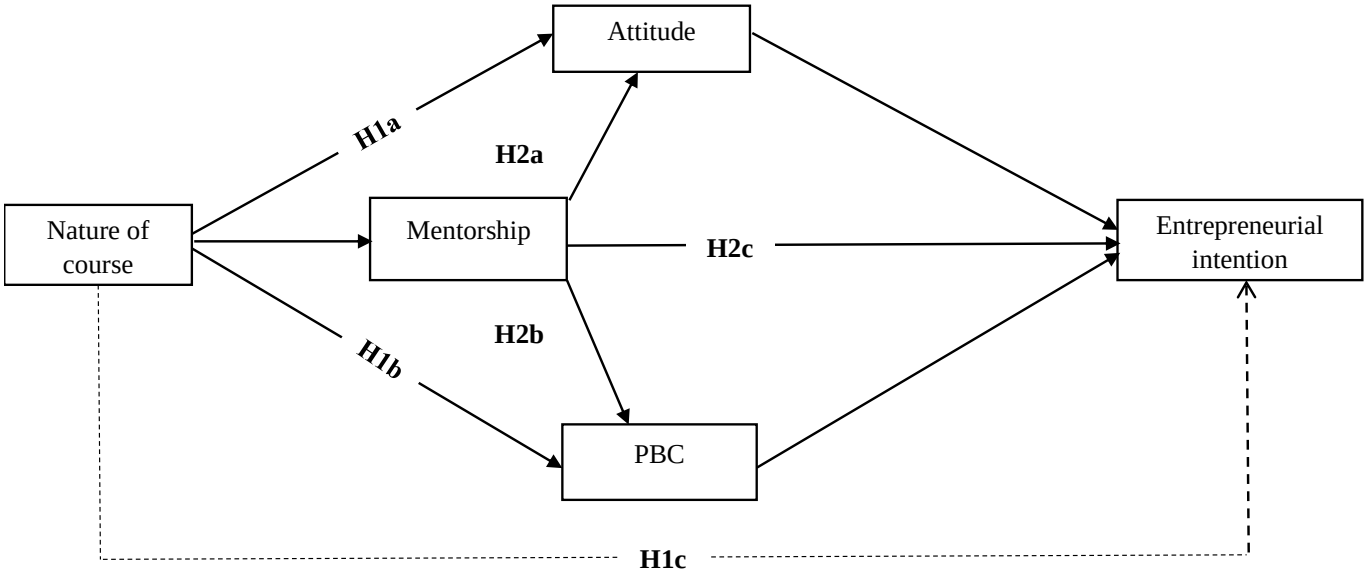

Figure 3 Hypothesised model

4.3 Data and methods

4.3.1 Data and sample frame

The study applies a survey method on students who are taking entrepreneurship courses in different UK universities. The reason behind choosing students who were enrolled in UK universities is because educational institutions provide a theoretical and practical entrepreneurship education curriculum that mainly aims to influence students' cognitive mindsets and develop their entrepreneurial abilities (Piperopoulos and Dimov, 2015; QAA, 2012). Furthermore, past research studies on UK entrepreneurship education focused on examining the impact of entrepreneurship education on students' cognitions as a general variable rather than testing the effect of its components such as the pedagogy (Henry and Lewis, 2018).

To achieve the purpose of this research, entrepreneurship education was divided into theoretical (n = 107) and practical (n = 114) courses. The student sample was up to 24 years old, mainly studying business, entrepreneurship and innovation and mostly unemployed or not having any entrepreneurial experience. Items in the questionnaire were confirmed from a group of 12 individuals from entrepreneurship education to ensure they are appropriate and do not contain any issues. Data collection took place between March and May 2016. Originally, 267 questionnaires were distributed to students at the beginning of their classes followed by a short explanation of the study and the purpose of their involvement in the survey. It took between 10 and 20 minutes to complete the questionnaires. Although 236 respondents were recruited, due to outliers, the final count of the sample is (n = 221) students and the response rate achieved is 88.3%.

Table 9 - sample characteristics

Demographic	Theoretical sessions	Practical sessions	Total
1. Gender			
Male	36	55	91
Female	68	62	130
Total	104	117	221
2. Age			
Up to 24+ yrs.	82	94	176

25 – 30 yrs. old	20	13	33
30+	2	10	12
Total	104	117	221
3. Employment			
Full time	7	6	13
Part time	26	37	63
Not employed	71	74	145
Total	104	117	221
4. Prior Entrepreneurial experience			
Yes	18	33	51
No	86	84	169
Total	104	117	221
5. Field			
Entrepreneurship and Innovation	28	27	55
Business Studies	72	78	150
Health and Sciences	4	11	15
Arts	0	1	1
Total	104	117	221

4.3.2 Methods and variables

A few studies applied a structured equation modelling (SEM) technique to test the influence of educational variables in entrepreneurship education on cognitive outputs (Rideout and Gray, 2013). SEM tests complicated research models developed from previous literature (Baron and Kenny, 1986; Crockett, 2012) by generating simultaneous results and goodness of fit outcomes about the stability of the research model (Prabhu et al, 2012). It is incorrect to test complex relationships between explanatory variables and TPB antecedents by using separate regression analysis (Lorz et al, 2013; McGee et al, 2009). TPB factors operate simultaneously (Krueger, 2003, 2007; MacCallum and Austin, 2000) and need a SEM analysis (Shumacker and Lomax, 2010) to generate instantaneous results. This study's variables are derived from the administered questionnaire that contains three sections. The first section lists 43 items that evaluate educators' mentorship practices in entrepreneurship education. Section two contains 22 items that assess students' attitude, PBC, SN and entrepreneurial intentions. The last section asks students' demographic questions which are used as control variables. All items followed a 1 = strongly disagree to 6 = strongly agree Likert-type scale.

4.3.2.1 Dependent variables

This study relied on Linan and Chen's (2009) entrepreneurial intention questionnaire (EIQ) to measure students' entrepreneurial cognitions. It contains four variables which achieved high reliability; i) entrepreneurial intention (α=.94), ii) PBC (α=.89), iii) subjective norms (α=.77) and iv) attitude (α=.89). Linan and Chen's (2009) work also shows a good convergent and discriminant validity. EIQ achieved a Kaiser-Meyer-Olkin (KMO) of .91, a Bartlett's Sphericity test of ($p < .001$) and showed a non-inflated correlation between attitude, SN, PBC and entrepreneurial intention. Based on the previous arguments from literature (Krueger et al, 2000; Linan and Chen, 2009; Lortie and Castogiovanni, 2015), the researcher decided to exclude SN from the analysis.

After conducting an exploratory factor analysis procedure, three latent variables that reveal students' cognitions were generated. They are i) entrepreneurial intentions, ii) perceived behavioural control (PBC), and iii) attitudes. It is recommended that a sample size of between 200 and 250 must have a minimum absolute value of .40 (Hair et al, 2009; Matsunaga, 2010). In this regard, factor loadings above .40 were retained and the finalised items for each latent variable weighed more than .50. In terms of convergent validity, the three variables achieved a KMO of .93 and a Bartlett's test of Sphericity of ($p < .000$). Furthermore, attitude achieved an AVE of .83, PBC achieved the .54 threshold and EI achieved an AVE of .77. In terms of reliability, attitude achieved a Composite Reliability (CR) of .95 and ($\alpha = .95$), PBC achieved a CR of .87 and ($\alpha = .89$) and EI achieved a CR of .95 and ($\alpha = .95$). Discriminant validity is showed in the correlation **table 13** as the square-root of AVE.

Table 10 TPB factor analysis - chapter 4

	Factor 1	**Factor 2**	**Factor 3**
F1: Entrepreneurial intention – 6 items (α=.95)			
I am determined to create a firm in the future.	**.977**		
I will make every effort to start and run my own firm.	**.944**		
I have very seriously thought of starting a firm.	**.826**		
I have the firm intention to start a firm someday.	**.790**		
My professional goal is to become an entrepreneur.	**.769**		
I am ready to do anything to be an entrepreneur.	**.619**		

F2: Perceived Behavioural Control – 6 items (α=.89)			
I know the necessary practical details to start a firm.		**.910**	
I know how to develop an entrepreneurial project.		**.808**	
I can control the creation process of a new firm.		**.692**	
To start a firm and keep it working would be easy for me.		**.691**	
If I tried to start a firm, I would have a high probability of succeeding.		**.686**	
I am prepared to start a viable firm.		**.627**	
F3: Attitude – 4 items (α=.95)			
Being an entrepreneur would entail great satisfaction for me.			**.979**
If I had the opportunity and resources, I'd like to start a firm.			**.895**
A career as an entrepreneur is attractive for me.			**.875**
Among various options, I would rather be an entrepreneur.			**.739**
Eigenvalues	**9.04**	**2.11**	**1.07**
Per cent of variance	**53.6%**	**10.9%**	**6.70%**
Eigenvalues are above 1 and achieved a total variance of 71.2%			

4.3.2.2 Explanatory variables

The independent variables are labelled as i) mentorship and ii) nature of course. After implementing an exploratory factor analysis, three latent variables were generated for the mentorship variable; these are: i) Traditional teaching; ii) Psychosocial, and iii) Career-related functions. The three explanatory variables were unified to form a second-order factor (Shumacker and Lomax, 2010) called mentorship pedagogy by relying on previous theories and arguments (Ragins et al, 2000; Bouquillon et al, 2005; Ensher and Murphy, 2010; Kram, 1985; Nora and Crisp, 2007; Pellegrini and Scandura, 2005; Scandura, 1992).

Originally, the mentorship items are derived from three previous studies. Maintaining a good relationship between the teacher (mentor) and students (mentees) is a core component of mentoring characteristics (Nora and Crisp, 2007). Therefore, Ensher and Murphy's (2005) mentorship relational challenge scale (MRCS) was used in the original study. MRCS reveals the practices that mentors use to test and maintain their relationship with their mentees (Ensher and Murphy, 2010). It was created from interviewing individuals who were engaged in mentorship. It was also used and tested on participants from different industries (Ensher and Murphy, 2005, 2010). Their study acheived sufficient face validity and contained three mentorship practices that are highly reliable;

they are: i) Requiring commitment and resilience (α=.91); ii) Measuring up to mentor standard (α=.88), and iii) Career goal and risk orientation (α=.80).

Due to the lack of studies in faculty-student mentorship (Chen et al, 2016), the mentorship effectiveness scale (MES) items are used in this study. It was originally developed by Berk et al (2005) to examine mentorship pedagogy practices in a mentoring relationship between students and faculty. Finally, since the previous review explains that theoretical knowledge is transmitted through traditional teaching (Nora and Crisp, 2007; Schockett and Haring-Hidore, 1985), it was decided to include Evertson and Smithey's (2000) items that were initially formed from interviews conducted with individuals who received mentorship to develop their traditional teaching practices. Their study reached good face validity and a criterion-referenced reliability between 83% and 92%, which indicates that evaluators' outcomes are very similar (Popham and Husek, 1969). Results from Badwan, Rentocchini and Tamvada's (2017) factor analysis for mentorship are shown in **table 11**.

Mentorship achieved a KMO of .86 and a significant Bartlett outcome of ($p < .000$) which indicates a strong convergent validity. **Table 4** in the previous chapter reveals that mentorship functions achieved strong Cronbach alpha reliability. Mentorship also achieved an AVE of .50 and its square root in **table 7** reached an adequate point. Mentorship as a second-order factor which combines three mentorship functions achieved a CR of .74.

Table 11 Mentorship pedagogy factor analysis - chapter 4

	Factor 1	**Factor 2**	**Factor 3**
F1: Teaching functions – 4 items (α=.88)			
Gives clear directions for assignments.	**.916**		
Describes objectives clearly.	**.872**		
Gives clear explanations and presentations.	**.785**		
Has instructional materials ready.	**.601**		
F2: Psychosocial functions - 4 items (α=.82)			
Questions me and makes me justify the decisions I make.		**.820**	
Demonstrates professional integrity.		**.750**	
Expects me to take critical feedback without being defensive.		**.746**	

Challenges me to think in ways I have never thought of before.		**.551**	
F3: Career-related functions – 4 items (α=.79)			
Asks me to get involved in additional projects that I would not normally do.			**.725**
Has suggested that I take risks in my career.			**.708**
Waits for me to take the initiative to set up meetings.			**.665**
Expects me to know what I need to do to accomplish my career goals.			**.664**
Eigenvalues	**4.71**	**2.02**	**1.34**
Per cent of variance	**35.2%**	**12.9%**	**8.43%**
Eigenvalues are above 1 and achieved a total variance of 56.5%			

In terms of nature of course as an explanatory variable, this study divided entrepreneurship education into theoretical and practical courses according to their objectives and contents (Leitch and Harrison, 1999). The study followed Piperopoulos and Dimov's (2015, p. 974) dichotomy of entrepreneurship education in **table 12** and relied on the explanations of Jamieson (1984), Linan et al (2008) and Fretschner and Weber (2013) foreach type of entrepreneurship education as an additional clarification to Piperopoulos and Dimov's (2015) work.

Information about courses' contents and objectives were obtained from their syllabi The 14 entrepreneurship courses applied learning practices such as reflection, questioning, interaction, debates, discussions, role play exercises and activity seminars that were integrated with traditional teaching methods such as lecturing and case studies and experiential methods such as business simulation, business planning and start-up pitching. The previous review of the literature identified these practices as *mentorship*. Entrepreneurship courses were selected according to Souitaris et al's (2007) and Nabi et al's (2016) UK 'good practice' course criteria. They discuss that an entrepreneurship course must include some of the following: i) taught component, ii) practical element such as business planning exercises, iii) university support such as market data resources and space meetings, and iv) business management component that includes general courses such as international business and finance.

Entrepreneurial thought and action, social entrepreneurship, global business, innovation and technology transfer and innovation, technology and the environment courses are categorised as theoretical entrepreneurship education. One must remember that learning innovation is a core element in entrepreneurship education (Cruz et al, 2009) and it must be taught to students (Kuratko,

2005) so they can be able to create firms that disrupt existing market segments through innovative products and services (O'Connor, 2013). Theoretical courses were designed to allow students to acquire skills such as conducting feasibility studies, identifying business opportunities, and critical skills. The courses were also designed to allow students to learn new theories in entrepreneurship and understand how new businesses work.

The courses are business models' development, entrepreneurial business management, brand development, managing high-growth business, new venture development and planning and new venture creation and simulation. These courses are designed to develop students' entrepreneurial skills through active learning such as practical business software, business plan creation competitions, and problem-solving training. Some of these courses gave an opportunity to students to introduce their ideas to entrepreneurs and investors who frequently visited their sessions.

Table 12 Dichotomy of entrepreneurship education (Piperopoulos and Dimov, 2015)

	Theoretical Courses	Practical Courses
Antecedents	Jamieson (1984): education about enterprise.	Jamieson (1984): education for enterprise.
	Garavan and O'Cinneide (1994): small business awareness education.	Garavan and O'Cinneide (1994): education and training for small business ownership.
	Levie (1999): "about" entrepreneurship.	Levie (1999): "for" entrepreneurship.
	Neck and Greene (2011): entrepreneurship as a process (the entrepreneur, the process, and the cognition world).	Neck and Greene (2011): entrepreneurship as a method.
Content and context	Entrepreneurial traits; personality characteristics; economic success.	Portfolio of techniques to encourage and practice entrepreneurship; "can" in entrepreneurship.
	Opportunity recognition; decision making; acquiring resources; implementing ideas; exit.	Generating ideas; team building; business planning; creativity; innovation; inspiration.
	How do people think entrepreneurially, corporate entrepreneurship; team entrepreneurship.	Pitching to potential investors.
	"Ought" in entrepreneurship; risks associated with entrepreneurship.	Growing your business; selling, marketing and networking.
		Unpredictable and contingent nature of entrepreneurship.
		Adapting to change; plan b; expecting and embracing failure.

Pedagogy	Teacher is the initiator of knowledge transfer (the expert).	Self-directed/active learning.
	Passive learning.	Learning by doing.
	Stand-and-deliver approach.	Team teaching (academics and practitioners).
	Entrepreneurship becomes a box which students either fit or do not.	Mentoring.
	Linear teaching of entrepreneurship in a step-by-step process.	Networking with entrepreneurs in residence.
	Guest speakers (usually selected to "fit" the stereotypical successful entrepreneur … Richard Branson, Steve Jobs, Bill Gates, and Jeff Bezos).	Pitching business ideas to investors and shareholders (team presentations).
	Case studies (usually adopted from textbooks).	Real-life (or at least simulations) business start-ups.
		Teaching with and through real-life entrepreneurs.
Pedagogy implications	Observation.	Action.
	Description.	Practice
	Understanding	Experimentation/decision making
	Predictions	Problem solving/opportunity grasping
	Decision	Reflection

4.3.2.3 Control variables

Participants also answered demographic questions. Gender, age, employment, prior entrepreneurial experience and education field represents the control variables of this study. They were originally derived from the studies by Karimi et al (2014), Kim (2010) and Piperopoulos and Dimov (2015). Age and education plays a role in explaining students' decision to either start a paid-employment or self-employment careers (Krueger et al, 2000; Zapkau et al, 2015). Prior entrepreneurial experience was included due to previous studies' (Miralles et al, 2016; Zapkau et al, 2015) confirmation of its strong impact on students' entrepreneurial intentions. Students from different educational areas who are taking entrepreneurship courses contribute to our understanding of why intentions change (Souitaris et al, 2007). Therefore, students' education field was added as one of the control variables. Although scholars (Souitaris et al, 2007; Tkachev and

Kolvereid, 1999) argued against using gender as a control variable, it will be beneficial to use it to check for invariance issues (Singh, 1995) in this study's model.

Tolerance of value and variance of inflation (VIF) tests show that this study does not suffer from multicollinearity problems. Tolerance of value exceeded 0.10 and VIF is below 10 (Pallant, 2005; Wang and Lin, 2016) for the independent variables (teaching functions, psychosocial functions and career-related functions). **Table 13** shows that variables were below the threshold of 0.9 (Hair et al, 2009). Since this study measures the phenomenon at a single point in time (Carr and Sequeira, 2007), it was decided to follow Podsakoff et al's (2003) remedies and a Harman single factor test that achieved a percentage value less than 50% (Byrne, 2010; Shirokova et al, 2015; Zapkau et al, 2015), which indicates that common method bias is not an issue.

Table 13 Correlation table

Variables	Mean	S. D	1	2	3	4	5	6	7	8	9	10
1. Mentorship P.	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.Nature of course	1.53	.50	.130**	.188*	.203**	.198**	-.126	.047	1			
8.Prior entrep	1.77	.43	-.157**	-.221**	-.291**	-.263**	.030	-.175**	-.138*	1		
9.Employement	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 < .01 level *p < .05 level

4.4 Results

4.4.1 Measurement model

After conducting an EFA method that clarified the variability among latent variables and removed cross-loading items, CFA technique was used to build the measurement model or the structure of the hypothesised model. It was also utilised to remove additional low factor-loadings found in items for each latent variable (Williams et al, 2010). The measurement model achieved a strong absolute fit (x^2=479.1; p=0.00; GFI=0.87; RMSEA=0.04; PClose=0.82), incremental fit (AGFI=0.84; TLI=0.96; CFI=0.96; IFI=0.97), and parsimonious fit (x^2/DF (331) = 1.8). According to Schreiber et al's (2006) review, the outcomes of this current research conclude a good model fit. Furthermore, factor loadings in the EFA and CFA analyses generated higher than the cutoff point of .4 (Ford et al, 1986).

4.4.2 Structural model

4.4.2.1 Nested modelling

The original hypothesised structural model achieved a strong absolute fit (x^2=509.2; p=0.27; GFI=0.99; RMSEA=0.03; PClose=0.49), Incremental fit (AGFI=0.93; TLI=0.97; CFI=0.99; IFI=0.99) and parsimonious fit (x^2/DF (355) = 1.43).

Following the work of Zapkau et al (2015) and Prabhu et al (2012), alternative models were compared against the original hypothesised model. Referring to **table 14**, **Model A** represents this study hypothesised framework. This model shows that partial mediation exists between the exploratory variables mentorship pedagogy and nature of course and TPB cognitive variables. **Model B** shows a full mediation framework by deleting the direct effect from nature of course to entrepreneurial intentions. **Model C** also displays a full mediation model. The pathway between nature of course and attitudes was deleted. **Model D** demonstrates a full mediation model by removing the direct pathway between nature of course and perceived behavioural control. **Model E** assumes that there are no direct effects between nature of course and all other variables and only full mediation works for this study. **Model F** also assumes that there is no direct impact from mentorship pedagogy to other variables. The results in **table 12** show that the more pathways are trimmed from the original model, the weaker the goodness of fit becomes. Therefore, this research proceeds to the main analysis with the original hypothesised **model A**.

Table 14 Nested structural model

Models	Structure	X^2	df	X^2/df	RMSEA	p-close	CFI	TLI	IFI	GFI	AGFI
Model A	Partial mediation (original)	509.2	355	1.43	0.03	0.49	0.99	0.97	0.99	0.99	0.93
Model B	Full mediation (NC→MP→EI)	509.3	356	1.43	0.06	0.24	0.98	0.89	0.98	0.98	0.90
Model C	Full mediation (NC→MP→ATT)	513.1	356	1.44	0.06	0.27	0.99	0.90	0.99	0.99	0.90
Model D	Full mediation (NC→MP→PBC)	515.3	356	1.45	0.07	0.22	0.99	0.88	0.99	0.99	0.89
Model E	No direct effects (From NC)	516.8	358	1.44	0.05	0.37	0.99	0.93	0.99	0.99	0.92
Model F	No direct effects (From MP)	528.4	358	1.48	0.18	0.00	0.90	0.28	0.91	0.96	0.64

Alternative direction effects

Model A: NC → MP ; NC → ATT, PBC & EI ; MP → ATT, PBC & EI **(Figure 3)**

Model B: NC → ATT, PBC & EI ; MP → ATT, PBC & EI

Model C: NC → MP ; NC → PBC & EI ; MP → ATT, PBC & EI

Model D: NC → MP ; NC → ATT & EI ; MP → ATT, PBC & EI

Model E: NC → MP ; MP → ATT, PBC & EI

Model F: NC → MP ; NC → ATT, PBC & EI

NC=Nature of course; MP=Mentorship pedagogy; ATT=Attitude; PB =Perceived behavioural control; EI=Entrepreneurial intention

4.4.2.2 SEM effects

Since Baron and Kenny's (1986) approach suffers from low statistical power (Mackinnon et al, 2002, 2007) to generate reliable results, a computerised bootstrap technique (Hayes, 2009; Mackinnon et al, 2007) was considered the most suitable method to provide evidential simultaneous effects between this study's explanatory variables and students' cognitive factors.

According to the SEM standardised estimates in **figure 4**, the nature of entrepreneurship courses does play a role in influencing students' attitude ($\beta = .12$, $p < .05$) and PBC ($\beta = .14$, $p < .05$) however, results shows no evidence that it impacts entrepreneurial intentions ($\beta = .51$, $p > .05$). Findings also show that the nature of entrepreneurship courses indirectly affects students' entrepreneurial intentions through attitudes ($\beta = .06$, $p < .05$) and PBC ($\beta = .15$, $p < .05$). However, there is no evidence that educators' mentorship pedagogy mediates the effect of the nature of entrepreneurship courses on students' entrepreneurial intentions ($\beta = -.01$, $p > .05$).

Although the nature of entrepreneurship courses can independently affect students' cognitive factors, the study reveals that educators' mentorship practices have a greater influence on students to form a business. Furthermore, educators' mentorship method has a stronger ability to impact students' entrepreneurial intentions through attitude and PBC than the nature of entrepreneurship courses. In conclusion, H1a and H1b are accepted, but H1c is rejected. Furthermore, H2a and H2b are accepted but H2c is rejected.

4.4.2.3 Control variables

In terms of control variables in **table 16**, gender ($\beta = -.14$, $p < .05$), employment ($\beta = .18$, $p < .05$), prior entrepreneurial experience ($\beta = -.12$, $p < .05$) and field of study ($\beta = -.15$, $p < .05$) play roles in influencing students' attitude towards entrepreneurship. However, students' PBC is only affected by their gender ($\beta = -.12$, $p < .05$) and prior entrepreneurial experience ($\beta = -.23$, $p < .05$). Students' age ($\beta = .11$, $p < .05$) is the only alternative variable that affects students' entrepreneurial intentions. Finally, students' gender ($\beta = .17$, $p < .05$) and their prior entrepreneurial experience ($\beta = -.12$, $p < .05$) have a role in influencing educators' mentorship practices during entrepreneurship courses.

4.4.2.4 Additional analyses

Different studies examined the impact of entrepreneurship education on entrepreneurial intentions between different times (Karimi et al, 2014), different students' education background (Kolvereid and Moen, 1997; Maresch et al, 2016) and between the level of students' entrepreneurial knowledge (Fayolle et al, 2006). Previous findings (Nabi et al, 2010; Wu and Wu, 2008) show that attitudes, PBC and entrepreneurial intentions are different among students with different academic majors, but are very similar in different types of entrepreneurship education. In contrast, recent results (Piperopoulos and Dimov, 2015) argue that perceiving entrepreneurship education as an 'undifferentiated whole' leads to a vague and biased view in explaining and understanding the antecedents of students' entrepreneurial intentions. Furthermore, the study explains that cognitive antecedents and entrepreneurial intentions are significantly different between theoretical and practical entrepreneurship education courses. If students' cognitive antecedents and intentions are different among many groups, then it is expected that they will also be different among theoretical and practical entrepreneurship education courses.

An independent sample t-test was conducted to examine the differences among theoretical and practical entrepreneurship courses. Referring to **table 15**, the mean scores of attitude (M1=4.22; M2=4.69), PBC (M1=2.67; M2=2.99) and entrepreneurial intentions (M1=3.22; M2=3.70) show that cognitive variables are different among both types of entrepreneurship course. Furthermore, **table 15** shows the p-value output for each variable which indicates that attitude, PBC and entrepreneurial intentions are significantly different under both sessions.

It is insufficient to claim differences between variables by observing their means under theoretical and practical courses (Fritz et al, 2012). Although R^2 results can be used as an alternative method to indicate the difference between students' cognitive variables in different sessions, it is however vital to compute Cohen's d to test the magnitude difference for each variable in different courses (Baguley, 2009; Fritz et al, 2012). Attitudes shows a value of (d = .37) which indicates a small- to medium-effect size (Rice and Harris, 2005). This indicates that students are perceiving and evaluating entrepreneurship in a different cognitive manner (Ajzen, 1991). PBC achieved a (d = .41) which is considered as a moderate effect size (Rice and Harris, 2005). It shows that students' self-confidence in their abilities to start a firm is different among theoretical and practical entrepreneurship education courses. Finally, students' entrepreneurial intentions attained a (d = .40) which is a medium effect size (Rice and Harris, 2005). This demonstrates that students from both types of course have different intentions towards entrepreneurship. These results conclude that attitude [$t(219) = -2.83$, $p < .05$], PBC [$t(219) = -3.07$, $p < .05$] and entrepreneurial intentions [$t(219) = -2.98$, $p < .05$] are different under theoretical and practical entrepreneurship forms of education.

The power level of each variable in the structural model is above the threshold of .80. This confirms the truthfulness of the p-value for each cognitive variable (O'Keefe, 2007) in **table 15**. Furthermore, generating a significant p-value, differences in magnitude and a post-hoc power of ($x > 80\%$) demonstrates a sufficient sample size and meaningful results (Lenth, 2001) for this study.

Table 15 – Significant differences

	Theoretical (n=104)		Practical (n=117)				
Variables	**Mean (M1)**	**S. D**	**Mean (M2)**	**S. D**	**p-value**	**Cohen's d**	**Power**
Attitude	4.22	1.31	4.69	1.13	.00	.37	80%
PBC	2.67	.78	2.99	.77	.00	.41	86%
Entrepreneurial intention	3.22	1.27	3.70	1.13	.00	.40	84%

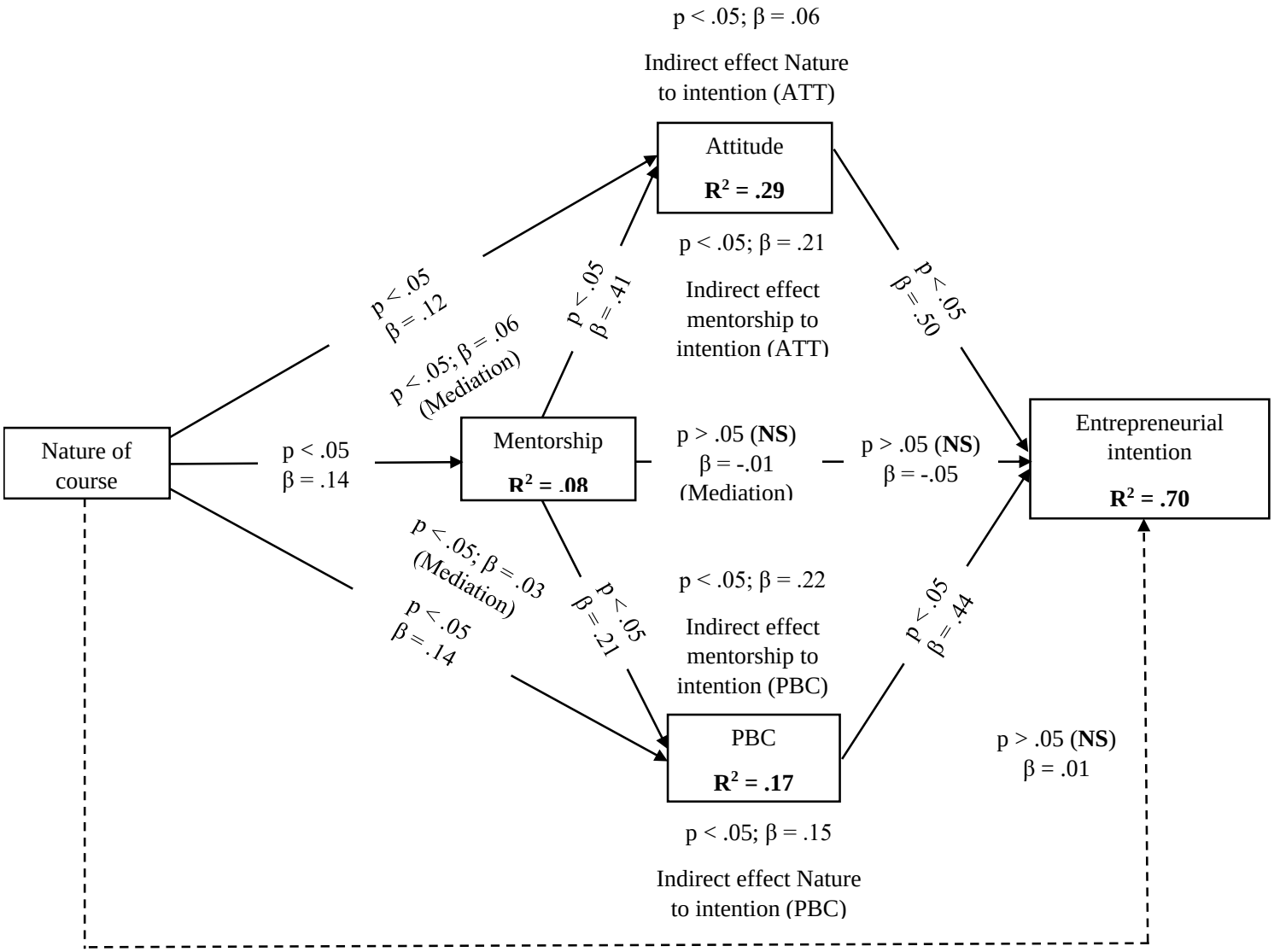

Figure 4 Structural model results - chapter 4

Table 16 Results for control variables

Pathways in structural model	Control variables				
Pathway 1: Nature of course and mentorship → Attitude	Gender	Age	Employment	Prior EE	Field
Standardszed effect	-.14	-.01	.18	-.12	-.15
p-value	.02	.92	.00	.04	.00
Pathway 2: Nature of course and mentorship → PBC					
Standardised effect	-.12	-.06	.04	-.23	-.07
p-value	.05	.40	.53	.00	.26
Pathway 3: Nature of course and mentorship → EI					
Standardised effect	.00	.11	.03	-.00	-.00
p-value	.81	.00	.41	.82	.88
Pathway 4: Nature of course → Mentorship					
Standardised effect	.17	.08	-.05	-.12	-.06
p-value	.00	.23	.40	.08	.38

4.5 Discussion

Findings show that educators' blended mentorship practices support the delivery of explicit and tacit entrepreneurial knowledge to students in entrepreneurship courses (Cope and Down, 2010). The relationship between the nature of entrepreneurship courses and educators' mentorship method within the mechanics of the hypothesised model in **figure 4** shows that theoretical and practical entrepreneurship education contents are influencing educators to use suitable mentorship practices that can positively affect students' attitudes, PBC and entrepreneurial intention. This means that educators understand the relationship between applying a more active teaching method and achieving the objectives of theoretical and practical entrepreneurship courses (Maritz and Brown, 2013).

The study shows that the direct effect of the nature of entrepreneurship courses on students' cognitive variables is stronger than the indirect impact through educators' mentorship method. From the theoretical courses' perspective, this indicates that students' attraction to, self-efficacy and intention about entrepreneurship will positively change if they obtain explicit information directly from available sources and materials (Fiet, 2000) rather than through the mentorship pedagogy.

From a practical courses' perspective, students gaining tacit knowledge directly from hands-on activities (Piperopoulos and Dimov, 2015) without the interference of educators' mentorship

practices during the activity will develop a more positive cognitive mind towards entrepreneurship. The findings of this study are aligned with previous findings (Miralles et al, 2016; Sommer and Haug, 2011) which found that entrepreneurial knowledge contents do have an impact on students' interest and self-confidence in their abilities to start a business. These results also point out that educators' mentorship practices do not simplify or filter knowledge to students during the learning process (Markert, 2001) nor do they transmit technical skills (Swap et al, 2001). However, the findings indicate that mentorship practices such as feedback, encouragement and challenging offer support in facilitating knowledge and skills (Swap et al, 2001). In summary, the component variables in **figure 4** shows that educators utilise their mentorship practices to support the effectiveness of students' tasks in theoretical and practical entrepreneurship courses.

The study findings show that educators' mentorship pedagogy is stronger than the components of entrepreneurship courses in affecting students' cognitive antecedents. To explain this, it is first acknowledged that the objective of traditional teaching is to transmit explicit knowledge to students (Mwasalwiba, 2010). However, when traditional pedagogy practices are mixed with active practices, mentorship is formed and educators shift their focus from delivering knowledge contents to constructing knowledge in students' cognitive minds (Krueger, 2007). Educators who become constructivists adopt a learning-centred approach (Krueger, 2007). In this regard, Lepisto and Ronkko (2013) described these types of educators as innovators who continuously develop entrepreneurial teaching for the purpose of achieving courses' objectives.

By deploying mentorship practices, educators are also intentionally creating an informal incidental learning approach that is considered as a hidden activity within classrooms (Marsick and Watkins, 2001). In addition to the previous point, this shows that learning is not only about constructing knowledge directly from entrepreneurial courses' knowledge contents (Wing Yan Man, 2006) but educators can also support knowledge structuring in students' cognitive minds as facilitators (Krueger, 2007; Jonson, 2008) by applying their mentorship practices.

Previously, the study created the binary variable 'nature of entrepreneurship courses' by dissecting it into theoretical and practical courses. The dichotomy was applied on the basis of entrepreneurship courses' knowledge contents and objectives. The results demonstrate that mentorship's indirect effect on intentions through attitude is stronger than the indirect impact of the nature of entrepreneurship courses. However, the nature of entrepreneurship courses' indirect

effect on students' intentions through PBC is weaker than the indirect influence of educators' mentorship method. Although the indirect effect of the nature of the course is weak, past research efforts confirmed that the nature of entrepreneurial knowledge impacts students' entrepreneurial intentions directly or indirectly through students' cognitive antecedents (Carr and Sequeira, 2007; Kolvereid and Moen, 1997; Yaghoubi Farani et al, 2017). However, the findings illustrate that no evidence exists to support the direct influence of entrepreneurial knowledge contents from the nature of the course on entrepreneurial intentions. Also, the indirect effect is stronger through students' PBC than attitudes. This is because entrepreneurial knowledge content is more related to students' PBC or — in other words their self-efficacy — than their attraction to engage in entrepreneurial activities (Yaghoubi Farani et al, 2017). This is in line with previous studies (Linan et al, 2013; Roxas, 2014) which found that PBC mediates the impact of entrepreneurial knowledge contents on entrepreneurial intentions. Attitude, however, is a cognitive variable that is constructed from thoughts and emotions (Botsaris and Vamvaka, 2014) instead of knowledge and skills. The ability of educators' mentorship practices to affect students' entrepreneurial intentions through attitudes indicates that educators are exercising an informal type of mentorship by providing encouragement and emotional support (Lee et al, 2016). To conclude this point, educators' mentorship practices do not transmit knowledge from courses' contents but instead support the overall entrepreneurship education course by constructing the existing knowledge at students' symbolic cognitive level where beliefs about a behaviour are created (Sarasvathy, 2004). This teaching strategy eventually leads to an impact on students' TPB antecedents.

In terms of control variables, this study reveals some interesting findings. Students' gender plays a role in affecting educators' mentorship practices. This is in line with Slater et al's (2007) study which argues that students' gender does influence the learning style of teachers. It also shows that lecturers are aware of gender differences when it comes to applying active learning strategies (Severiens and Ten Dam, 1994) or different mentorship practices. Also, students who are with or without prior entrepreneurial experience also significantly affect educators' mentorship practices. Although previous efforts (Fretschner and Weber, 2013; Jamieson, 1984) supported practitioners to create specific entrepreneurship courses for particular individuals with entrepreneurial experience (Mwasalwiba, 2010), the results of this study show that mentorship is a method that can adapt to students' professional backgrounds.

4.6 Implications

4.6.1 Theoretical implications

Past studies (Souitaris et al, 2007; Wilson et al, 2009) focused on students' participation in entrepreneurial courses rather than testing the influence of vital elements of entrepreneurship education (Blenker et al, 2014). This study extends Maritz and Brown's (2013) framework by operationalising the components of entrepreneurship education into testable variables that clarified how significant elements of entrepreneurship courses and educators' mentorship method complement each other to impact students' cognitive factors. In terms of how these elements work together, there is a notion that educators who do not have entrepreneurial experience rely on delivering theoretical knowledge or invite entrepreneurs to run practical entrepreneurship classes (Jack and Anderson, 1999). However, this research reveals the opposite. Educators' mentorship practices are extending the theory of inductive teaching and active learning and contributing to students' learning process to facilitate knowledge transmission from theoretical and practical contents and classroom activities (Piperopoulos and Dimov, 2015; Prince and Felder, 2006). This answers Higgins el al's (2013) question about how experience which is derived from tacit knowledge (Fayolle, 2008; Nonaka, 1994) is developed through pedagogy methods.

This study raises the question of why attitude is responding better as a mediator with educators' mentorship method than the knowledge content component of the nature of entrepreneurship course to impact entrepreneurial intentions. Previously, it was argued that personal characteristics and situational factors such as employment status affect individuals' attitudes, which in turn impacts entrepreneurial intention and behaviour (Krueger et al, 2000). Past evidence also points out that students' attitude responds more with entrepreneurial knowledge contents (Peterman and Kennedy, 2003; Watchravesringkan et al, 2013). While these different claims are true, the researcher also acknowledges that deployment of interactive practices such as mentorship techniques does change students' attitudes (O'Callaghan et al, 2015). Referring to the works of Vosniadou (1996) and Palinscar and Brown (1984), students' awareness of their own metacognition such as the realisation of their own attitudes and PBC towards entrepreneurship will respond better if they experience higher degrees of interaction with their educators during classroom sessions. Metacognition is one's awareness of their cognitive process (Vosniadou,

1996). When individuals engage in metacognition experience, it will influence their future behaviours (Dickson, 1981) or, in this case, students' entrepreneurial behaviour which appears directly after their entrepreneurial intentions and attitudes (Ajzen, 1991).

The entrepreneurship literature acknowledges the impact of information on individuals' behaviours through mental procedures (Gregoire et al, 2010). This study extends this claim and contributes to Sloman's (1996) systems of reasoning theory that explains how cognitive systems influence individuals' thinking, intentions and behaviours (Rydell and McConnell, 2006). Sloman's (1996) theory is divided into two systems; i) the *slow-learning* system is a slow accumulation of information over a period of time that enhances paired associations in individuals' memories, and ii) the *fast-learning* system that depends on logical and verbal representations (Rydell and McConnell, 2006; Rydell et al, 2006). This research demonstrates that theoretical and practical entrepreneurship courses are supporting students' slow-learning system to accumulate knowledge they have acquired since enrolling on the course. Furthermore, educators' mentorship practices are enabling students to associate new information and past knowledge (Rydell and McConnell, 2006) that was received from theoretical and practical entrepreneurship courses. This argument extends Ajzen's (1991) theory of planned behaviour about the importance of knowledge in affecting individuals' cognitions (Sommer and Haug, 2011) Furthermore, the study shows that educators support in re-constructing information after it is being transmitted to students.

4.6.2 Practical implications

Most universities evaluate entrepreneurship education programmes based on the number of business start-ups after graduation; however, this does not reveal the true effect of entrepreneurship education (Von Graevenitz et al, 2010). Explaining the degree of effects of entrepreneurship education core components allows practitioners to assess and focus on learning strategies that achieve socio-economic goals (Fayolle and Gailly, 2008; Maritz and Brown, 2013). Since little academic work attempted to evaluate the operationalisation of entrepreneurship education components (Duval-Couetil, 2013), this study provides practitioners with a quantifiable tool to measure educators' mentorship practices. It aids curriculum planners to design and regulate the sequential procedure of *when should entrepreneurship educators use mentorship during students' learning process*.

Previously, Palinscar and Brown's (1984) research on metacognition theory was applied practically by teachers who used metacognitive practices such as questioning and clarifying with students (Vosniadou, 1996). This study's positive findings indicate that educators do not need to push students to 'step outside of the classroom' (Cooper et al, 2004) to change their entrepreneurial mindset (Fayolle and Gailly, 2008). Therefore, Palinscar and Brown's (1984) work can influence future educators to implement the study mentorship practices on students during the transmission process of entrepreneurial knowledge contents from classroom tasks and activities. If this happens, educators will not only influence students' cognition and knowledge construction process but will also impact the nature of entrepreneurship classroom management (Emmer and Stough, 2001) and their own actions (Zanting et al, 1998).

4.7 Limitations and future studies

Although this study lists significant contributions, it is, however, not free from limitations. The study divided entrepreneurship education into binary theoretical and practical variables (Piperopoulos and Dimov, 2015) based on types of knowledge contents and course objectives and aim. It was difficult to create a Likert scale measure for tacit and explicit knowledge due to issues that could rise in the reliability of this study. Recognition and verbalisation procedure issues such as participants' attempts to recall and verbalise knowledge appears when researchers measure tacit and explicit knowledge (Lee, 1995). Future studies should rely on multiple-choice questions or questionnaires in general to measure knowledge contents (Lee, 1995). Also, it would be useful if future research divides entrepreneurship education according to Johannisson's (1991) or Fayolle and Gailly's (2008) types of learning instead of measuring entrepreneurship education holistically (Blenker et al, 2014).

The study is also limited to alternative factors that might have played a role in influencing students' cognitive antecedents. Future studies must consider educators' practical knowledge such as pedagogical, classroom management and overall education system knowledge (Zanting et al, 1998). These variables are components of educators' background profile that play a role in shaping students' entrepreneurial intentions (Fayolle and Linan, 2014). Educators' transmission of practical knowledge from mentorship practices creates a high level of interaction which will reduce cognitive distance through effective communication (Nooteboom, 2000). Scholars can begin

investigating the communication factor (Fleming et al, 2013) in a teacher to students' mentoring relationship. This is important due to its influence on students' absorption capacity which is a part of students' cognitive process (Nooteboom, 2000) and intentions towards entrepreneurship. Finally, this study did not consider the mentoring stages during an entrepreneurship session due to limitation in our time horizon. Students' expectations from the course and educators might change at each mentoring stage (Ensher and Murphy, 2010). Therefore, conducting a quasi-experiment research in a single entrepreneurship session time period would serve the purpose of explaining the changes in rather than influence on students' cognition at each mentoring stage.

4.8 Conclusion

Overall, the study explains that students' attitudes will be much more affected by educators' mentorship practices rather than from courses' contents. However, students' confidence in their skills to start a business will be influenced more from teachers' mentorship method rather than from the nature of entrepreneurship courses. This means that students' interest in entrepreneurship can be changed through high levels of interaction with their educator. Therefore, mentorship is an effective tool in entrepreneurship education that can change the nature of a course into an interactive one.

Past efforts were exerted to study the impact of entrepreneurship education on entrepreneurial intentions (Fayolle and Linan, 2014). Different researchers found that entrepreneurship education has either a positive (Fayolle and Gailly, 2015; Fitzsimmons and Douglas, 2011; Franke and Luthje, 2004; Sanchez, 2013) or negative effects (Oosterbeek et al, 2010; Souitaris et al, 2007) on entrepreneurial intention (Lima et al, 2014). These findings hide the potential impact of specific factors within entrepreneurship education (Couetil, 2013; Kolvereid and Moen, 1997; Linan and Fayolle, 2015; Tkachev and Kolvereid, 1999) but concludes that the nature of this type of education has different effects on students' entrepreneurial intentions (Herman and Stefanescu, 2017; Lans et al, 2010).

To encourage students to conduct entrepreneurial activities, one must understand the factors that play a role in shaping entrepreneurial intentions. It is difficult to acknowledge that entrepreneurship education impacts students' entrepreneurial intentions (Martin et al, 2013)

without dismembering its core components. However, we recognise that different types of entrepreneurship education courses provide different goals and contents (Sirelkhatim and Gangi, 2015). In this regard, the literature review shows that educators deploy mentorship practices in both theoretical and practical entrepreneurship courses. However, it was not clear how these practices interact with some of the components of these courses to influence students' intentions to form a business. This study clarified this point by claiming that mentorship method performed by educators during the sessions is part of the entire entrepreneurship education course, but is not responsible in filtering entrepreneurial contents. Also, educators' mentorship methods are used to construct practical knowledge in students' cognitive minds. Furthermore, the results show that developing a teaching method does not only depend on the course contents and objectives but also on students' needs to survive in the entrepreneurial world.

Chapter 5: The impact of traditional teaching, psychosocial and career-related pedagogy functions on students' entrepreneurial intentions

Abstract

Mentorship in entrepreneurship education consists of traditional teaching, psychosocial and career-related functions. Previously, it was concluded that these functions are practiced in organisations; however, the latest findings argue that educators are also applying these functions to achieve the goals of entrepreneurship education and establish an entrepreneurial mindset in students. The aim of this study is to compare the strength of effect between the three mentorship functions on students' semantic cognitive factors. The sample consists of UK university students who were enrolled in different entrepreneurship courses. After using a structural equation modelling method to analyse the data, results show that psychosocial mentorship function has no effect on students' cognitive variables; however, career-related and teaching functions had a positive influence in supporting students to build confidence in their skills to form a business and changing their mindset about entrepreneurship. It is concluded that changing students' personality into an entrepreneurial one will not bring about a change in their intentions to create new start-ups. Furthermore, traditional teaching and instrumental mentorship are key to an interactive faculty-student relationship. This study contributes to the MIND methodology, personal meaning system, and the research field of learning environment.

5.1 Introduction

Entrepreneurship education must introduce advanced methods that influence students' entrepreneurial intentions (Teerijoki and Murdock, 2014). In an educational setting, students who engage in certain behaviours are mostly influenced by their educators' mentorship practices, which is the most effective pedagogy to transform explicit knowledge into tacit knowledge during an entrepreneurship class (Feldon et al, 2014; Gimmon, 2014; Lin et al, 2010; Swap et al, 2001). Mentorship has the power to transform individuals' careers into entrepreneurship (Terjesen and Sullivan, 2011). Mentorship is a vital component of higher education (Webb et al, 2009). Previous studies argued that mentorship in an academic environment improves students' research skills and widens their learning experiences to support them to become scholars in their field of research (Webb et al, 2009). Moreover, mentors improve students' critical thinking skills, and provide career opportunities and support in career decision making (Sword et al, 2002; Waitzkin et al, 2006). Other studies (Barkham, 2005; Packard et al, 2004; Thomka, 2007) discussed that mentors in an educational setting develop personal relationships with students and act as friends, provide emotional support and encouragement. The majority of research on mentorship in an academic environment focused on peer and faculty mentorship (Webb et al, 2009). Peer mentorship is based on a friendship relationship that provides motivation to students, improves their grades, and addresses any personal issues that might otherwise impact their academic achievement (Webb et al, 2009; Rodger and Tremblay, 2003). Faculty mentorship is based on a professional relationship that enhances students' communication and interpersonal abilities (Budge, 2006; Webb et al, 2009).

Previously, this study found that mentorship impacts students' attitudes, perceived behavioural control (PBC) and entrepreneurial intentions in entrepreneurship education. Mentorship as an explanatory variable contains three hidden mentorship functions that were aggregately tested in this study. They are *career-related*, *psychosocial* and *traditional teaching* functions. The three functions were generated from an exploratory and confirmatory factor analysis. These three mentorship functions are successful in a work environment; however, they are still vague and suffer from a lack of evaluation in an academic setting (Curtin et al, 2016). It is important to examine educators' mentorship practices in a classroom environment (Liou et al, 2016) which starts by evaluating these three mentorship functions (Webb et al, 2009). In terms of

entrepreneurship education, studies such as Duval-Couetil (2013) and Fretschner (2014) overlooked the impact of educators' entrepreneurial pedagogies on cognitive antecedents in entrepreneurship education (Duval-Couetil, 2013; Fayolle and Linan, 2014). This concludes that the current study aims to compare the strength of direct and indirect influences of different mentorship functions on students' cognitive outputs in entrepreneurship education. Furthermore, this research continues from the previous chapters by testing each mentorship function in order to determine the optimal method for educators to use in entrepreneurship education.

This paper is structured as follows: it starts with a review of traditional teaching, psychosocial and career-related functions in general academic settings and entrepreneurship education specifically. Empirical evidence is also provided in the literature review to strengthen the basis of the study's conceptual framework. The paper proceeds by explaining the research methods, data sample and variables that will be tested in the study. After that, the results are presented and discussed. Finally, limitations are addressed to provide an opportunity for researchers to extend the findings of this study.

5.2 Literature Review

5.2.1 Traditional teaching

Educational entrepreneurship programmes introduce students to the 'science' and 'arts' parts of entrepreneurship (Heinonen and Poikkijoki, 2006). Educators apply traditional teaching practices to deliver the science component of entrepreneurship education (Scott et al, 2016). Traditional teaching is a transmissive methodology that is responsible in transferring theoretical information to students (Sterling, 2001). Unlike alternative active approaches, traditional teaching is a top-down static method where knowledge is received, stored and reproduced by learners (Marton et al, 1993; Wright et al, 1994). While this is one of the most used methods, it is argued that there should be a radical change in the way entrepreneurship is taught to students (Makimurto-Koivumaa and Belt, 2016). Many scholars and practitioners stood against traditional teaching in entrepreneurship education and stressed that educators should apply active learning practices instead (Hoppe, 2016). This is because traditional teaching does not influence students' entrepreneurial intentions, which is the overall aim of an entrepreneurship programme (Cooper et al, 2004; Peterman and Kennedy, 2003). On the other hand, ignoring the traditional teaching

component of entrepreneurial learning disregards the theoreticalcomponent of entrepreneurship which is the spark of an entrepreneurial mindset (Johnsson et al, 2016). It is significant to provide students with full knowledge about entrepreneurship as an alternative career option through traditional teaching before aiming to improve their entrepreneurial skills through active teaching practices.

Teaching students' practical skills such as writing a business plan is insufficient to create entrepreneurial mindsets; however, trying to change students' attitudinal factors through theoretical knowledge is key to establishing a positive perception about entrepreneurship (Makimurto-Koivumaa and Belt, 2016). Establishing entrepreneurial mindsets takes place in awareness entrepreneurship education where educators use traditional teaching to deliver basic knowledge about the nature of entrepreneurship (Fretschner and Weber, 2013). This type of education aims to increase students' attitudes, which in turn increases their entrepreneurial intentions (Linan et al, 2011). Attitude explains individuals' evaluation and attraction towards a behaviour (Ajzen, 1991), while intention is a planned behaviour based on the notion that the behaviour is desirable and feasible (Barbosa et al, 2007; Krueger, 2003; Segal et al, 2005). Students' perceived behavioural control (PBC) which is the second cognitive component that leads to an entrepreneurial mindset is influenced through mastery skills (Kakouris, 2015; Prabhu et al, 2012). Practical pedagogy practices such as experimental learning and simulation games or active learning methods such as reflection, feedback and interaction impact students' levels of confidence or PBC to perform an entrepreneurial behaviour (Audet, 2004; Carr and Sequeira, 2007; Krueger and Brazeal 1994; Linan et al, 2008; St-Jean and Mathieu, 2015). Although traditional teaching is the least used pedagogy in entrepreneurship education, studies are still acknowledging its existence by opposing it (Akinboye and Pihie, 2014).

Traditional teaching delivers knowledge and influences students' perceptions or attitudes towards entrepreneurship (Krueger, 2007). Previously, many scholars suggested ways to improve the effectiveness of entrepreneurship education by either developing the concept of traditional teaching or eliminating it from the entire curriculum (Fiet 2000; Prabhu et al, 2012). It is argued that there is a lack of evidence on the effectiveness of traditional teaching in entrepreneurship education (Scott et al, 2016). The literature of entrepreneurship education is rich in arguments

about the best practices to teach entrepreneurship; however, previous debates attempted to support their arguments by measuring the impact of theoretical entrepreneurship education (Fretschner and Weber, 2013; Piperopoulos and Dimov, 2015) and not traditional teaching itself which is the core component of a theoretical education (Matlay and Carey, 2007). Therefore, we hypothesise the following:

H1: Traditional teaching positively impacts students' entrepreneurial intentions through attitude.

5.2.2 Psychosocial mentorship pedagogy

The psychosocial approach is a type of mentorship pedagogy that boosts individuals' self-efficacy, self-worth and identity (Eby et al, 2010; Kram, 1985). It also assists individuals' personal and mental development process through practices such as providing advice and feedback (Fraser and Fisher, 1986; Kram, 1985). The most important dimension of a psychosocial mentorship is the quality of the relationship between the mentor and mentee (Mertz, 2004). Schockett and Haring-Hidore (1985) recognised role modelling, counselling, encouraging and moving from a transitional figure to a friend as components of psychosocial mentorship that increases the interaction between the mentor and the mentee. Eller et al (2014) study continued Schockett and Haring-Hidore's (1985) work by finding that interactive communication, feedback, challenging and caring are also core practices of a psychosocial mentorship pedagogy. While these methods exist in a workplace environment, they are not clearly explained in an educational setting as very few scholars researched these practices in this area (Crisp and Cruz, 2009; Mertz, 2004). Furthermore, Campbell et al (2012) urged future studies to examine psychosocial pedagogy in an educational environment instead of a workplace environment.

Psychosocial mentorship pedagogy practices were recently discovered in an entrepreneurship educational setting (Gershenfeld, 2014). Educators in entrepreneurship education apply psychosocial pedagogy on students in the form of reflection, feedback, challenging, questioning and reasoning (Campbell et al, 2012; Wilbanks, 2013). These practices develop students' psychosocial entrepreneurial competencies while learning about entrepreneurship (Linan et al, 2008; Santos et al, 2013). More importantly, psychosocial methods influence individuals' self-efficacy and entrepreneurial intentions (Rideout and Gray, 2013). According to Bandura (2006),

individuals' self-efficacy is influenced by repetition of an activity, experience, modelling and verbal persuasion. From the theory of planned behaviour perspective (Ajzen, 1991), these active practices affect students' PBC which eventually leads to an entrepreneurial behaviour (Kakouris, 2015; Prabhu et al, 2012; Rideout and Gray, 2013).

To improve students' entrepreneurial skills, educators must focus on positively influencing their PBC in order to have the confidence to engage in an entrepreneurial activity (Hattab, 2014; Sanchez, 2013). Very few studies found that psychosocial mentoring practices impact students' self-efficacy more than attitudes (Eby et al, 2008; Ragins and Cotton, 1999; Scandura and Viator, 1994; St-Jean and Mathieu, 2015; Zimmerman and Paul, 2007). Other studies also found that PBC mediates the impact of psychosocial practices on students' intentions to engage in an academic matter (Vayre and Vonthron, 2017). This concludes that educators' psychosocial pedagogy practices impact students' intentions through PBC. Therefore, we hypothesise that:

H2: Psychosocial pedagogy positively impacts students' entrepreneurial intentions through PBC.

5.2.3 Career-related mentorship pedagogy

Previous theories explained how individuals realise their career goals. Drawing on Vroom's (1964) expectancy theory, individuals define their career objectives by evaluating their self-efficacy and external influences such as job displacement or work experience (Segal et al, 2005). Social cognitive career theory (Bandura, 1976; Lent and Brown, 2013; Lent et al, 1994, 2000) also explained that self-efficacy or PBC (Ajzen, 1991) aids individuals to assess their self-confidence to achieve a career goal (Curtin et al, 2016). Previous research focused on how self-efficacy changes inside one's mindset to explain students' entrepreneurial intentions (Tran and Korflesch, 2016); however, only few studies have examined the impact of external factors that can influence self-efficacy (Hindle et al, 2009). Such studies (Scherer et al, 1989) found that individuals will be more likely to choose a specific career if they observed a person who succeeded in that same occupation. In this regard, BarNir et al (2011) found that role models who use social persuasion practices (Engle et al, 2010) in entrepreneurship education courses have a positive effect on students' entrepreneurial intentions through their self-efficacy. Other studies (Liguori et al, 2017; Pfeifer et al, 2016) proposed that personal variables such as gender and minority status (Kolvereid,

1996) and prior employment and entrepreneurial experience positively changes ones' self-efficacy beliefs about entrepreneurship as a career choice. Also, Tran and Korflesch (2016) proposed that students' personality traits, role models and entrepreneurship education directly affect their PBC. One of the core issues with previous studies is that personality characteristics do not influence students' PBC towards entrepreneurship (Gartner, 1988; Thompson, 2009). Another issue is the lack of explanation of how educators can impact students' PBC in entrepreneurship education to have the confidence in starting an entrepreneurial career (Fayolle and Linan, 2014).

Career-related mentorship pedagogy supports individuals to realise their career goals by enforcing additional tasks and guidance to establish future career plans (Allen et al, 2004; Kram, 1985; Nora and Crisp, 2007). Moreover, career mentoring practices foster proactivity between the mentor and mentees which leads to clarity in future career objectives (Wanberg et al, 2006). Career-related or instrumental mentorship includes coaching, protection, challenging assignments, exposure and visibility (Blake-Beard et al. 2011; Chao et al, 1992; Kram, 1985). Achieving career goals also relies on practices such as allowing individuals to take initiatives, involving them with additional projects and taking risks during a mentoring relationship (Ensher and Murphy, 2010). In an educational environment, these active career-related practices provide students with opportunities to gain sufficient information and knowledge about the career they wish to pursue (Blake-Beard et al, 2011). Furthermore, they offer students solid information about the different types of entrepreneurial goals and opportunities they may encounter after completing an entrepreneurship course (Curtin et al, 2016; Mwasalwiba, 2010). Drawing on the social cognitive career theory (Bandura, 1976; Lent and Brown, 2013; Lent et al, 1994, 2000), a career objective and intentions are predicted by individuals' PBC (Ajzen, 1991) or self-efficacy which in turn is influenced by instrumental career mentorship practices (Curtin et al, 2016) in entrepreneurship education. This generates the following hypotheses:

H3: Career-related mentorship pedagogy positively impacts students' entrepreneurial intentions through PBC.

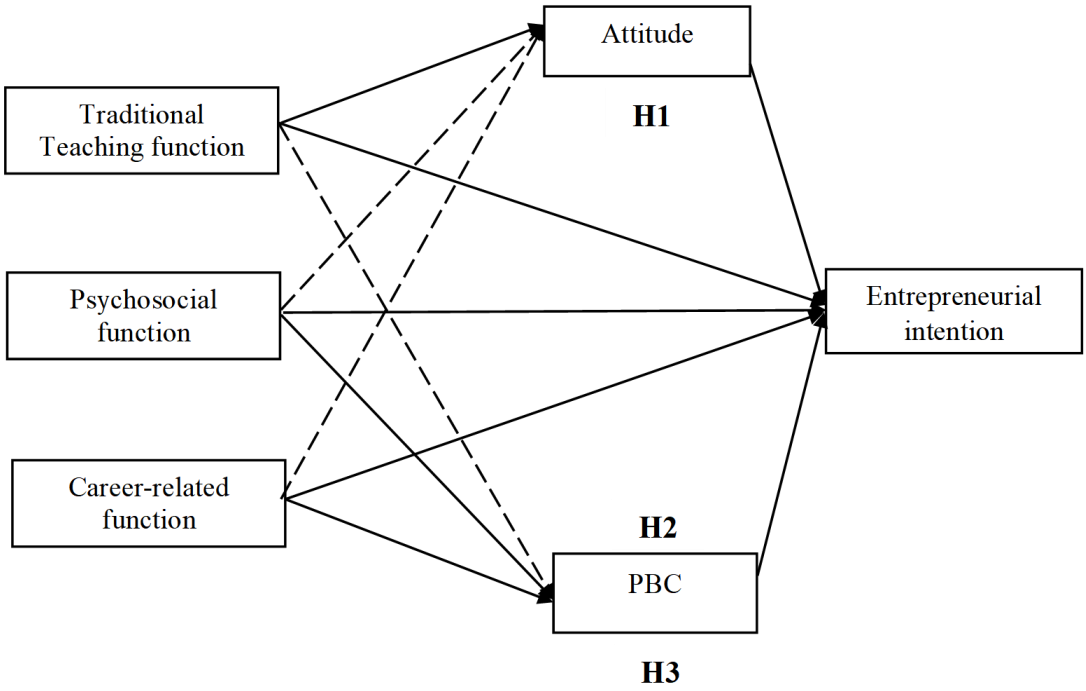

Figure 5 Conceptual model

5.3 Data and methods

5.3.1 Procedure

Traditional teaching, psychosocial and career-related functions are forms of mentorship in an educational environment (Nora and Crisp, 2007). Previous studies examined each mentorship function by explaining their effects on cognitive and personality factors (Allen et al, 2008; Ferreira et al, 2012; Thompson, 2009). These studies (Ragins and McFarlin, 1990; Scandura and Ragins, 1993) tested the impact of psychosocial mentorship function by applying quantitative analysis such as regression, t-test and correlation. Other studies (Noe, 1988; Scandura, 1992) examined the impact of career-related mentorship function by using analytical techniques such as regression and ANCOVA. It is argued that structural equation modelling instead of basic statistical analysis such as correlation and regression is the optimal solution to test the impact of explanatory variables on cognitive variables (Lorz et al, 2011; McGee et al, 2009; Shumacker and Lomax, 2010). SEM tests complicated conceptual frameworks generated from prior literature (Baron and Kenny, 1986; Crockett, 2012; Rideout and Gray, 2013) and produces estimated effects and goodness of fit results

from a single analysis (Prabhu et al, 2012). Furthermore, a SEM diagram provides a deeper explanation about the exposure of a dependent variable to an exploratory variable. Lastly, since this study implements a multi-item scale in the survey then a SEM approach is in a better position to measure instantaneous variables derived from multi-item responses (McGee et al, 2009).

5.3.2 Data and sample frame

To avoid any bias in the study (Berk et al, 2005), a survey method was used to collect data from students instead of educators who were enrolled in different forms of entrepreneurship courses in six different UK universities. Information about courses' contents and objectives was obtained from their syllabus. The 14 entrepreneurship courses applied learning practices such as reflection, questioning, interaction, debates, discussions, role play exercises and activity seminars that were integrated with traditional teaching methods such as lecturing and case studies. Based on arguments from previous chapters, these are also called mentorship practices that are performed by educators in entrepreneurship courses. Items in the questionnaire were verified from a group of 12 individuals that were involved in entrepreneurship education. Few items that were irrelevant to participants in the questionnaire were omitted. Furthermore, the wording of some items was improved according to participants' suggestions.

Data collection took place between March and May 2016: 267 questionnaires were distributed to students at the beginning of their classes and these took between 10 and 20 minutes to complete. Students were informed of the purpose of this research and why they were selected as the study sample. Although 236 students completed the survey, the number was reduced to 221 students due to outliers. The final sample count was 221 students who were studying about and for entrepreneurship, representing a response rate of 88.3%. It is worth noting that mean imputation method was not used in this study due to its potential negative effect on the statistical analysis (Acock, 2005; Donders et al, 2006; Greenland and Finkle, 1995).

In terms of the sample characteristics, there were more females (59%) than males (41%) who were studying entrepreneurship. Most students were up to the age of 24 (80 %). The rest of the students were between the ages of 25 and 30 (15%) and above 31 years old (5%). Most students did not have prior entrepreneurial experience (77%) while few of them engaged in an entrepreneurial activity (23%). Most students were majoring in business studies but taking an entrepreneurship course (67.9%). Some students were majoring in entrepreneurship and innovation (24.8%). Health

and science students (6.8%) were also taking an entrepreneurship course and finally only 0.5% percent were majoring in arts. In terms of employment, most students did not have a job (65.6%) while other students were working on a part-time basis (28.5%) and few of them were in a full-time job (5.9%). Some students were taking practical entrepreneurship courses (52.9%) while others were enrolled in theoretical courses (47.1%).

Examinations, revision periods and other academic concerns prevented this study to collect more data. However, the researcher achieved the required sample size in terms of the statistical requirements of factor analysis (Hoelter, 1983) and structural equation modelling (Byrne, 2010; Shumacker and Lomax, 2010) to generate reliable and sufficient results.

5.3.3 Variables

5.3.2.1 Overview

The variables are derived from the questionnaire that contains three sections. The first section lists 43 items that evaluate educators' mentorship practices in entrepreneurship education. Section two contains 22 items that assess students' attitude, PBC and entrepreneurial intentions. The last section asks students' demographic questions which are used as control variables. All items followed a 1 = strongly disagree to 6 = strongly agree scale.

5.3.2.2 Dependent variables

It is revealed that TPB was the most dominant model in the field of entrepreneurial intentions due to its validity and reliability (Schlaegel and Koenig, 2013). Lortie and Castogiovanni's (2015) systematic literature review also exposes that 91% of previous research work confirms the relationship between the elements of TPB and entrepreneurial intentions. Previous scholars who applied TPB have also argued that it is the most suitable model to measure a student's intention towards entrepreneurship as a career choice. Finally, it is confirmed that TPB has the power to predict different types of intentions such as creating a firm, developing an existing one or recognising an opportunity (Fayolle et al, 2006; Lortie and Castogiovanni, 2015; Shook et al, 2003; Van Gelderen, 2008). These arguments supported the use of TPB as this study's leading theory to measure students' cognitive variables.

Linan and Chen's (2009) entrepreneurial intention questionnaire (EIQ) was used to measure the antecedents of students' entrepreneurial intentions. It contains four variables that achieved high

reliability; i) entrepreneurial intention (α=.94), ii) PBC (α=.89), iii) subjective norms (α=.77) and iv) attitude (α=.89). Linan and Chen's (2009) work also shows a good convergent and discriminant validity. EIQ achieved a Kaiser-Meyer-Olkin (KMO) of .91, a Bartlett's Sphericity test of ($p < .001$) and showed an uninflated correlation between attitude, SN, PBC and entrepreneurial intention. However, based on the arguments from the literature findings (Krueger et al, 2000; Linan and Chen, 2009; Lortie and Castogiovanni, 2015) the decsions was taken to exclude SN from the analysis.

5.3.2.3 Explanatory variables

Mentorship in an educational environment relies on three core components; they are i) relationship, ii) mentorship effectiveness, and iii) knowledge transmission (Berk et al, 2005; Ensher and Murphy, 2010; Evertson and Smithey, 2000). The mentorship relational challenge scale (Ensher and Murphy, 2005, 2010) or (MRCS) was used in the survey to evaluate the mentoring practices educators use on their students to maintain the relationship during an entrepreneurship course. Maintaining a good relationship between the teacher (mentor) and students (mentees) is a core component of mentoring characteristics (Nora and Crisp, 2007). MRCS achieved sufficient face validity and contained three mentorship practices that are highly reliable; they are i) requiring commitment and resilience (α=.91), ii) measuring up to mentor standard (α=.88), and iii) career goal and risk orientation (α=.80).

The questionnaire also used Berk et al's (2005) mentorship effectiveness scale (MES) to examine mentorship pedagogy practices in a mentoring relationship between students and the educator. Since traditional teaching is a core component of mentorship in an educational setting (Nora and Crisp, 2007; Schockett and Haring-Hidore, 1985), the researcher decided to include Evertson and Smithey's (2000) items that were initially formed from interviews conducted with individuals who received mentorship to develop their traditional teaching practices. Their study achieved good face validity and a criterion-referenced reliability between 83% and 92%, which indicates that evaluators' outcomes are very similar (Popham and Husek, 1969).

5.3.2.4 Control variables

Gender, age, employment, prior entrepreneurial experience, education field and type of entrepreneurship course are used in the analysis as the control variables that were derived from the studies of (Karimi et al (2014), Kim (2010) and Piperopoulos and Dimov (2015). Previous studies

proved that these control variables offer alternative explanations for to why certain cognitive outputs change in students' minds (Krueger et al, 2000; Miralles et al, 2016; Souitaris et al, 2007; Tkachev and Kolvereid, 1999; Zapkau et al, 2015). According to the results of the multicollinearity test, tolerance of value exceeded 0.10 and VIF is below 10. These results satisfied the required threshold of a multicollinearity test (Wang and Lin, 2016; Pallant, 2005). Since this study measures the phenomenon at a single point in time (Carr and Sequeira, 2007), it was decided to follow Podsakoff et al's (2003) remedies and a Harman single factor test that achieved a percentage value less than 50% (Byrne, 2010; Shirokova et al, 2015; Zapkau et al, 2015) which indicates that common method bias is not an issue. Correlation results presented in **table 17** show that variables were below the threshold of 0.9 (Hair et al, 2009).

Table 17 Correlation table - chapter 5

Variables	Mean	S. D	1	2	3	4	5	6	7	8	9	10	11	12
1.CRF	3.25	.82	1**(0.71)**											
2.PSF	3.73	.74	.376**	1**(0.74)**										
3.TTF	4.31	.90	.391**	.707**	1**(0.87)**									
4.ATT	4.41	1.25	.309**	.276**	.329**	1**(0.92)**								
5.PBC	2.78	.78	.326**	.136*	.159*	.466**	1**(0.80)**							
6.EI	3.47	1.22	.336**	.155*	.205**	.733**	.683**	1**(0.87)**						
7.Gender	1.59	.49	.068	.081	.158*	-.089	-.090	-.092	1					
8.Age	1.26	.55	.031	.076	.128	.079	.029	.161*	-.059	1				
9.Employment	2.60	.60	-.055	-.077	-.081	.114	-.004	.064	.082	-.249**	1			
10.Prior entrep	1.77	.43	-.150*	-.089	-.131	-.217**	-.287**	-.262**	.030	-.175**	.050	1		
11.Nature of course	1.53	.50	.176**	.159*	.074	.185**	.201**	.197**	-.126	.047	-.029	-.138*	1	
12.Field	1.84	.54	-.082	.024	-.077	-.170*	-.071	-.130	-.098	-.082	.017	.126	.129	1

***Squared root AVE is in bold**

**p < .01 level *p < .05 level

5.4 Results

5.4.1 Measurement model

5.4.1.1 Validity and reliability

5.4.1.1.1 Validity

The validity and reliability were assessed by using an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA). EFA generated three valid factors for this study's dependent variables. CFA results show that i) attitude received an average variance extract (AVE) of .84, ii) PBC received an AVE of .64, and iii) entrepreneurial intentions received an AVE of .76. EFA analysis shows that these three cognitive variables achieved a KMO of .93 and a Bartlett's test of Sphericity of ($p < .000$). **Table 19** shows the EFA results.

EFA also generated three valid mentorship functions. CFA shows that: i) Traditional teaching function received an AVE of .75; ii.) Psychosocial mentorship function reached an AVE of .54, and iii) Career-related mentorship functions got an AVE of .50. EFA reveals that the three mentorship explanatory variables achieved a KMO sample adequacy of .86 and a Bartlett's test of Sphericity of ($p < .000$). **Table 20** shows EFA results for teaching, psychosocial and career functions.

Previous studies supported this research to justify the names of the latent explanatory variables. Factor 3 is named "Career-related functions" based on previous studies findings (Kram, 1985; Nora and Crisp, 2007). Mentors who implement career function practices support students to realise their career goals by i) offering suggestions based on the nature of their future career, and ii) imposing additional tasks that nurture protégés' career plans and encourage them to achieve their goals (Ensher and Murphy, 2010; Nora and Crisp, 2007). Factor 2 is named "Psychosocial functions" which is a core function in mentorship that improves students' self-efficacy and contributes to their personal development and mental characteristics through advice, reflection and feedback (Ensher and Murphy, 2010; Fraser and Fisher, 1986; Kram, 1985; Ragins and McFarlin, 1990). Factor 1 is named "Teaching function" based on the arguments that transmission of theoretical knowledge is one of the core functions of mentorship in an educational setting (Anderson and Shannon, 1998; Crasborn et al, 2011; Nora and Crisp, 2007).

In terms of discriminant validity, it was examined by comparing the square root of AVE with the entire correlation construct in **table 17**. AVE square roots were higher than the correlated relationship between variables (Fornell and Larcker, 1981; Karimi et al, 2014).

5.4.1.1.2 Reliability

Results of the reliability test in **table 19** shows that attitude (α = .95), PBC (α = .89) and Entrepreneurial intentions (α = .95). CFA also reveals that attitude achieved a composite reliability (CR) of .95, PBC achieved a CR of .90 and entrepreneurial intention reached .95 reliability. In terms of the three mentorship functions, traditional teaching function shows a reliability of (α = .88; CR= .89), psychosocial function achieved (α = .82; CR = .82) and career-related function achieved a reliability of (α = .79; CR = .79)

5.4.1.1.3 Common method bias

This study followed Podsakoff et al' (2003) remedies for a common method bias due to its attempt to measure the impact of traditional teaching, psychosocial and career-related mentorship functions on students' cognitive factors at a single point in time (Carr and Sequeira, 2007). The researcher accumulated explanatory measures from different studies; the participants were assured that their responses were confidential, and criterion variables were presented in the same questionnaire but in different sections. A Harman single latent factor test was conducted which achieved less than 50% (Carr and Sequeira, 2007; Podsakoff et al, 2003; Shirokova et al, 2015). This indicates that common method bias is not an issue for this study.

Table 18 Validity and Reliability of explanatory and dependent variables

Constructs	Reference	No. of items	α	CR	AVE
Teaching function	Evertson and Smithey (2000) (e.g., "Gives clear explanations and presentations")	4	.88	.89	.75
Psychosocial function	Ensher and Murphy (2010) (e.g., "Challenges me to think of way I have never thought of before"; "Questions me and make me justify the decisions I make")	4	.82	.82	.54
Career-related function	Ensher and Murphy (2010) (e.g., "Asks me to get involved in additional projects that I would normally not do")	4	.79	.79	.50
Attitude	Linan and Chen (2009) (e.g., "Being an entrepreneur would entail great satisfaction to me")	4	.95	.95	.84
PBC	Linan and Chen (2009) (e.g., "I know the necessary practical details to start a firm")	4	.89	.90	.64
Entrepreneurial intention	Linan and Chen (2009) (e.g., "I will make every effort to start and run my own firm")	4	.95	.95	.76

AVE: Average Variance Extract; CR: Composite Reliability

Table 19 EFA results - chapter 5

	Mean	S.D	F1	F2	F3
F1: EI – 6 items (α=.95)					
I am determined to create a firm in the future.	**3.99**	**1.51**	**.977**		
I will make every effort to start and run my own firm.	**3.84**	**1.49**	**.944**		
I have very seriously thought of starting a firm.	**4.14**	**1.51**	**.826**		
I have the firm intention to start a firm someday.	**4.22**	**1.55**	**.790**		
My professional goal is to become an entrepreneur.	**3.77**	**1.51**	**.769**		
I am ready to do anything to be an entrepreneur.	**4.22**	**1.55**	**.619**		
F2: Perceived Behavioural Control – 6 items (α=.89)					
I know the necessary practical details to start a firm.	**3.61**	**1.32**		**.910**	
I know how to develop an entrepreneurial project.	**3.65**	**1.29**		**.808**	
I can control the creation process of a new firm.	**3.67**	**1.18**		**.692**	
To start a firm and keep it working would be easy for me.	**3.36**	**1.14**		**.691**	
If I tried to start a firm, I would have a high probability of succeeding.	**3.59**	**1.25**		**.686**	
I am prepared to start a viable firm.	**3.60**	**1.37**		**.627**	
F3: Attitude – 4 items (α=.95)					
Being an entrepreneur would entail great satisfaction for me.	**4.71**	**1.39**			**.979**
If I had the opportunity and resources, I'd like to start a firm.	**4.77**	**1.36**			**.895**
A career as entrepreneur is attractive for me.	**4.52**	**1.41**			**.875**
Among various options, I would rather be an entrepreneur.	**4.29**	**1.44**			**.739**

Eigenvalues	**9.04**	**2.11**	**1.07**
Per cent of variance	**53.6%**	**10.9%**	**6.70%**
Eigenvalues are above 1 and achieved a total variance of 71.2%			

Table 20 EFA results for traditional, psychosocial and career functions

	Mean	**S.D**	**F1**	**F2**	**F3**
F1: Teaching functions – 4 items (α=.88)					
Gives clear directions for assignments	**4.51**	**1.15**	**.916**		
Describes objectives clearly	**4.41**	**1.09**	**.872**		
Gives clear explanations and presentations	**4.62**	**1.09**	**.785**		
Has instructional materials ready	**4.51**	**1.15**	**.601**		
F2: Psychosocial functions - 4 items (α=.82)					
Questions me and makes me justify the decisions I make	**4.37**	**1.35**		**.820**	
Demonstrates professional integrity	**4.67**	**1.15**		**.750**	
Expects me to take critical feedback without being defensive	**4.31**	**1.13**		**.746**	
Challenges me to think of ways I have never thought of before	**4.25**	**1.25**		**.551**	
F3: Career-related functions – 4 items (α=.79)					
Asks me to get involved in additional projects that I would not normally do	**3.37**	**1.38**			**.725**
Has suggested that I take risks in my career	**3.39**	**1.33**			**.708**
Waits for me to take the initiative to set up meetings	**3.69**	**1.32**			**.665**
Expects me to know what I need to do to accomplish my career goals	**3.63**	**1.26**			**.664**
Eigenvalues			**4.71**	**2.02**	**1.34**
Per cent of variance			**35.2%**	**12.9%**	**8.43%**
Eigenvalues are above 1 and achieved a total variance of 56.5%					
Tolerance ($1 – R^2$)			**.514**	**.485**	**.751**
VIF ($1 / 1 – R^2$)			**1.946**	**2.060**	**1.332**

5.4.1.1.4 Goodness of fit

The measurement model contains six latent variables that contain 28 items. Factor loadings for each item inthe latent variables exceeded the cutoff point of 0.4. Following Schreiber et al's (2006) recommendations, the measurement model achieved a strong absolute fit (x^2=469.5; p=0.00; GFI=0.87; RMSEA=0.04; PClose=0.84), incremental fit (AGFI=0.84; TLI=0.96; CFI=0.97; IFI=0.97), and parsimonious fit (x^2/DF (327) = 1.43. These indicators also satisfy the thresholds of construct validity (Strauss and Smith, 2009).

5.4.2 Structural model

5.4.2.1 Model fit

A data imputation method was employed in order to insert items generated in tables 3 and 4 in latent variables. This allowed the researcher to simplify the structural model and create testable observed variables. The structural model achieved a strong absolute fit (x^2=25.86; p=0.27; GFI=0.98; RMSEA=0.06; PClose=0.27), incremental fit (AGFI=0.90; TLI=0.92; CFI=0.98; IFI=0.98), and parsimonious fit (x^2/DF (14) = 1.84). These measurements indicate that the data will be analysed on a strong hypothesised model which will generate trustworthy results.

5.4.2.2 Alternative scenarios

Other hypothesised models that are theoretically relevant to this study must be considered as well. By comparing alternative models (Prabhu et al, 2012; Zapkau et al, 2015), this study can generate the optimal scenario that has a strong construct validity (Strauss and Smith, 2009).

Referring to **table 21**, **model A** represents the original hypothesised model. The framework suggests that the partial mediation between the three types of mentorship and cognitive variables creates strong model fit. **Models B, C and D** suggest that there is no direct effect from traditional teaching, psychosocial and career-related mentorship functions to entrepreneurial intentions. Their goodness of fit slightly changed from the original model and did not improve. This suggests that the construct validity of models A to D is strong to generate reliable results.

In terms of direct effects, **Model E** was formed by removing the pathway between traditional teaching and attitude. This reduction in the strength of the model shows that traditional teaching must be well fitted with students' attitudes. **Model F** goodness of fit did not change from the original hypothesised model. This means that the pathway from traditional teaching to PBC does not improve the overall model fit and theoretically, they might not be related to one another. In terms of psychosocial mentorship, **models G and H** did not show drastic improvement in the overall model. This indicates that psychosocial mentorship structural relationship with attitudinal variables does not play a role in building the entire construct. **Models I and J** model fit shows weakness. In terms of **model I**, when the pathway between career-related mentorship and attitude was removed, incremental fit indices were reduced; however, when the pathway between career-related mentorship and PBC was removed in **model J**, both incremental and absolute fits were weakened. This demonstrates that both pathways must be directly constructed with cognitive

variables. The study thus continues with scenario **model A** as it shows strong goodness of fit for all simultaneous pathways.

Table 21 – Alternative scenarios

Scenarios	Structure	Absolute fit					Incremental fit				Parsimonious fit
		X^2	Pvalue	GFI	RMSEA	PClose	AGFI	TLI	CFI	IFI	X^2/DF
MEDIATION ANALYSES											
Model A	Partial mediation (original model)	510.4	0.02	0.98	0.06	0.27	0.90	0.92	0.98	0.98	1.55
Model B	Full mediation (TT→ATT&PBC→EI)	510.6	0.03	0.97	0.06	0.31	0.91	0.92	0.98	0.98	1.55
Model C	Full mediation (PM→ATT&PBC→EI)	511.1	0.03	0.97	0.06	0.28	0.90	0.92	0.98	0.98	1.55
Model D	Full mediation (CM→ATT&PBC→EI)	513.1	0.02	0.97	0.06	0.24	0.90	0.92	0.97	0.97	1.56
DIRECT EFFECTS											
Model E	No direct effects (From TT→ATT)	513.2	0.00	0.97	0.07	0.13	0.89	0.89	0.97	0.97	1.56
Model F	No direct effects (From TT→PBC)	510.6	0.03	0.97	0.05	0.32	0.90	0.93	0.98	0.98	1.55
Model G	No direct effects (From PM→ATT)	511.1	0.04	0.97	0.05	0.37	0.91	0.93	0.98	0.98	1.55
Model H	No direct effects (From PM→PBC)	510.4	0.03	0.98	0.05	0.33	0.91	0.93	0.98	0.98	1.55
Model I	No direct effects (From CM→ATT)	519.7	0.00	0.97	0.07	0.14	0.89	0.89	0.97	0.97	1.58
Model J	No direct effects (From CM→PBC)	519.9	0.00	0.96	0.08	0.03	0.86	0.84	0.95	0.96	1.58
ALTERNATIVE EFEFCTS SCENARIOS											

Model A: TT→ ATT, PBC & EI ; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI **(Figure 5)**

Model B: TT→ ATT & PBC; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model C: PM→ ATT & PBC; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model D: CM→ ATT & PBC; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model E: TT→ PBC & EI ; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model F: TT→ ATT & EI ; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model G: PM→ PBC & EI ; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model H: PM→ ATT & EI ; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model I: CM→ PBC & EI ; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

Model J: CM→ ATT & EI ; PM→ ATT, PBC & EI ; CM→ ATT, PBC & EI ; ATT & PBC→ EI

TT: Traditional teaching; **PM:** Psychosocial mentorship; **CM:** Career-related mentorship; **ATT:** Attitude; **PBC:** Perceived Behavioural Control; **EI:** Entrepreneurial intention

5.4.2.3 Standardised effects

Traditional teaching function which is one of the core components of mentorship in educational session have a direct and positive influence on students' attitudes in entrepreneurship education ($\beta = .22$, $p = .01$). However, there was not enough evidence to claim that traditional teaching impacts students' PBC ($\beta = .06$, $p = .53$) and entrepreneurial intentions ($\beta = -.04$, $p = .46$). In terms of mediation, traditional teaching has an indirect effect on entrepreneurial intentions through students' attitudes ($\beta = .16$, $p = .01$); however, it does not show any form of mediation evidence with PBC ($\beta = .03$, $p = .45$). Therefore, H1a and H1b are accepted.

Psychosocial function did not show any form of evidence of its effect on students' cognitive variables. It showed a non-significant impact on students' attitudes ($\beta = .05$, $p = .59$), PBC ($\beta = .05$, $p = .59$) and entrepreneurial intentions ($\beta = -.06$, $p = .27$). In terms of mediation effects, psychosocial function did not show any indirect effects on entrepreneurial intentions through attitudes ($\beta = .04$, $p = .69$) and PBC ($\beta = -.02$, $p = .68$). Therefore, the alternative hypotheses H2a and H2b are rejected.

Career-related function was the most explanatory variable that showed adequate evidence of its impact on students' cognitive factors. It has a positive and significant effect on students' attitudes

or attraction towards entrepreneurship (β = .16, p = .01). It also shows a positive impact on students' PBC (β = .27, p = .00). However, it does not show any significant evidence of impact on students' entrepreneurial intentions (β = .06, p = .13). Career-related function also indirectly impacts students' entrepreneurial intentions through their attitudes (β = .13, p = .01) and PBC (β = .17, p = .00). Therefore, H3a is accepted while H3b is rejected.

In terms of control variables, few alternative variables showed significant evidence. Students' major field havs a significant negative impact on their own attitudes towards entrepreneurship (β = -.16, p = .01). Students' prior entrepreneurial experience on PBC (β = -.23, p = .00) and their gender on attitudes (β = -.14, p = .02) show negative effects. Finally, students' age shows a significant and positive effect on their entrepreneurial intentions (β = .12, p = .00). **Figure 6** visually shows the SEM results.

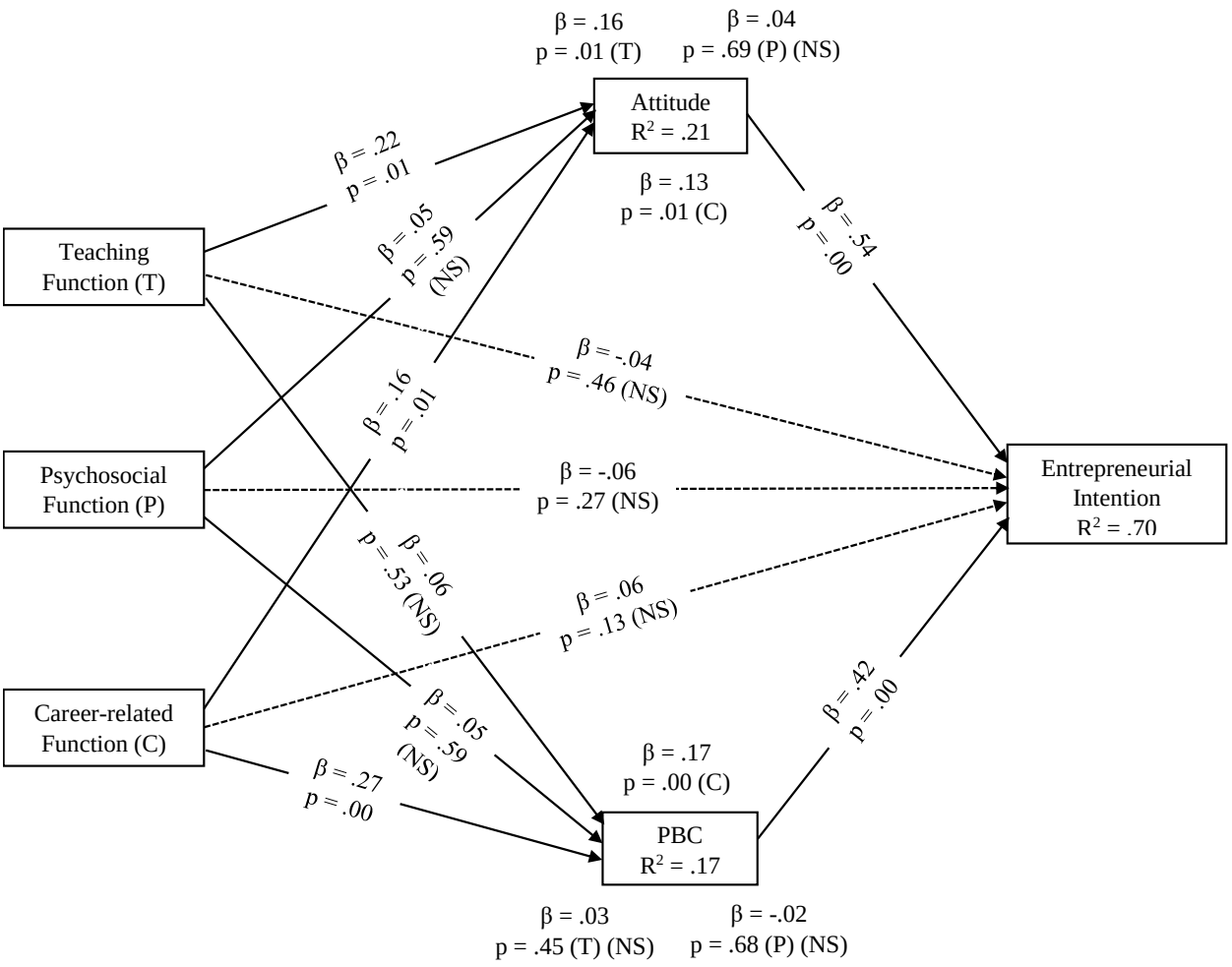

Figure 6 SEM model - chapter 5

5.5 Discussion

Historically, educators stood against traditional teaching and other forms of instructive or deductive pedagogies due to the ineffecrtiveness of these practices to increase students' interest in entrepreneurship and reflecting on real-life entrepreneurial scenarios (Cooper et al, 2004 Peterman and Kennedy, 2003; Shepherd and Douglas, 1996). In the past, it was suggested that traditional teaching must be executed with interactive pedagogy practices to change students' entrepreneurial behaviours and intentions (Gibb, 1996). In other words, entrepreneurial learning in entrepreneurship education must be inductive and student-centric or experimental which allows

students to take responsibility for their own learning style (Prince and Felder, 2006). This method was preferred to curriculum planners because students have the opportunity to acquire explicit information from other sources than just teachers (Fiet, 2000). This was the main issue in theoretical entrepreneurship education which calls for either scrapping or modifying traditional teaching (Lautenschlager and Haase, 2011). Strangely enough, previous arguments were concluded and assumed based on studies that tested the impact of general entrepreneurship education on students' cognitive outputs without considering the specific units of theoretical entrepreneurship courses (Martin et al, 2013). Furthermore, past research works (e.g., Prabandari and Sholihah, 2015; Solesvik et al, 2012; Wu and Wu, 2008) reveal that attitude has a significant direct effect on entrepreneurial intentions in general entrepreneurship education which indicates that certain educational elements are influencing students' perceptions of entrepreneurship. This leads the researcher to conclude that previous arguments were built on proposals rather than on tested hypotheses. In addition, traditional teaching is not specifically tested and validated in the field of entrepreneurship education.

Fretschner and Weber's (2013) research results motivated this study to offer traditional teaching another examination opportunity. In their study, it is found that students' attitudes and entrepreneurial intentions were positively exposed to factors in theoretical entrepreneurship courses. This current study's results extend their research by showing that traditional teaching practices performed by educators do impact on students' attitudes towards entrepreneurship. In other words, transmitting theoretical information about entrepreneurship through traditional teaching allows students to evaluate their own interest to start a business. Recent studies (Engel et al, 2016; Jones and Underwood, 2017) found that replacing traditional teaching with highly experimental pedagogies increases students' tension and anxiety during entrepreneurship sessions which negatively affects students' learning process. This indicates that a traditional form of transmitting knowledge is always needed in both experimental and theoretical entrepreneurship education.

The results show that educators' psychosocial practices do not have an impact on students' interests, confidence in their own entrepreneurial skills, and intentions to start a business. Educators mainly use psychosocial mentorship practices to contribute to students' personal growth (Nora and Crisp, 2007) and to spark positive outcomes such as challenging oneself, adaptation to

surrounding environment, welcoming new experiences, and reflective skills (Crisp and Cruz, 2009; Kram, 1985). Moreover, psychosocial practices influence students' emotions rather than their intentions (Crisp and Cruz, 2009; Eller et al, 2014). Previous findings (Eby et al, 2010; Kakouris, 2015; Prabhu et al, 2012; Rideout and Gray, 2013) show that psychosocial practices indirectly increase students' self-efficacy and entrepreneurial intentions through personal development. In this regard, it is argued that studying personality and psychological characteristics helps in understanding how individuals' intention is stimulated into an action (Espiritu-Olmos and Sastre-Castillo, 2015). Zhao et al's (2010) meta-analysis also claims that students' personality should not be avoided in entrepreneurship research as it is a significant determinant of entrepreneurial intention. On the other hand, Gartner (1988) stood against researching the relationship between personality and entrepreneurial intention because it will cause an issue when attempting to differentiate an entrepreneur from a small business owner or a manager. Thompson's (2009) study also strongly argues that not all individuals with an entrepreneurial personality tends to form the intention to create a company and, thus, individuals who formed an entrepreneurial intention should not be confused with people who possess the characteristics of an entrepreneur. Although personality is the main researched area in the field of entrepreneurial intentions, researching personality attracted criticism from different scholars who questioned its validity (Fayolle and Linan, 2014). These arguments support this study's findings and it can be concluded that attempting to change students' mental and personal growth (Kram, 1985) is not going to impact their intentions to create start-ups. The findings reconsider previous studies (Eby et al, 2008; Ragins and Cotton, 1999; St-Jean and Mathieu, 2015; Zimmerman and Paul, 2007) that claimed psychological, personal and professional mentoring functions impact students' self-efficacy and attitudes and support scholars who suggested that educators should not attempt to get involved in changing students' personalities.

The career-related function has the strongest impact on individuals during a mentoring relationship (Wanberg e al, 2006). The findings indicate that career-related mentorship practices have an impact on all of the antecedents of students' entrepreneurial intentions. This function played a major role in shaping students' cognitive minds towards entrepreneurship. The career-related function tends to focus on improving the necessary skills that will be needed for a designated career (Crisp and Cruz, 2009). In this regard, educators are deploying practices that improve risk-taking and practical skills which are important abilities for future entrepreneurs. Wanberg et al's (2006)

study reveals that career-related mentorship practices improve individuals' career clarity which also affects their intentions. This indicates that allowing students to engage in additional projects (Ensher and Murphy, 2010) outside the required classroom activities to gain additional entrepreneurial knowledge and coaching them to improve their entrepreneurial skills during class-based activities does clarify their own career goals (Carr and Sequeira, 2007) which leads to a positive change in entrepreneurial intentions. Chemers et al's (2011) study supports the findings of research that career-related or instrumental mentorship practices influence graduate students' intentions and interests in a science career through their self-efficacy cognitive variable. Our study acknowledges that students' PBC is only affected when educators assign them to classroom activities. This creates a sense of task completion which could also change students' self-confidence in their entrepreneurial skills that are gained during their sessions (Curtin et al, 2016).

5.6 Implications

5.6.1 Theoretical implications

This study extends the MIND methodology that was developed by Johnsson et al (2016). According to their work, the MIND methodology is a cognitive infrastructure that supports the human mind to work efficiently. It is comprised of four blocks: i) Theory which absorbs information and knowledge about entrepreneurship; ii) Practice which understands 'what to do' with the absorbed knowledge. It also focuses on building individuals' entrepreneurial skills; iii) Mindset block component which uses the absorbed knowledge and skills to either confirm or change someone's mindset about a behaviour, and iv) Engagement block is related to students' learning from engaging in additional projects. The positive impact of traditional teaching on students' attitude contributes to their theory block of their cognitive mind which expands their knowledge about entrepreneurship as a career. Career-related practices benefit students' cognitive mind by supporting their engagement MIND component. The factor analysis from **table 4** shows that educators require students to get involved in additional projects outside their normal curriculum requirements. Although psychosocial function practices did not show any kind of evidence of its influence on students' attitudes, PBC and entrepreneurial intentions, it does however clarify that educators should not be responsible to directly change students' mindsets through personal development. This study also extends a classical theory called the 'personal meaning system'. The theory which was developed by Reker and Wong (1988) explains that an individual's life meaning and purpose is defined by the affective, cognitive and motivational

components (Smith, 2013). The impact of educators' career-related and traditional teaching practices is providing students the opportunity to explore their purpose while they are engaging in their entrepreneurship education studies. By affecting students' semantic cognition (Sarasvathy, 2004), educators are also changing the entire cognitive component in the triadic model of the 'personal meaning system'.

This study also contributes to the field of learning environment. This area focuses on the environment and psychological factors that can have an impact on students' cognition outcomes (Smith, 2013). The nature of a learning environment depends on the practices an educator deploys with students (Fraser and Fisher, 1982) in entrepreneurship education. Previous studies that focused on the learning environment investigated students' academic accomplishments (Johnson and Stevens, 2006), attitudes towards specific major studies (Nix et al, 2005), and entrepreneurial learning (Fayolle and Linan, 2014). This study's findings expand the learning environment research area by revealing the possibility to change an entrepreneurship course learning setting by applying more unfamiliar but interactive pedagogy methods such as psychosocial and career-related functions. From Smith's (2013) research perspective, the current findings create the possibility of impacting students' satisfaction with entrepreneurship courses. Finally, the positive effect of the exploratory variables on students' behavioural antecedents provides future studies the opportunity to test the same variables not only in an entrepreneurship education environment (Linan et al, 2011) but within general management education as well.

5.6.2 Practical implications

In general, comparing the effect of Kram's (1985) career-related and psychosocial functions with the traditional teaching function in an entrepreneurship education environment allows educators to reflect on their current practices that try to change students' mindsets towards entrepreneurship. The study findings show that educators' highly interactive pedagogy practices such as provocation, which is a practice in mentorship, modifies the goal of an entrepreneurship course from a type of education that increases students' knowledge and improves their practical skills to a course that enhance students' creativity and critical abilities (Hjorth, 2011; Mueller et al, 2011; Nora and Crisp, 2007). Furthermore, the study framework acts as a tool for education consultants, practitioners and educators (Tran and Korflesch, 2016) when designing a new curriculum. It also provides an opportunity for future educators to improve their teaching practices to prepare students

for an entrepreneurial career (Curtin et al, 2016). Finally, measuring the outcomes of entrepreneurship education in the UK is still vague (Matlay and Carey, 2007). This study adds new interactive pedagogies to previous frameworks that are responsible for measuring the effectiveness of entrepreneurship education in the UK. They introduce policy makers to new measurements that were not included in previous assessments in a UK entrepreneurship education.

5.7 Limitations and future studies

This study has some limitations that need to be addressed. Although the research contributes to past findings in the field of mentorship (Crisp and Cruz, 2009) this study did not focus on defining mentorship in entrepreneurship education. Previous studies in different academic environments (Bordes and Arredondo, 2005; Mangold et al, 2013; Rodger and Tremblay, 2003) did not define the one-to-one mentorship with university-level students. This opens an opportunity for future studies to explore the definition of group mentorship (Kroll, 2016) in terms of psychosocial, career-related and traditional teaching in entrepreneurship sessions. Future studies can also explore other factors of a group mentoring relationship in entrepreneurship education classrooms such as communication practices and educators' level of involvement.

The objective of entrepreneurship education is to contribute to students' personal development, increase their awareness, and change their mindset about entrepreneurship (Fayolle and Gaily, 2008). It was agreed in the past that mentorship practices improve individuals' entrepreneurial personality and abilities (Gimmon, 2014). From the perspective of this study, attempting to improve students' personality by applying psychosocial mentorship practices is not going to influence their entrepreneurial intentions. Studying personality features does not confirm a positive entrepreneurial intention since intentions are derived from individuals' behavioural perceptional processes (Bird, 1988; Thompson, 2009). However, previous chapters of this thesis shows that if educators deploy career-related, psychosocial and traditional teaching practices aggregately, they could generate positive effects on each cognitive factor. Future studies can conduct a quasi-experiment research (Fretschner, 2014) by examining the change in students' cognitive elements before and after being exposed to psychosocial mentorship practices.

5.8 Conclusion

Researching entrepreneurial pedagogies shows that the field of entrepreneurship education has an opportunity to grow in the next decades (Duval-Couetil, 2013). Many scholars assume that

mentorship in general is about only giving advice (Darwin, 2000). However, mentorship in an educational environment does not only enable educators to develop students at a psychological level but also improves the skills needed by students (Liou et al, 2016) for the entrepreneurship journey. This study provides a specialised educational mentorship framework (Darwin, 2000) for teachers who want to achieve the objectives of an entrepreneurship course. Although traditional teaching was not welcomed by many scholars and specialists, this study's findings show that traditional teaching is not only needed in entrepreneurship education but must also be executed along with career-related and psychosocial mentorship functions. The study also concludes that when educators implement the three mentorship functions, it spontaneously creates a form of an informal mentorship (Allen and Eby, 2004) between the educator and students. Overall, the results of this paper are expected to provide a new direction in the field of cognitive psychology. Therefore, the author calls upon future researchers to integrate this framework and factor analyses results with their empirical work.

Chapter 6: Conclusion

6.1 Introduction

This chapter aims to highlight the dimensions, implications and limitations of this thesis. It explains how research objectives, aims and questions were achieved by featuring the main gaps and findings. This chapter also emphasises core areas that extend and add value to past theories, studies and arguments. Furthermore, thesis limitations are outlined to pave the way for future studies to extend current research work.

Overall, the thesis examines the effects in the relationship between exposure to mentorship and students' semantic cognitive process, and demonstrates how this relationship supports different forms of entrepreneurship education factors to influence students' cognitive factors. To achieve this aim, the study created four objectives that were separated into three chapters. Each chapter focused on specific factors in the educator-students' learning relationship in entrepreneurship education. The thesis starts by recognising the blended learning method in entrepreneurship education. From this point, it was argued that mentorship as a blended learning pedagogy has the potential to impact the semantic cognitive layer in students' cognitive minds.

To fulfill the first and second objectives, the optimal intentional model that was established as the backbone of the thesis was identified. It was also concluded from past studies and reviews that educators' mentorship pedagogy which is a combination of traditional teaching and active learning practices plays a major role in influencing students' attitudes, PBC and entrepreneurial intentions. The hypotheses were validated through a set of examination procedures to find that mentorship does influence the students' cognitive variables. This provided an opportunity for the thesis to achieve the third objective by assessing the relationship between the nature of entrepreneurship courses and educators' mentorship pedagogy and how this relationship influences students' cognitive antecedents' and entrepreneurial intentions. Findings demonstrate that mentorship method employed adapts itself to the nature of entrepreneurship courses' knowledge content and objectives to affect students' cognitive variables. To fulfill the fourth objective, the thesis tested the impact of each mentorship function on students' attitudes, PBC and entrepreneurial intentions.

These functions are psychosocial mentorship, career-related mentorship and traditional teaching methods. Results show the ability of mentorship as an aggregate variable to construct beliefs and knowledge about entrepreneurship in students' cognitive minds. Furthermore, the study explained the cognitive dimensions that are affected beyond the semantic cognitive elements.

6.2 Revisiting the research aim, objectives and research questions

6.2.1 Thesis

Mentorship pedagogy was discovered in higher education (Nora and Crisp, 2007) and entrepreneurship education (Mars et al, 2008; Miyasaki, 2014). This method is deployed by teachers to respond to the blended nature of entrepreneurship education (Linan et al, 2008; Powell, 2013). It combines traditional teaching with active practices such as reflection and feedback during students' learning process (Galbraith and James, 2004; Zachary, 2002). This mixture in teaching practices is called *blended pedagogy* (Matlay, 2005; Peterman and Kennedy, 2003) that transforms teachers into faculty mentors in entrepreneurship education. Past studies argued that it is still not clear how the mentorship component works with entrepreneurship education factors to influence students' semantic cognition during the learning process (Abaho et al, 2015; Albornoz, 2008; Clouse and Goodin, 2002; Feldon et al, 2014; Fayolle and Degeorge, 2006; Fayolle et al, 2006; Ferreira et al, 2012; Hartshorn and Hannon, 2005; Hindle, 2007; Krueger, 2003; Kubberoed and Hagen, 2015; Lorz et al, 2013; Neck et al, 2014; Sarasvathy, 2004; Shen et al, 2012; St-Jean and Mathieu, 2015). Overall, this thesis questions the influence of teachers' mentorship method on students' semantic cognitive antecedents' in entrepreneurship education.

The thesis aims to test the relationship between exposure to mentorship on students' semantic cognitive process and how this relationship supports different forms of entrepreneurship education factors to impact students' cognitions. The following methodological procedure was established to achieve the aim of the thesis.

From a philosophical perspective, mentorship and students' semantic cognitive process are mathematically measured (Berk et al, 2005; Bouquillon et al, 2005; Diesing, 1966; Ensher and Murphy, 2010; Evertson and Smithey, 2000; Fayolle and Linan, 2014; Gibb, 2002; Kram, 1985; Nora and Crisp, 2007; Pellegrini and Scandura, 2005; Ragins et al, 2000; Scandura, 1992; St-Jean, E. and Mathieu, 2015).Therefore, zooming in on the relationship between mentorship pedagogy and students' cognitive factors as specifics in the entire teacher-student interaction reflects an

objective positivist (Diesing, 1966; Gibb, 2002) philosophical stance. Since the relationship between educators' mentorship pedagogy and students' semantic cognitive process reflects a processional interactionism (Elfving et al, 2009) then a quantitative methodology is applied for this research. As mentorship is being implemented naturally by educators during entrepreneurship education sessions, then it is difficult to manipulate it for the purpose of experimental types of research (Shadish et al, 2002). The thesis used a non-experimental type of research strategy that focused on testing the influence mentorship as a non-manipulative variable (Fretschner, 2014; Johnson, 2001; Saunders et al, 2012) on students' cognitions. A non-experimental procedure, hybrid factor analysis and structural equation modelling (SEM) were the main used statistical analyses that supported the process of the selected research strategy to generate effective findings. Each paper generated research models that fulfilled the thesis objectives

The main aim of the research is divided into four core objectives that direct the three papers. Chapter 3 (paper 1) worked on achieving the first two objectives of our thesis. The first objective was fulfilled by selecting a reliable and tested intentional model that supported this thesis to explain the impact of educators' mentorship pedagogy on students' entrepreneurial intentions through cognitive variables. The second objective was achieved by testing and analysing the direct influence of teachers' mentorship method on students' attitudes and PBC. Chapter 4 (paper 2) completed the third objective by examining the interaction between the nature of entrepreneurship education courses and educators' mentorship method and evaluating the influence of this interactive relationship on students' cognitions. Chapter 5 (paper 3) was designed to achieve the fourth objective of the thesis by assessing the effects in the relationship between psychosocial, career-related and traditional teaching functions and students' cognitive components.

6.2.2 Chapter 3 (paper 1)

The first objective was to examine the ability of a theoretical cognitive framework to predict entrepreneurial intentions. The second objective focused on assessing the nature of impact of educators' mentorship pedagogy on students' cognitive variables. To fulfill these objectives, the first paper focused on comparing the strength of impact of teachers' mentorship method on students' attitudes, PBC and entrepreneurial intentions. One of the aims was also to explain the mediator role of these cognitive variables to support mentorship to affect students' entrepreneurial intentions.

In order to establish the backbone of our thesis, the author revisited past studies in entrepreneurial intentions. He found that past studies used the theory of planned behaviour to predict students' intentions to create firms (Lortie and Castogiovanni, 2015; Schlaegel and Koenig, 2013). In this regard, the first part of the hypothesised framework was established. To achieve the second half of the objectives, a review of the entrepreneurship education literature was undertaken. It was found that past research focused on the impact of entrepreneurship education on students' entrepreneurial intentions without considering the effect of specific educational factors within entrepreneurship education (Blenker et al, 2014; Fayolle and Linan, 2014). In other words, since entrepreneurship education has both positive and negative effects on entrepreneurial intentions (Lima et al, 2014), its specificities must be examined. Although past studies examined entrepreneurial learning methods on outcomes such as cognitions, tacit knowledge and opportunity identification (Canziani et al, 2015; Chrisman et al, 2005; DeTienne and Chandler, 2004; Gartner and Vesper, 1994; Liao and Gartner, 2007; Mueller et al, 2011; Sherman et al, 2008; Souitaris et al, 2007), very few studies measured the influence of interactive mentorship pedagogy on students' cognitive antecedents' (Lorz et al, 2013). Our findings discuss that educators' mentorship method impacts students' evaluation abilities of their interests towards entrepreneurship. They also show that educators' mentorship practices are allowing students to have confidence in their skills to conduct entrepreneurial activities. This paper fulfilled the first objective of the thesis by verifying the ability of a cognitive framework to predict entrepreneurial intentions. It also fulfilled the second objective by finding that educators' mentorship pedagogy impacts students' semantic cognitive antecedents.

6.2.3 Chapter 4 (paper 2)

The second objective of the thesis was to evaluate the ability of educators' mentorship practices to support the impact of the nature of entrepreneurship education on students' cognitive factors. In other words, there was a need to explain how mentorship facilitates the impact of theoretical and practical entrepreneurship contents on students' cognitive antecedents. To achieve the objective, it was identified that entrepreneurship education is originally dissected into i) "About" entrepreneurship that aims to enhance students' awareness of the field, ii) "For" entrepreneurship that transmits practical skills through classroom exercises that improves students' skills, and iii) "In" entrepreneurship that focuses on developing nascent entrepreneurs' businesses by improving their management and business competencies (Co and Mitchell, 2006; Fretschner and Weber,

2013; Hytti and O'Gorman, 2004; Jamieson, 1984). Piperopoulos and Dimov (2015) simplified past studies' efforts by dividing the nature of entrepreneurship education into theoretical and practical entrepreneurship courses. Practical entrepreneurship courses allow students to engage in real-life entrepreneurial classroom activities that enhance their tacit knowledge (Fayolle, 2008; Nonaka, 1994). Theoretical entrepreneurship courses raise students' awareness about entrepreneurship and can allow students to recognise opportunities from past business ideas in case studies. This type of education improves students' explicit knowledge (Becerra-Fernandez and Sabherwal, 2001; Fayolle, 2008; Linan et al, 2008; Nonaka, 1994).

The researcher's curiosity revolves around the question of whether educators' mentorship supports tacit and explicit entrepreneurial knowledge that students gain to impact the factors of entrepreneurial intentions. Findings reveal that when educators naturally implement a mentorship method, it acts as a competitive factor rather than a supporting component of entrepreneurship education. To the best of the author's understanding, educators apply mentorship practices after students increase their tacit and explicit knowledge. This shows that mentorship as a blended learning pedagogy (Fook et al, 2016) supports entrepreneurship education to achieve its programme goals (Fretschner and Weber, 2013; Linan et al, 2008). In conclusion, this paper successfully dissected entrepreneurship education according to courses' objectives and type of knowledge to examine their impact on students' cognitive factors.

6.2.4 Chapter 5 (paper 3)

The final objective of the thesis was to test the different forms of mentorship on students' entrepreneurial intentions. It is not sufficient to claim that educators' mentorship pedagogy impacts students' semantic cognition. Therefore, the factor analyses results were used to test each education mentorship function on students' cognitions and complete the story of this thesis. Previously the research generated traditional teaching, psychosocial and career-related functions.

In terms of traditional teaching, many scholars were against this type of pedagogy due to its weak ability to change students' entrepreneurial intentions (Cooper et al, 2004; Hoppe, 2016; Makimurto-Koivumaa and Belt, 2016; Peterman and Kennedy, 2003); however, there is no evidence of the effectiveness of traditional teaching (Scott et al, 2016). In terms of psychosocial function, it increases individuals' self-efficacy, self-worth and identity (Eby et al, 2010; Kram, 1985). Very few studies investigated the impact of psychosocial practices in an entrepreneurship

educational environment (Crisp and Cruz, 2009; Gershenfeld, 2014; Mertz, 2004) and few researchers found that psychosocial mentoring practices impact students' self-efficacy more than their attitudes (Eby et al, 2008; Ragins and Cotton, 1999; Scandura and Viator, 1994; St-Jean and Mathieu, 2015; Zimmerman and Paul, 2007). Finally, the factor analysis procedure labelled that last variable as career-related function that supports students to realise their career goals by enforcing additional tasks and guidance to establish future career plans (Allen et al, 2004; Blake-Beard et al, 2011; Ensher and Murphy, 2010; Kram, 1985; Nora and Crisp, 2007). The puzzle remains of whether career-related function does affect students' cognition (Curtin et al, 2016) in entrepreneurship education.

This chapter achieved the last objective of the thesis by conducting structural equation modelling to find that each mentorship function has a different impact on students' cognitive factors. Findings reveal that psychosocial mentorship function did not show any evidence to influence students' attitudes, perceived behavioural control and entrepreneurial intentions; however, career-related and teaching functions showed enough evidence to impact students' cognitive factors by supporting them in building their confidence in their skills to form a business and changing their mindset about entrepreneurship. This chapter showed that external learning methods are being integrated in entrepreneurship classrooms, which is changing the nature of entrepreneurial learning. Furthermore, by deploying career-related and traditional functions, teachers are assisting students to explore their purpose during their studies.

6.3 Implications and contributions

6.3.1 Theoretical implications and contributions

The thesis concludes several points that add value to the broader discipline of entrepreneurship, learning and cognitive psychology research areas. First, this study contributes to the arguments in educator-student relationship in entrepreneurship education research by emphasizing on the classroom climate that teachers can create for their students (Shernoff et al, 2016). Past studies (Goetez et al, 2013; Shernoff, 2013; Smith, 2013; Shernoff and Schmidt, 2008; Nix et al, 2005; Shernoff et al, 2003; Shernoff and Hoogstra, 2001) that researched the impact of classroom environment focused on educational and academic outcomes such as high grades, classroom participation, academic intensity and interest in the subject. This thesis extends past studies by

explaining the relationship between the increase in students' entrepreneurial cognitions and academic and educational outcomes.

From the self-determination theory perspective, this thesis shows that entrepreneurship teachers mentorship pedagogy is delivering entrepreneurial knowledge through an interpersonal tone of support and shared communication. This is creating an energizing relationship which is influencing students' entrepreneurial cognitions. Due to this effect, students will feel the need to learn more about entrepreneurship which will motivate them to achieve academic and educational outcomes hence, will increase their academic self-efficacy. Furthermore, the theoretical mechanism shows that the more students engage with teachers through mentorship, the more motivated they become to gain knowledge about the subject (Jang et al, 2016). This conclusion indicates that students are cognitively engaged with teachers and are able to recognise the mentorship method as a learning strategy in entrepreneurship education that can be used for goal-oriented purposes (Chiu et al, 2012; Quin, 2016). This explains that researching cognitive engagement can reveal the level of motivation students have towards entrepreneurship as a topic (Jang et al, 2016; Fredricks et al, 2004). Although this successfully engage students with entrepreneurship as an academic subject however, the thesis contributes to the teacher-student relationship beyond this point.

This study contributes to the question of what happens inside students' minds when teachers decide to interact more with them in entrepreneurship education. The mentoring process allows students to learn new cognitive strategies such as problem-solving and knowledge filtering. From a processional interactionism point of view, the theoretical interaction between mentorship pedagogy and students' cognitive process energizes the process of transforming preliminary knowledge in the symbolic cognitive level to a more established information in the semantic level of the human mind (Simon, 1995). From a student-centred learning theory, this changes students into independent learners who are responsible in re-constructing entrepreneurial knowledge and their own reality according to their own career goals (Elshaw et al, 2018; Krueger, 2007). In other words, when entrepreneurship teachers use mentorship behaviour to increase their interaction with students (Cooper et al, 2004; Mertz, 2004; Nora and Crisp, 2007), the initial knowledge in the symbolic level will be transformed at a faster pace to an established entrepreneurial fact in the semantic cognitive level. This happens when teachers behave as social mirrors to enable students to question their current knowledge and permit them to assess their own thoughts and grow

cognitively (Lau et al, 2017) or when entrepreneurship teachers use confirmatory learning with students such as critically responding to their questions and acknowledging their efforts in the classroom (Burns el al, 2017; Ellis, 2000).

Classroom engagement is not a characteristic of the student, but is the result of contextual influences from the relationship between teachers and students (Quin, 2016; Sinclair et al, 2003). The transformation of cognitive elements from symbolic to semantic is also increased when teachers use a discussion-based mentorship behaviour that allows students to expand their responses rather than providing broad and limited answers during classroom discussions (Applebee et al, 2003; Nguyen et al, 2016). Mentorship as a cultured method in educational classrooms shows that it nurtures social integration which leads to academic and educational outcomes (Dwyer, 2015; Zimmerman and Paul, 2007; Ragins and Cotton, 1999). The findings add to past studies in teacher-student relationship by demonstrating that an interactive relationship creates an immunity against boredom and anxiety from entrepreneurship as both an academic subject and as a career journey which removes any cognitive obstacles between the movement of cognitive elements from symbolic to semantic levels (Quin, 2016; Nguyen et al, 2016; Cooper, 2014; Martin and Dowson, 2009; Sarasvathy, 2004). In conclusion, the thesis contributes to the learning environment research by explaining theoretical mechanism of the interactionism process between educators and students. It also shows that mentorship does not only ignite the relationship between entrepreneurship teachers and students but also spark and speed up the cognitive interactionism between cognitive elements in students' mindsets (Verzat et al, 2017).

The thesis contributes to the discussion about traditional teaching in entrepreneurship education. It initially resolves the conflict between scholars (Akinboye and Pihie, 2014; Mwasalwiba, 2010; Fiet, 2000) about its true impact and existence in entrepreneurship courses. The following procedure was conducted to decide on which side of the conflict this thesis will stand. First, the thesis factor analysis process created the traditional teaching, psychosocial and career-related functions. The traditional teaching variable that was formed from students' data response shows that it exists in entrepreneurship education and does have a positive impact on students' attitude and intention. Traditional teaching with the other two functions were labeled as mentorship due to supportive arguments found in previous chapters. What is interesting about this finding is that the configuration of the explanatory mentorship variable indicated that it is extending the original

mentorship theory that was introduced by Kram (1985). This is because traditional teaching which is a classical learning method is being added to Kram's career and psychosocial methods. The addition of traditional teaching is causing a pedagogical adaptation (Yballe and O'Connor, 2000; Fiet, 2000) to the mentorship theory in order to meet the goals of entrepreneurship programs. In terms of entrepreneurial learning research, this thesis stresses the importance of researching theoretical teaching methods by demonstrating through previous findings its power to improve students' opportunity recognition (Campbell et al, 2012; Sardeshmukh and Smith-Nelson, 2011).

This thesis contributes to entrepreneurship education by developing a focused teaching model framework for entrepreneurship education (TMFEE) inside the entire framework of entrepreneurship education that was introduced by past scholars (Martiz and Brown, 2013; Alberti et al, 2004). It extends these frameworks by highlighting the relationship between nature of entrepreneurship courses and teachers' mentorship method. Although the relationship might be organic in other educational classrooms, the direction of the framework in **figure 7** is concluded from the findings in chapter 4 that focused on an entrepreneurship education setting. The figure starts by revealing the taxanomy of entrepreneurship education which is divided into theoretical and practical courses. The nature of entrepreneurship education is determined by identifying the types of knowledge contents and cognitive objectives. Depending on these two factors, entrepreneurship teachers will decide to use the most suitable mentorship functions that fulfills the cognitive objective and deliver the type of knowledge content to audience memebers.

This thesis extends past frameworks of entrepreneurship education by revealing the direction of each educational component in the presence of the mentorship pedagogy. In other words, the type of entrepreneurship education dictates the cognitive goals and type of entrepreneurial knowledge and these two factors influence teachers' choice of a mentorship function. This conclusion shows that the adaptation of mentorship pedagogy to cognitive goals and knowledge contents is not an accidental but it is intentionally implemented. This is a positive approach by teachers because it shows that they understand how to balance between academic requirements and changing students' mindsets about entrepreneurship (Powell, 2013; Linan et al, 2008).

Theoretical contributions are also credited to the thesis methodological process. The results in chapters 3, 4 and 5 were generated from a structural equation modelling (SEM) procedure that relied on the measurement and a structural model to create a highly fit model. Very few studies

relied on SEM to report the influences and changes in students' semantic cognitive antecedents. Doubts were raised on whether results were sufficiently reliable to extend the field of entrepreneurship. This is because regression analysis treats cognitive factors separately while in reality, the factors simultaneously work together in the mindset. In this regard, the aim of the thesis was not only to introduce a new pedagogy to entrepreneurship research but to also ensure that the results are generated from highly fit hypothesised framework. The measurement model in chapters 3, 4 and 5 showed that any results that will appear in the structural model will be sufficiently reliable for use in future studies.

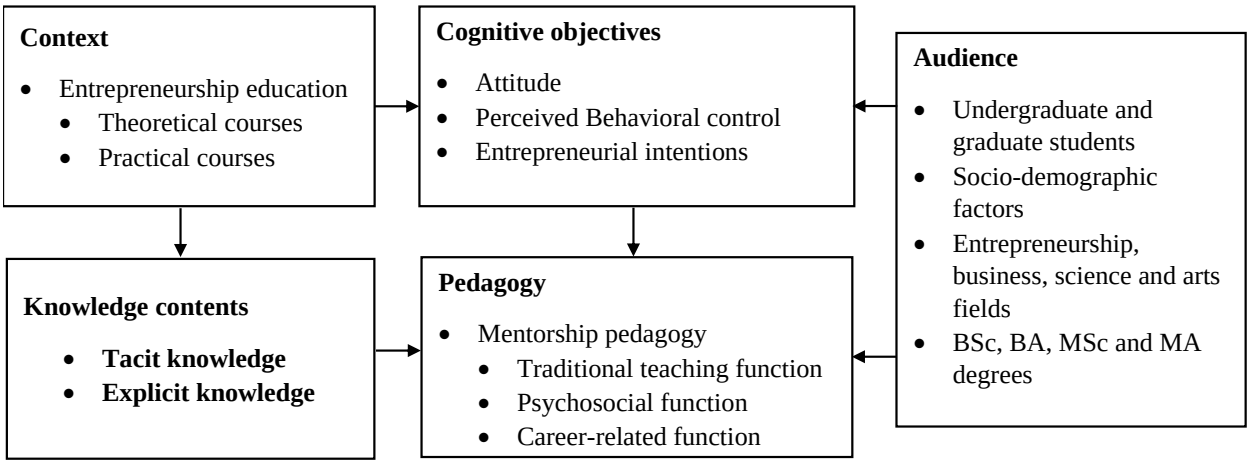

Figure 7 – Initial teaching model framework

6.3.2 Practical implications and contributions

This thesis benefits policy-makers who are responsible in constructing the operation of the economy. It contributes to their understanding of how educators teaching methods have a direct link to how universities operate in the economy. Universities are struggling to either maintain their status as an entrepreneurial university or avoid going down the ladder to an older system such as an expert university that does not connect with society or non-elite university that have a weak research base and very traditional teaching method (Guzman-Valenzuela's, 2017).

What is interesting about the thesis findings is that it shows the importance of entrepreneurship teachers to increase the number of entrepreneurs. The process begins when teachers applies mentorship practices to interact more with students during the classroom. The study findings show

that their method positively influences students' mindsets and build up their intentions to engage in an entrepreneurial behaviour. This indicates that the more teachers influence students', the more universities will produce entrepreneurs. This procedure contributes to entrepreneurial universities educational agenda that welcomes innovative pedagogies by teachers' to improve students' entrepreneurial abilities (Jansen et al, 2015; Etzkowitz and Viale, 2010). Although this indicates entrepreneurship educators are becoming a key factor in shaping the economy, their teaching method are allowing universities to develop into modern educational institutes. Teachers pedagogical adaptation to the requirements of entrepreneurship education are transforming entrepreneurial universities into revolutionary university. A revolutionary university pedagogy is mainly a critical one that allow students and teachers to work together to invent and re-invent knowledge through discussions, questioning and critical thinking (Guzman-Valenzuela, 2017; Lambert et al, 2007). This shows that the mentorship pedagogy fits with the educational structure of the revolutionary university.

This thesis also allows policy-makers to understand the relationship between using an interactive teaching methodology such as mentorship and the development of an innovation ecosystem (Oh et al, 2016; Carey et al, 2010). The mentorship methodology will not only influence students to create firms but will also positively reflect on business schools' contribution indices (Fayolle, 2013). This will strengthen business schools' stance in the third academic revolution (Etzkowitz and Viale, 2010; Heinonen and Hytti, 2010) which will modify them with the revolutionary universities agenda that directly contribute to the innovation system. This is carved in the Europe 2020 strategy which is an economic policy that prioritize increasing the number of entrepreneurs and focus on three factors; smart, sustainable and growth (Carayannis et al, 2017).

Curriculum planners can benefit from the findings of this thesis by considering additional ways to evaluate entrepreneurship education and develop them into effective programs. The strength of impact of teachers' mentorship method provides a clearer picture of the role that entrepreneurship education plays in fostering a supportive classroom climate which can eventually contribute to socio-economic goals (Maritz and Brown, 2013; Gailly, 2008). The thesis methodology provides curriculum planners a measurement instrument for mentorship and cognitions that can support them to regulate and create a customized mentorship method that fits the agenda of the department. This can be also beneficial to organisations that produce reports about UK entrepreneurship such

as Global Entrepreneurship Monitor and Global University Entrepreneurial Spirit Students' Survey.

Curriculum planners can develop current entrepreneurship programs and modify the culture of the classroom (Liou et al, 2016) by promoting open communication which increases students' confidence in their abilities to enagage in entrepreneurship. They can also modify the teaching method into a challenging mentorship relationship which promotes passion, encourages students to engage in critical thinking and builds mututal respect (Eller et al, 2014).

Business school directors who wants to develop their staff teaching skills can use the findings of this thesis to create training programmes about classroom mentorship. These training workshops can develop teachers' pedagogy knowledge (Depaepe and Konig, 2018) by enabling them to understand the latest trend in entrepreneurial learning. Also, teacher education organisation that provides teaching qualification can consider inviting professional mentors from different industries to teach mentorship to early career entrepreneurship teachers. This can help young teachers to interact more with their students' during classroom discussions and exercises.

6.4 Limitations and opportunities for future research

The thesis had several limitations that provide numerous research opportunities for future studies. The aim of this work was to examine the impact of educators' mentorship pedagogy on students' semantic cognitive process in entrepreneurship education. The cognitive mind is complex and it is formed of another two layers; they are the *symbolic* and *neurological* levels (Krueger, 2003; Sarasvathy, 2001; Simon, 1995). This study focused only the semantic layer where intentions are formed from cognitive antecedents. It did not focus on the symbolic level where knowledge and beliefs are constructed (Simon, 1995). Chapter 4 concluded that mentorship practices also allow educators to construct new beliefs about entrepreneurship in students' cognitive minds. Therefore, the researcher invites future scholars to investigate the complexity of knowledge construction (Gaglio, 2004; Mitchell et al, 2002) and discover how blended pedagogy supports students to categorise new information in their schematas (Fook et al, 2016; Gaglio and Katz, 2001; Krueger, 2003). In terms of human cognitions, future research works can analyse the effect of teachers' mentorship pedagogy on students' interest in entrepreneurship as a subject and as an academic career (Nguyen et al, 2016). This will require future scholars to focus on students' cognitive

engagement which involves the psychological skills such as mastering, understanding and learning entrepreneurship knowledge and skills (Cooper, 2014; Nguyen et al, 2016).

Studies can also examine the bi-directional effect of mentorship on entrepreneurship teachers' self-efficacy (Depaepe and Konig, 2018) instead of the effect on students' cognitions. Studies can use Tschannen-Moran and Hoy's (2001) measures to evaluate entrepreneurship educators' self-efficacy such as confidence in maintaining students' engagement, managing classrooms and evolving their teaching methods.

The thesis examined the impact of mentorship practices on the semantic cognitive variables without considering the stages of the mentoring process; this thus raises the question of whether the impact of educators' mentorship method does change under different mentoring stages (Scandura and Williams, 2004). According to Kram (1985), mentorship is divided into several stages; they are i) initiation, ii) cultivation, iii) separation and iv) redefinition. Very few studies examined each mentorship stage due to time constraints and academic obstacles (Bouquillon et al, 2005). It is suggested that mentees have different cognitive and learning needs at each stage. Furthermore, mentorship practices might change at each level which will have different effects on mentees (Ensher and Murphy, 2010). Therefore, future studies must consider examining and observing the changes in students' cognitive factors at each mentoring stage.

The thesis relied on the theory of planned behaviour to proceed with cognitive examination. While this research opens a new pathway for scholars who are interested in studying UK-based entrepreneurship education, evaluating students' entrepreneurial intentions is still limited in UK studies (Altinay et al, 2012; Lucas and Cooper, 2012; Schlaegel and Koenig, 2013). The author suggests that future studies continue researching the field of entrepreneurial intentions in the UK by applying other intentional models such as Shapero's (1982) entrepreneurial event model. Furthermore, researchers can contribute to the UK context by exploring teachers' background profile and how their UK education, research publications and classroom management styles impact students' cognitive factors (Fayolle and Linan, 2014; Karimi et al, 2014). Scholars can also research the impact of mentorship pedagogy on individuals' entrepreneurial intentions in different contexts such as UK business incubators and entrepreneurial societies.

Although this thesis focused on very specific mentorship functions, the communication factor in a mentoring relationship is not fully addressed. Thus, future studies should test the impact of

teachers' communication practices in a mentoring relationship on students' entrepreneurial intentions. Results from these studies can explain in depth the quality of the social influence of entrepreneurship educators on students during entrepreneurship courses (Eesley and Wang, 2017). It also recommended that future scholars to analyse the influence of teachers' communication on the entire interactive relationship and investigate how students adapt to teachers' communication methods during the learning process (Pennings et al, 2018).

The thesis also faced some methodological limitations. A cross-sectional research technique was applied in order to test the influence of mentorship rather than observing the change that mentorship brings to students' semantic cognitive elements. Although cross-sectional methods are the stepping stone for novel studies however, the author suggests that future studies should conduct quasi-experiments to continue this research and provide results about students' cognitive changes. In this regard, future studies can observe these changes in theoretical and practical entrepreneurship courses (Piperopoulos and Dimov, 2015).

To the best of the author's knowledge, entrepreneurial intentions are formed from desirable and feasible beliefs (Krueger, 2003; Segal et al, 2005). Although most intentional models rely on these cognitive factors, there are, however, other variables that play a role in shaping students' entrepreneurial intentions. It would be interesting to see what results would be generated if researchers examined the impact of motivational antecedents', goals and opportunity assessment (Elfving et al, 2009; Elfving, 2008) on cognitive factors. Exploring these factors would support future studies to identify hidden elements within the entrepreneurship education system (Maritz and Brown, 2013).

6.5 Conclusion

This chapter revisited the thesis research question, aim and objectives. It highlighted the main research idea that motivated chapters 3, 4 and 5 to conduct an in-depth review of past literature in the fields of entrepreneurship education and entrepreneurial intentions. Furthermore, it explained the methodological procedure flow that aided the chapters to achieve the thesis objectives. In summary, chapter 3 focused on the influence of entrepreneurship educators' mentorship method on students' cognitive factors. Chapter 4 took into consideration the nature of entrepreneurship education and examined the ability of educators' mentorship method to drive the impact of theoretical and practical entrepreneurship courses on students' cognitive minds. Chapter 5 aimed

to complete the whole picture about the effect of the mentorship method by testing each mentorship function on students' attitudes, perceived behavioural control, and entrepreneurial intentions.

This chapter also underlined the thesis' theoretical contributions that extended past theories and frameworks of entrepreneurship education. Moreover, it highlighted the practical implications for educators, curriculum planners, the learning environment and the entrepreneurial university. Finally, the chapter stated the theoretical and methodological limitations that provide future studies an opportunity to extend this work in the fields of educational psychology and entrepreneurship education.

The thesis was designed to contribute to and support the pedagogy factor in the entrepreneurship education system. Past academic revolutions focused on changing how universities operate within an economy from an institutional level. In this study, the focus was on paving the way for scholars to realise the existence of an axial revolution (O'Brian et al, 2013) in entrepreneurship education. This type of revolution supports the third academic revolution (Etzkowitz and Viale, 2010) by strengthening the entrepreneurship education factor which is a core element in entrepreneurial universities (Jansen et al, 2015). Overall, increasing the number of entrepreneurs starts by changing cognitive minds.

Appendix A - Questionnaire

Students' entrepreneurial intentions and the impact of the mentor under different types of entrepreneurship education programme

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

This is a PhD research aiming to study students' and individuals' entrepreneurial intentions under "About", "For" and "In" entrepreneurship programmes. I am a PhD student in management under the research group innovation and enterprise at Southampton Business School – University of Southampton. The Questionnaire contains the sections that involve three participants. They are the student or individual who is taking or took an entrepreneurship course in any entrepreneurial programme, incubator, accelerator and/or initiative, the lecturer who plays the role of the mentor in practical entrepreneurial courses and teaches theoretical entrepreneurship subjects, and the mentor who is involved in mentoring students and individuals in professional entrepreneurship programmes. Students will answer the following designated sections while mentors and lecturers will complete a separate section that asks them about their background profile.

You have been chosen because you are an essential individual in my research. You have been also chosen because you are taking an entrepreneurship programme/course within a Russell Group or a non-Russell Group university.

The questionnaire should take around 10 to 20 minutes to complete it once. Students will answer questions (items) about the mentor characteristics and the elements of the theory of planned behaviour (TPB).

Your participation in this survey is very important as you will be contributing to one of the first studies about the theory of planned behaviour in the UK.

There will be no risks in taking this survey.

Your answers in the survey will be confidential. Your name and contact details will not be shown as it is not required from you to provide your name. Only the name of your university and its ranking will be presented in this research. Data information and research results will be viewed by myself (the researcher) and my supervisors overseeing my PhD research.

You have the right to withdraw from this survey at any time for any reasons.

Participants may wish to contact the research support officer, Ying Ying Cheung (risethic@soton.ac.uk) or Head of Research Governance (02380 595058, rgoinfo@soton.ac.uk)

If you need to gain access to more detailed information, then please contact my supervisors:

Dr. Francesco Rentocchini – **F.Rentocchini@soton.ac.uk**

Dr. Jagannadha Pawan Tamvada - **jp.tamvada@soton.ac.uk**

Kind regards,
Abdul Rahman Badwan
Ethics number: 18721
Ethics number after amendment: 19790

If you are a student or an individual taking an entrepreneurship course or workshop, please answer **sections 1, 2 and 3**. Lecturers and mentors are required to answer **section 4** only.

Mentoring characteristics **FOR STUDENTS**

(SECTION 1)

PLEASE READ: You are a student/individual who is taking an entrepreneurship course and/or workshop. Please indicate your level of agreement on your mentor's (**who is also your current lecturer**) mentoring characteristics during the session.

Commitment and Resilience	**Strongly Disagree**					**Strongly Agree**
1. Challenges me to reach a difficult, specific goal.	1	2	3	4	5	6
2. Encourages me to improve certain aspects of my personality.	1	2	3	4	5	6
3. Challenges me to think clearly about my career aspirations.	1	2	3	4	5	6
4. Challenges me to think in ways I have never thought of before.	1	2	3	4	5	6
5. Expects that he or she can trust me.	1	2	3	4	5	6
6. Expects me to take critical feedback without being defensive.	1	2	3	4	5	6
7. Questions me and makes me justify the decisions I make.	1	2	3	4	5	6
8. Demonstrates professional integrity.	1	2	3	4	5	6
9. Approachable.	1	2	3	4	5	6
10. Provides useful constructive suggesions and useful critiques of my work.	1	2	3	4	5	6
11. Helps in providing directions and guidance on professional issues.	1	2	3	4	5	6
12. Answers my questions satisfactorily.	1	2	3	4	5	6
13. Suggests appropriate resources.	1	2	3	4	5	6
14. Challenges me to extend my abilities.	1	2	3	4	5	6
Measuring up to mentor's standard						
15. Puts me under observation.	1	2	3	4	5	6
16. Strongly suggests I take his or her advice.	1	2	3	4	5	6
17. Feels it is important for me to see the world similarly to the way he or she sees it.	1	2	3	4	5	6

18. Pressures me in my performance by telling me not to mess up.	1	2	3	4	5	6
19. If I don't have the necessary skills my mentor wants, it will create a conflict.	1	2	3	4	5	6
Managing instructions						
20. Describes objectives clearly.	1	2	3	4	5	6
21. Gives clear explanations and presentations.	1	2	3	4	5	6
22. Gives clear directions for assignments.	1	2	3	4	5	6
23. Has individualised assignments.	1	2	3	4	5	6
24. Provides rationales for lessons and concepts.	1	2	3	4	5	6
25. Paces lessons appropriately.	1	2	3	4	5	6
26. Checks students' understanding.	1	2	3	4	5	6
27. Has instructional materials ready.	1	2	3	4	5	6
28. Provides high levels of interactive instruction.	1	2	3	4	5	6
29. Accessible.	1	2	3	4	5	6
30. Demonstrates content expertise in my area of need.	1	2	3	4	5	6
Motivating Students						
31. Considers students' attention spans in lessons.	1	2	3	4	5	6
32. Relates activities to students' interests.	1	2	3	4	5	6
33. Supportive and encouraging.	1	2	3	4	5	6
34. Motivates me to improve my work product.	1	2	3	4	5	6
35. Acknowledges my contributions appropriately.	1	2	3	4	5	6
Managing Student Behavior						
36. Monitors student work and behaviour effectively.	1	2	3	4	5	6
37. Manages behaviour consistently.	1	2	3	4	5	6
38. Rewards good performance.	1	2	3	4	5	6

Career goals and Risk orientation						
39. Has suggested that I take risks in my career.	1	2	3	4	5	6
40. Asks me to get involved in additional projects that I would not normally do.	1	2	3	4	5	6
41. Waits for me to take the initiative to set up meetings.	1	2	3	4	5	6
42. Expects me to know what I need to do to accomplish my career goals.	1	2	3	4	5	6
43. Is willing to go out on a limb for me in exchange for my loyalty.	1	2	3	4	5	6

Part 2 of the Questionnaire – The theory of planned behaviour

Elements of TPB **(SECTION 2)**						**FOR STUDENTS**
PLEASE READ: You are a student/individual who is taking a practical, professional and/or theoretical entrepreneurship courses. Please continue the following sections.						
Items	Scale measurement					
Attitude	**Total Disagree**					**Total Agree**
1. A career as entrepreneur is attractive for me.	1	2	3	4	5	6
2. If I had the opportunity and resources, I'd like to start a firm.	1	2	3	4	5	6
3. Being an entrepreneur would entail great satisfaction for me.	1	2	3	4	5	6
4. Among various options, I would rather be an entrepreneur.	1	2	3	4	5	6
Subjective Norms – part 1	**Total Disapproval**					**Total Approval**
5. Your close family.	1	2	3	4	5	6
6. Your friends.	1	2	3	4	5	6
7. Your colleagues.	1	2	3	4	5	6
Subjective Norms – part 2	**Not at all**					**Very much**
8. Parents or family members.	1	2	3	4	5	6
9. Friends or fellow students.	1	2	3	4	5	6
10. People important to me.	1	2	3	4	5	6

Perceived Behavioural Control	**Total Disagree**					**Total Agree**
11. To start a firm and keep it working would be easy for me.	1	2	3	4	5	6
12. I am prepared to start a viable firm.	1	2	3	4	5	6
13. I can control the creation process of a new firm.	1	2	3	4	5	6
14. I know the necessary practical details to start a firm.	1	2	3	4	5	6
15. I know how to develop an entrepreneurial project.	1	2	3	4	5	6
16. If I tried to start a firm, I would have a high probability of succeeding.	1	2	3	4	5	6

Entrepreneurial Intention	**Total Disagree**					**Total Agree**
17. I am ready to do anything to be an entrepreneur.	1	2	3	4	5	6
18. My professional goal is to become an entrepreneur.	1	2	3	4	5	6
19. I will make every effort to start and run my own firm.	1	2	3	4	5	6
20. I am determined to create a firm in the future.	1	2	3	4	5	6
21. I have very seriously thought of starting a firm.	1	2	3	4	5	6
22. I have the firm intention to start a firm someday.	1	2	3	4	5	6

Students' Demographic questions

Demographic questions (SECTION 3) **For Students**

Gender:	☐ Male	☐ Female	
Age:	☐ Up to 24 years	☐ 25-30	☐ 31+ years
Education level:	☐ Postgraduate	☐ Undergraduate	
Student status:	☐ Full-time	☐ Part-time	☐ Not a student
Employment:	☐ Full-time	☐ Part-time	☐ Not employed
Prior entrepreneurial experience	☐ Yes	☐ No	
Marital Status:	☐ Partnered	☐ Non-partnered	
Minority:	☐ Yes	☐ No	☐ Do not know

Name of your entrepreneurship course/training programme/workshop/seminar:

_____

Your major degree **(Ex: BSc/MSc in management)**

_____

University ranking **(*To be completed by the researcher*):**

_____

University name:

_____

If you are **not** taking an entrepreneurship module in a university lecture classroom, then please name the business incubator or organisation in which you are taking the entrepreneurship workshop, course or seminar:

_____

Lecturer (mentor) demographic questions

(SECTION 4 – **NOT USED FOR THE STUDY FINDINGS)**

For Lecturer (Mentors)

Gender: ☐ Male ☐ Female

Age: ☐ 26-30 ☐ 36-40 ☐ 46-50 ☐ 56-60
☐ 31-35 ☐ 41-45 ☐ 51-55 ☐ 61+

Marital status: ☐ Partnered ☐ Non-partnered

Highest level of education: ☐ High School degree ☐ Bachelor degree ☐ Doctorate degree
☐ College/Diploma degree ☐ Master degree

Place of birth: _____

Previous employment: ☐ Full-time ☐ Part-time ☐ Visiting

If yes, how many years? ☐ 0 – 2 yrs. ☐ 2 – 6 yrs. ☐ 6 – 10 yrs. ☐ 10 – 15 yrs. ☐ 15+ yrs.

Which industry? _____

Previous position? _____

Prior mentorship experience: ☐ Yes ☐ No

If yes, how many years: ☐ 0 – 2 yrs. ☐ 2 – 6 yrs. ☐ 6 – 10 yrs. ☐ 10 – 15 yrs. ☐ 15+ yrs.

Which industry? _____

Prior research publications: ☐ Yes ☐ No

If yes, how many published papers? _____

Published in which area? ☐ Management/ economics ☐ Law/Arts ☐ Engineering /Sciences ☐ Medicine/ psychology ☐ Other: _____

Research experience: ☐ 1 – 2 yrs. ☐ 2 – 3 yrs. ☐ 3 – 4 yrs. ☐ 4+ yrs.

Prior entrepreneurial experience: ☐ Yes ☐ No

If yes, how many years: ☐ 0 – 2 yrs. ☐ 2 – 6 yrs. ☐ 6 – 10 yrs. ☐ 10 – 15 yrs. ☐ 15+ yrs.

If yes, how many employees do you have? ☐ 0 - 15 ☐ 15 - 30 ☐ 30 – 50 ☐ 50 – 100 ☐ 100+

If yes, in which industry?

_____

If <u>NO prior entrepreneurial experience</u>, have you seriously considered becoming an entrepreneur?

□ Yes □ No

If yes, what size (number of employees) would you like it to achieve?

□ No employees □ 10 – 50 □ 50 – 250
□ Up to 10 □ 50 - 250 □ 250+

Do you think you have a satisfactory level of the following capacities to be an entrepreneur? (1=low capacity, 6=high capacity)	Opportunity recognition	□	1	□	□	□	□	□ 6
	Creativity	□	1	□	□	□	□	□ 6
	Problem solving	□	1	□	□	□	□	□ 6
	Leadership and communication skills	□	1	□	□	□	□	□ 6
	Development of new products and services	□	1	□	□	□	□	□ 6
	Networking and making professional contacts	□	1	□	□	□	□	□ 6
To what extent do you agree with the following statements regarding your entrepreneurial capacity?	I am prepared to start a viable firm	□	1	□	□	□	□	□ 6
	I can control the creation process of a new firm	□	1	□	□	□	□	□ 6
	I know the practical details to start a business	□	1	□	□	□	□	□ 6
	I know how to develop an entrepreneurial project	□	1	□	□	□	□	□ 6
	If I tried to start a firm, I would have high probability of succeeding	□	1	□	□	□	□	□ 6

Current position:

- ☐ PhD candidate
- ☐ Postdoc
- ☐ TA/RA
- ☐ Teaching Fellow
- ☐ Lecturer
- ☐ Senior Lecturer
- ☐ Reader
- ☐ Associate Professor
- ☐ Professor
- ☐ Other_____

In which field/industry? _____

How long you held this title? (e.g., 1 year and 5 months):

Year: _____ and Months:_____

How long have you been employed in your institute/company? (e.g., 1 year and 5 months):

Year: _____and Months:_____

Name of the university you are working with:

_____

Name of the course/module you are teaching or mentoring:

_____

This is the end of the survey

Thank you very much.

Glossary of Terms

First academic revolution: It is a single helix model that transforms universities from teaching to research institutions. In this type of revolution, economies relied on inventors' tacit knowledge which was difficult to codify. Also, there was little collaboration between universities and industries for knowledge creation purposes (Etzkowitz, 2008; Etzkowitz and Viale, 2010).

Second academic revolution: It is a double helix model that enables universities to use both teaching and research for the purpose of socio-economic development. In this type of revolution, universities started to work with industries on technical issues and presented their new knowledge in publication formats (Etzkowitz, 2008; Etzkowitz and Viale, 2010).

Third academic revolution: It is a third helix model that sparked a cooperation between universities, industries and governments to foster economic growth through innovation (Etzkowitz, 2008; Etzkowitz and Viale, 2010).

Entrepreneurial university: An entrepreneurial university relies on researchers to innovate and generate new knowledge to contribute to socio-economic growth (Abreu et al, 2016; Etzkowitz and Viale, 2010). It integrates the dimensions of a 'teaching university' that aims to change students into enterprising individuals by configuring their cognitive mindsets and a 'research university' that focuses on the academic side of entrepreneurship (Heinonen and Hytti, 2010; Fayolle and Gailly 2008).

Entrepreneurship education: It is an actionable theory form of education which combines theoretical and practical content that develops students' personality and allows them to acquire an entrepreneurial mindset and start-up competencies to cognitively and practically plan and create a firm (Currie and Knights, 2003; Neck et al, 2014; Taks et al, 2014; Urban, 2006).

Axial revolution: The ability to influence individuals' cognitions to conduct a cetain behaviour (O'Brien et al, 2013).

Semantic cognition: The cognitive area that is responsible in forming an intention towards a behaviour (Krueger, 2003; Sarasvathy, 2001).

Intention: It is a cognitive element that appears before a certain behaviour. It consists of a goal and planned process that are established within individuals' minds (Barbosa et al, 2007; Segal et al, 2005; Krueger and Carsrud, 1993).

Pedagogy: It is defined as practices that structure the teaching and learning process in education (Loughran, 2006).

Mentorship:	It is a type of pedagogy that transmits knowledge, supports students' personal development, and provides them with guidance on academic and non-academic issues (Eby et al, 2008; Jacobi, 1991; Mertz, 2004).
Mentor:	Is an individual who possess knowledge that teaches and directs mentees towards a goal (Swap et al, 2001).
Blended learning:	It is defined as a pedagogy that combines traditional teaching practices with e-learning methods such as digital media styles (Fook et al, 2016; Adam and Nel, 2009).
Mentorship in entrepreneurship education	Is a blended learning pedagogy that combines active and traditional teaching practices to influence students' cognitions about entrepreneurship.
Mentorship functions:	Are the types of mentorship methods that educators' use on their students' in order to direct them towards an objective (Webb et al, 2009; Nora and Crisp, 2007).
Nature of course:	Is a dichotomy that distinct entrepreneurship education into theoretical and practical type of education (Piperopoulos and Dimov, 2015).
Cognitive interactionism:	Explains how intention is formed from the symbolic level — where beliefs are constructed, to the semantic level — where individual intention appears from cognitive elements (Pittaway and Tunstall, 2016).
Processional interactionism:	Focuses on the external factors that influence an individual's decision-making and intentions toward an entrepreneurial activity (Elfving et al, 2009).
Theory of planned behavior:	Is an intentional theoretical framework that explains the relationship between intentions and its cognitive antecendents (Ajzen, 1991).
Attitude:	It is a cogntivie antecendent that is responsible in evaluating one's attraction towards the behaviour (Ajzen, 1991; Krueger et al, 2000).
Subjective norms:	It is the social pressure from people that impacts one's decision to perform the behaviour (Ajzen, 1991; Krueger et al, 2000; Lortie and Castogiovanni, 2015).
Perceived behavioral control:	It is when individuals assess their own confidence and abilities to perform the targeted behaviour (Ajzen, 1991; Krueger et al, 2000)
Entrepreneurial intentions:	It is cognitive factor that is present before an entrepreneurial behaviour is conducted and it consists of a goal and planned cognitive process (Barbosa et al, 2007; Krueger and Carsrud, 1993).

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