

Do entrepreneurial education programs impact the antecedents of entrepreneurial intention?

An analysis of an entrepreneurship MBA in Ghana

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Abstract

Purpose – Since the number of Entrepreneur Education Programs (EEPs) is constantly increasing, there is an ongoing debate on their effectiveness on entrepreneurial intention, but mixed results were found. This paper aims to analyse the impact of an EEP on the antecedents of the entrepreneurial intention in Ghana.

Design/methodology/approach – Following the theory of planned behaviour, we analysed the impact of the EEP on 30 participants of the “E4impact MBA” managed in Accra (Ghana), using an explanatory approach with a mixed-method quasi-experimental design featuring pre and post-testing as well as methods for measuring students’ self-perceived change.

Findings – Results show that EEPs strongly and positively affect some physiological characteristics, skills, and knowledge of participants, which are antecedents of entrepreneurial intentions.

Originality/value – The study offers a perspective of EEPs programs in a fast-expanding market, covering the lack of studies on entrepreneurship in these areas, and it is focus on a post-graduate program covering the lacks of studies on these level of education.

Keywords Ghana, Developing countries, Entrepreneurial education

Paper type Research paper

Introduction

Beginning with the recognition of entrepreneurs as promoters of social and economic development (Sine and Lee, 2009), over the past three decades, the number of Entrepreneur Education Programs (EEPs) has increased tenfold in the USA and in other parts of the world (Barak, 2012; Fayolle *et al.*, 2006; Katz, 2008; Matlay and Carey, 2007; Spiteri and Maringe, 2014; Varblane and Mets, 2010). These programs are designed for a career in self-employment and, during the program, participants are expected to learn how to set up and run their own businesses.

Since the number of EEPs is constantly increasing, there is an ongoing debate on their effectiveness on real entrepreneurial intention, but earlier research have been mixed results. A group of studies found that EEPs have a positive impact on antecedents of entrepreneurial intention (Guerrero *et al.*, 2008; Iakovleva *et al.*, 2011; Krueger and Carsrud, 1993; Krueger *et al.*, 2000; Krueger, 2009; Lee and Wong, 2004; Liñán and Chen, 2009; Lüthje and Franke, 2003; Müller, 2011). For instance, several studies showed that EEPs have a positive impact on the perceived attractiveness and feasibility of a new venture (Fayolle *et al.*, 2006; Müller, 2011; Soutaris *et al.*, 2007; Zhang *et al.*, 2014) and on the cognition of personal self-efficacy, pro-



activeness, and the inclination toward risk (Sánchez, 2013). Other research underlined that attending an EEP has a direct and positive relation with the participants' intention to start a business after graduating from the program (Karlan and Valdivia, 2006; Dickson *et al.*, 2008; Pittaway and Cope, 2007; Souitaris *et al.*, 2007). At the opposite other studies demonstrated that EEPs could have negative impacts on entrepreneurial intention (Martin *et al.*, 2012; Mentoor and Friedrich, 2007; Oosterbeek *et al.*, 2010). Eventually, a set of studies discovered that EEPs do not have any impact of entrepreneurial intention (do Paço *et al.*, 2015). In this field, for instance, Honig and Samuelsson (2012) demonstrated that training entrepreneurs in business planning, which is often a key aspect of EEPs, does not increased venture-level performance over the six-year study period.

Existing research on EEPs has several limitations and many authors have called for more research on the topic (Frank *et al.*, 2007; von Graevenitz *et al.*, 2010). For instance, most studies on EEPs were conducted in the USA or in countries where there is a strong entrepreneurial tradition (Nabi and Liñán, 2011), and there is a general lack of research in areas such as Africa (Karimi *et al.*, 2010; Dana, 2007; Ratten, 2014). In this vein, the geographical focus of existing studies conflicts with the fact that countries with a weak entrepreneurial context are the most interested in EEPs and, in fact, in these countries EEPs are a significant part of the educational system (Jesselyn and Mitchell, 2005). Additionally, research has mainly focused on EEPs offered at the undergraduate level and does not address those aimed at graduate students, such as MBAs (Rodrigues *et al.*, 2010; Souitaris *et al.*, 2007). This focus conflicts with the fact that universities are offering an increasing number of EEPs aimed at this second level and, at the present time, the effectiveness of these programs has been largely unexplored (Wright *et al.*, 2009).

Appreciating the limits of existing literature, this paper aims at contributing to the above field of research by analysing the impact on antecedents of the entrepreneurial intention of an MBA in entrepreneurship offered in Ghana. Following the theory of planned behaviour (Alonso and Krajsic, 2015; Fayolle, 2005; Fayolle *et al.*, 2006; Souitaris *et al.*, 2007; Sánchez, 2013), we analysed the impact of the "E4impact MBA," managed by the Catholic Institute of Business and Technology (CIBT) in Accra (Ghana). The research was designed to answer two explorative questions:

- RQ1. Does an entrepreneurship MBA impact the psychological characteristics that are antecedents of entrepreneurial intention?
- RQ2. Does an entrepreneurship MBA impact the personal skills and knowledge that are antecedents of entrepreneurial intention?

To answer these questions, we examined the effectiveness of the MBA for 30 students using a mixed-methods quasi-experimental design (Cohen and Manion, 1989) featuring pre and post-testing – collecting data with a repeated survey – and in-depth interviews with participants to measure self-perceived change.

The paper is organized as follows: first, we introduce the theory of planned behaviour and review its application to EEPs. Then, we discuss the role of antecedents of entrepreneurial intentions. Next, the methodology employed within the study is outlined. The section that follows provides the results of our research. Finally, the paper concludes with a discussion, keeping in mind the limitations of the study, recommending paths for further research.

EEPs and the antecedents of entrepreneurial intention

In recent years, models focusing on entrepreneurial intention have been the subject of considerable interest in entrepreneurship research (Krueger and Carsrud, 1993; Krueger

et al., 2000; Lüthje and Franke, 2003; Guerrero *et al.*, 2008; Liñán *et al.*, 2011; Müller, 2011). One of the most widely acknowledged intention models is the theory of planned behaviour developed by Ajzen (1991). According to the author, there are three antecedents of the intention to become an entrepreneur: the personal attitudes (the degree to which a person favourably or unfavourably evaluates entrepreneurial behaviour), subjective norms (whether most people approve or disapprove of entrepreneurial behaviour), and perceived behavioural controls (the perceived ease or difficulty of performing entrepreneurial behaviour). The theory has shown broad applicability in various fields of research (Sutton, 1998; Armitage and Conner, 2001). In particular, the ability of the theory of planned behaviour to predict entrepreneurial intention has been proven by the broad number of studies on entrepreneurs (Autio *et al.*, 2001; Kolvereid and Isaksen, 2006; Kolvereid, 1996; Krueger *et al.*, 2000; Liñán *et al.*, 2011; Müller, 2011; Scheiner, 2009; Souitaris *et al.*, 2007; García-Rodríguez *et al.*, 2013; Lee and Wong, 2004; Van Gelderen *et al.*, 2008; Liñán and Chen, 2009).

In recent years, different studies have extended and adapted the original theory of planned behaviour (Kolvereid and Isaksen, 2006), suggesting to include two other dimensions among the antecedents of entrepreneurial intention:

- (1) the psychological characteristics of potential entrepreneurs; and
- (2) the personal skills and knowledge of potential entrepreneurs (Bygrave, 1989; Robinson *et al.*, 1991; Garavan and O'Conneide, 1994; Koh, 1996; Rauch and Frese, 2007; Ferreira *et al.*, 2012; Ramadani *et al.*, 2016).

Various authors have argued that the extension of the theory should include, as antecedents of the entrepreneurial intention, psychological characteristics, such as a *locus* of control (Rotter, 1966; Hansemark, 1998), risk propensity (Brockhaus, 1980), self-efficacy (Betz and Hackett, 1983; Eccles, 1994; Scherer *et al.*, 1990), the need for achievement (Glennon, 1966; Hornaday and Aboud, 1971; McClelland, 1961; Hansemark, 1998), tolerance for ambiguity (Betaman and Grant, 1993), and innovativeness (Rauch and Frese, 2007). Among others researchers, Robinson *et al.* (1991) found that achievement, innovativeness, a *locus* of control, and self-confidence were positively related to entrepreneurial intentions. Moreover, Lüthje and Franke (2003) showed that personality traits, such as risk propensity, have a strong positive effect on an individual's intention to become an entrepreneur.

Other academics have discussed the role of personal skills and knowledge as antecedents of entrepreneurial intention (Liñán *et al.*, 2011). Several studies have demonstrated the positive impact of creativity (Lee *et al.*, 2004), entrepreneurial knowledge (Fayolle *et al.*, 2009), flexibility (Oosterbeek *et al.*, 2010), personal networks (Ostgaard and Birley, 1996), and analytical abilities (Casson, 1982) on entrepreneurial intentions and gender (Ramadani *et al.*, 2015). Earlier research indicated that extensive entrepreneurial knowledge, a well-developed social network, and an ability to identify opportunities also contribute to positive entrepreneurial behaviours (Ko and Butler, 2007; Kijkuit and van den Ende, 2007; Rosa *et al.*, 2008). An entrepreneurial knowledge base can also enhance useful juxtapositions between previously unrelated ideas or domains (Ko and Butler, 2006).

To understand the impact of EEPs on entrepreneurial intentions, earlier research mainly analysed the likelihood of start a business before and after attending entrepreneurship courses aimed at secondary school and university students. Krueger and Carsrud (1993) conducted research in the USA and found that undergraduate EEPs can have an impact on the antecedents of entrepreneurial intentions. Moreover, Fayolle *et al.* (2006), analysed a group of French students attending a one-day EEP and found that the antecedents of entrepreneurial intentions were strongly influenced by education, while entrepreneurship

education does not have a significant impact on students' perceived behavioural control. Other researchers used insights from several theory of planned behaviour studies tested on Spanish final-year undergraduate students to provide advice regarding educational institutions (Liñán, 2008; Liñán *et al.*, 2011). Some entrepreneurship researchers have confirmed that subjective norms and perceived behavioural control predict the entrepreneurial intentions of students from countries with advanced economies [i.e., Scandinavia, the USA (Autio *et al.*, 2001; Krueger *et al.*, 2000), Australia (Kennedy *et al.*, 2003), and Hong Kong (Kolvereid, 1996)]. Souitaris *et al.* (2007) collected data from undergraduate students from two universities (London and Grenoble) and used a theory of planned behaviour model at the beginning and at the end of an undergraduate course. Their analyses showed that entrepreneurial intentions increased after the course. Müller (2011), running a similar study with students who attended entrepreneurship courses in Austria and Germany, concluded that it was possible to promote entrepreneurial intentions and suggested which aspects of entrepreneurship should be covered within a course. However, academics have called for more research, such as Kolvereid (1996), who needed more empirical research to confirm whether the results he obtained from a small sample of Norwegian undergraduates could be generalized to other contexts. However, the impact of EEPs on graduate students has remained largely unexplored.

Methodology

In this study, the effectiveness of the "E4impact MBA", managed in Accra, on the antecedents of participants' entrepreneurial intentions were analysed. Ghana is an interesting country to study the impact of EEPs. According to the Global Entrepreneurship Monitor (GEM) (2013), Ghana has both the largest gap between necessity and opportunity entrepreneurship and the second-highest total early-stage entrepreneurial activity (TEA) levels in the world (Zambia, 41per cent, Ghana, 37per cent, Nigeria, 35per cent, and Angola, 32per cent) and it was one of the most prosperous countries in Africa in the last 20 years (Dana, 2007) and one of the fast-expanding markets (Acheampong and Dana, 2017). In addition, a review of the historical development of entrepreneurship in Ghana demonstrates that the concept of entrepreneurship has been part of the Ghanaian culture even before the fifteenth century (Buame, 1996). However, until now Ghana has partially exploited its potential of entrepreneurial activity for different reasons: the political policies were mainly focused on promotion of large-scale firms (Robson and Obeng, 2008); there are relevant levels of bureaucracy and corruption (Chamlee-Wright, 1997); some socio-cultural factors reduce the chance to start a firm such as a general dependence from family for major resources (Malecki, 1997; Adeya, 2006); and the existence of an environment where an institutional finance for start-up business is extremely limited (Robson and Obeng, 2008; Lall, 1995; Kiggundu, 2002).

The national context makes sense for the cited MBA. It is a 12-month program designed to train young Ghanaian entrepreneurs to start their business, transform a business idea into a business plan, develop the business skills necessary to guide a new venture, and connect with an international network of potential partners and investors to grow their business. Participants in the "E4impact" MBA program are potential entrepreneurs who have, at minimum, a three-year bachelor's degree from an accredited institution, preferably in management, economics, education, social science, communication, agro-science, or engineering. At the beginning of the program, candidates must present an entrepreneurial idea (potential start-up), which is one of the criteria for the selection process. Table I summarizes the details about the participants and entrepreneurial ideas from the 2014 edition. The program is built around participants' entrepreneurial ideas: each course provides participants with the opportunity to apply the knowledge and tools they acquire to

Participant no.	Gender	Age	Educational background	Industry of entrepreneurial idea
Participant 01	Male	38	Bachelor in Business Administration	Entertainment
Participant 02	Male	42	Bachelor in Pharmacy	Milk and yogurt production
Participant 03	Male	38	Bachelor in Business Administration	Automotive
Participant 04	Male	40	Bachelor in Business Administration + Master in Marketing	Education and e-learning
Participant 05	Male	30	Bachelor in Computer Science + Bachelor in Entrepreneurship and SME Management	Education and e-learning
Participant 06	Female	49	Bachelor in Arts	Fish farming
Participant 07	Male	32	Bachelor in Arts Nursing and Psychology	Agriculture
Participant 08	Male	38	Master in Pharmacy Honours degree	Pharmaceutical
Participant 09	Male	32	Bachelor in Pharmacy	Health
Participant 10	Male	33	Bachelor in Marketing	Housing and accommodation
Participant 11	Female	35	Bachelor in Fashion Design	Fashion and clothes
Participant 12	Male	32	Bachelor in Computer Science	Education and e-learning
Participant 13	Male	27	Bachelor in Arts Information Studies	Mobile banking
Participant 14	Male	42	Bachelor in Accounting	Fish farming
Participant 15	Male	31	Bachelor in Biological Science	Fish farming
Participant 16	Male	44	Bachelor in Business Administration	Microfinance
Participant 17	Male	35	Bachelor in Sales and Marketing	Entrepreneurial training
Participant 18	Female	46	Bachelor in Resource Management	Bottle water business
Participant 19	Male	42	Bachelor in Business Administration	Health
Participant 20	Male	33	Bachelor in Administration	Fashion and clothes
Participant 21	Female	40	Bachelor in Agriculture Economics	Agriculture
Participant 22	Female	43	Bachelor in Marketing	Agriculture
Participant 23	Male	40	Bachelor in Information Technology	Waste management
Participant 24	Male	30	Bachelor in Sociology	Printing solutions
Participant 25	Male	27	Bachelor in Arts English Language	Restaurant
Participant 26	Male	37	Bachelor in Business Administration	Cooking oil
Participant 27	Male	31	Bachelor in Business Administration	Restaurant
Participant 28	Male	37	Bachelor in Arts in Economics and Geography	Cluster initiatives
Participant 29	Male	41	Bachelor in Logistics and Transport	Logistic
Participant 30	Male	29	Bachelor in Arts Communication Design	Printing

Table I.
E4Impact MBA 2014
participants

their business idea and receive the preparation and contacts necessary to successfully launch a new and impactful business plan.

To overtake limits of hypothetic-deductive quantitative research (Dana and Dana, 2005) and inductive-qualitative research (Dana and Dumez, 2015), we followed suggestions of Light *et al.* (2009) and to assess the effectiveness of the EEP we used a mixed-methods quasi-experimental design (Cohen and Manion, 1989). A quasi-experimental design examines the effects of an intervention on a specific population without a control group (Cohen and Manion, 1989). In the case of “E4Impact” MBA program it was not possible to run a fully experimental design because there was no opportunity to identify a reliable control group, as it would have been composed of potential entrepreneurs that did not attend the E4Impact program.

An explanatory design typically involves two phases: an initial quantitative instrument phase, followed by a qualitative data collection phase, which builds directly on the results of the quantitative phase (Creswell *et al.*, 2003). In this way, the quantitative results are better explained through the qualitative data. Comparing multiple data sources provides a more robust assessment and reduces any bias that may result from using a single method of

measurement (Cronbach and Meehl, 1955; Cook and Campbell, 1979; Kirkpatrick, 1979). For this reason, in our research we combined pre and post-test evaluations using questionnaires to collect participant perceptions (quantitative method) (Chen *et al.*, 2013) and in-depth interviews with attendants to assess the impact of the MBA on antecedents of entrepreneurial intentions (qualitative method).

Regarding the quasi-experimental design, Warr *et al.* (1999) recommend conducting pre and post-test evaluations to discover any changes in the gain scores, which provides a more detailed assessment of the average shift associated with EEPs. The evaluation requires researchers to collect data regarding participants' perceptions before the EEP took place (pre-test) and after the intervention took place (post-test) (Cohen and Manion, 1989). Our design featured more than one post-test so that we could obtain information on how the outcome variables change over time, given problems with maturation, testing, history, and self-selection (Aussems *et al.*, 2011). To collect data, the pre-test round (T0) took place on the first day of the program. The first post-test round (T1) took place in the middle of the program, and the third round (T2) took place during the last month of the program. Before beginning the course, all participating students were informed that the questionnaires were for research purposes only, participation was voluntary, and responses would in no way influence grading within the course, following Souitaris *et al.* (2007). All quantitative data were collected with a questionnaire. In total, 30 students completed all three questionnaires.

The content of the questionnaires was based on several related studies. Only the first questionnaire featured a section with general demographic profiles and identified prior entrepreneurial experience. The other section was the same for all three questionnaires, with closed-ended questions regarding entrepreneurial psychological characteristics and personal skills and knowledge, measured using a seven-point Likert scale to allow for rigorous analysis (1 = strongly disagree, 7 = strongly agree).

We measured five psychological characteristics of participants: a *locus* of control, self-efficacy, tolerance for ambiguity, the need for achievement, and risk propensity. A *locus* of control refers to an individual's perceived ability to control events in his or her life (McClelland, 1961; Gurin *et al.*, 1969; Lao, 1970; Brockhaus, 1980; Begley and Boyd, 1987; Bonnett and Furnham, 1991; Nwachuckwu, 1995). The present study focuses on the internal dimension of a *locus* of control using a four-item scale originally developed by Rotter (1966) to measure individuals' confidence in their ability to control the events in their lives. To measure self-efficacy, or individuals' belief in their ability to accomplish a task, we used four items based on the foundations for exercising self-efficacy (Bandura, 1997) developed starting from the general self-efficacy scale (Schwarzer, 1992). A tolerance for ambiguity is an individual's tendency to perceive ambiguous situations as desirable (Budner, 1962). As Mitton (1989) affirmed, entrepreneurs are inclined to operate in uncertain environments and manage the unknown, so a tolerance for ambiguity can be considered an entrepreneurial characteristic. It was assessed using a three-item scale originally developed by Budner (1962). The need for achievement, originating from the seminal work of McClelland (1961), has been frequently defined as an individual's expectation that he or she will do something better or faster than anyone else will (McClelland, 1961; Brockhaus, 1980; Carland *et al.*, 1984; Carsrud *et al.*, 1989). It was measured using the three-item scale originally developed by Edwards (1959) to measure achievement motivation and Kahl's (1965) eight-item scale. Risk propensity, a predictor of career choice, is often mentioned as an antecedent of entrepreneurial intentions (Bygrave, 1989). Individuals who founded their own companies have a greater risk propensity than managers (Begley and Boyd, 1987). The questionnaire

was comprised of a four-item scale based on other studies (Gomez-Mejia and Balkin, 1989; Gibcus *et al.*, 2012).

Entrepreneurship is a grey area between art and science, and for this reason it is imperative for students to learn how to apply the studied theory to practical situations (Dana, 1993, 1987). For this reason, in our study we included the consideration of participants' personal skills and knowledge. They were measured using five constructs: personal creativity, entrepreneurial knowledge, flexibility, networking, and analysis. Personal creativity is an entrepreneurial personality trait that includes high levels of energy, attraction toward complex and novel phenomena, openness to ambiguity, willingness to be open-minded, and persistence in adverse conditions (Mintzberg *et al.*, 1976; Feist, 1999). In our study, personal creativity was assessed using Gibcus *et al.*'s (2012) three-item scale. Entrepreneurial knowledge is defined as a set of skills needed to create and succeed at a business venture, and we measured it using a two-item scale by Gibcus *et al.* (2012). To measure flexibility, or an individual's ability to observe and react to changes in his or her environment, such as new needs of clients or new competitors (Oosterbeek, Van Praag, and Ijsselstein, 2010), we used two items suggested by Gibcus *et al.* (2012). Networking was measured with a four-item scale used by Gibcus *et al.* (2012). Finally, we measured participants' capacity for analysis, or their ability to carefully weigh advantages and disadvantages, recognize patterns and consequences, identify constraints, and consider alternatives.

Since we had the same sample of participants for the three managed questionnaires, to assess the statistical significance of observed differences, a one-way ANOVA with repeated measures was conducted to compare the scores of the antecedents of entrepreneurial intentions obtained by the three surveys. One of the assumptions of an ANOVA with repeated measures, provided by Statistical Package for Social Science Software (SPSS), is sphericity (Field, 2009). Sphericity requires that the variances in the population difference scores for any two conditions are the same as the variances in the population difference scores for any two other conditions. To assess this, we used Mauchly's test of sphericity (Field, 2009). When the significance level (probability) of Mauchly's test is less than or equal to the a priori alpha level (e.g., ≤ 0.05), the assumption of sphericity has been violated and there are significant differences between the variances. To correct this, we used the Greenhouse-Geisser *F* ratio to provide the output of the analysis.

Then, using an explanatory approach (Creswell *et al.*, 2003) to assess the reliability of the results of the quantitative method, nine in-depth interviews were conducted. Respondents were selected among those who participated the most and earned the best grades during the program. The content of the transcripts of the semi-structured interviews was analysed to confirm or disconfirm the results of the questionnaires. An interview script was used to structure the interview and allow for follow-up questions. The questions were designed to enable interviewers to assess changes in respondents' perceptions of entrepreneurial psychological characteristics and personal skills and knowledge before and after completing the entrepreneurial MBA program (Yin, 1984; Eisenhardt, 1989). Bryman and Bell (2007) noted that this method allows the same topics to be discussed with each respondent and guarantees a great deal of leeway for new or specific issues to emerge. Given the purpose of the analysis, the questions were focused on the ways in which the MBA program results in changes. The interviewers received comprehensive training on interview techniques to probe participants' answers, the use of prompts to clarify abstract statements, note taking, and typical interviewer errors (e.g., non-verbal signs of agreement). Verbatim notes of participants' responses to open questions were taken. Following Strauss and Corbin (1990,

1998), outcomes were analysed by clustering statements in core categories reflecting the specific constructs being discussed.

Results

Table II provides the results of the ANOVA test that quantify participants' levels of entrepreneurial psychological characteristics during the MBA program. The results show that the MBA program had a significant impact on participants' *locus* of control, self-efficacy, need for achievement, and risk propensity, constructs in which items generally present differences between the three periods of analysis with a p-value lower than 0.05. For self-efficacy, three to four items and the mean show a statistically significant increase. The mean of the factor shows a significant ($F = 9.37$; $p < 0.01$) increase over the three observations (before MBA: 4.76; during MBA: 5.01; after MBA: 5.34). This result was confirmed by participants' interviews. With respect to the increase in self-efficacy, the MBA, which provides students with practical instruments for managing a business, allows participants to increase their perceived ability to organize the work. For instance, one participant said:

Before the MBA, I wanted to be an entrepreneur, but I didn't know how to be an entrepreneur. After the MBA, I feel that I can manage my activities better than before.

Similarly, another participant stated:

I had my business idea in mind for some time, but I was not confident that I would be able to implement it. The MBA has forced me to begin to implement my business idea.

The observed differences in the items related to risk propensity also increased ($F = 3.85$; $p < 0.05$; mean: 4.81; 4.87; 5.22). The fact that the MBA program increased risk propensity is also evident in the participants' statements. The participants demonstrated an ability to recognize entrepreneurial risks, but, as a result of the MBA program, they are also able to control the risks and any fears related to them, as one participant reported:

I've learned how to manage my fear. Before the program, I was not thinking about the entrepreneurial risk. I wanted to immediately reach my goals, and if it did not happen, I was scared. The program has given me the opportunity to understand that it takes time; now I know the risks and the uncertainty, but I'm no longer scared.

Regarding a *locus* of control, the mean value shows a significant change ($F = 4.33$; $p < 0.05$). However, the differences are not the same, with a decrease in the first part of the MBA program (equal to -0.36) and an increase in the second part (equal to $+0.37$).

Finally, there were no significant differences in indicators related to a tolerance for ambiguity.

Table III summarizes the results of the analysis of participants' personal skills and knowledge. The results show significant positive differences in the pre and post values of creativity, knowledge, networking, and analysis ($p < 0.05$). The significant increase in networking ($p < 0.01$; $F = 6.83$; mean: 4.81; 4.96; 5.26) reflects the program's emphasis on teamwork and the creation of an ecosystem of entrepreneurial-minded people. The statements describing changes in networking were confirmed in several ways during the interviews. Some participants reported the change directly in terms of the relationship within the class: "At the beginning, I was afraid to talk with others students about my business idea; now, one of them is my partner". Others discussed their personal networks: "Expanding my personal network, now I'm in contact with people who can help me to build my company".

Variables	Before MBA		During MBA		After MBA		γ - α	W	Sphericity Significance	F	ANOVA Significance	
	M(α)	SD	M(β)	SD	M(γ)	SD						γ - β
<i>Locus of control</i>												
Many of the unhappy things in people's lives are due to bad luck rather than people's mistakes	5.20	0.92	4.10	1.76	-1.10	4.13	1.18	0.04	0.65	*	6.13	*
Most entrepreneurs do not realize the extent to which success is influenced by accidental happenings	4.13	1.98	4.24	1.81	0.10	4.61	1.67	0.48	0.65	*	0.71	
Trusting fate has never been successful for me when making a decision to take a course of action	4.87	1.28	4.90	0.77	0.04	5.52	0.67	0.66	0.69		5.70	**
Becoming successful is a matter of hard work. Luck has little or nothing to do with it	6.23	0.90	5.85	1.31	-0.38	6.22	0.80	-0.02	0.37	0.70	2.52	
Mean of locus of control	5.11	0.74	4.75	0.71	-0.36	5.12	0.68	0.01	0.37	0.82	4.33	*
<i>Self-efficacy</i>												
When I try hard enough, I can always manage to solve difficult problems	5.37	1.00	4.52	2.04	-0.84	5.13	1.60	-0.24	0.61	0.46	1.79	
In demanding situations, I can usually think of solutions	5.00	0.95	5.24	0.54	0.24	5.39	0.50	0.39	0.15	0.76	4.78	*
No matter what comes my way, I am usually able to handle it	4.73	0.94	5.10	0.77	0.36	5.48	0.67	0.74	0.38	0.86	6.70	**
I can rely on my ability to solve problems	3.93	2.30	5.25	0.55	1.32	5.35	0.71	1.41	0.10	0.16	6.92	**
Mean of self-efficacy	4.76	0.74	5.01	0.78	0.25	5.34	0.51	0.58	0.33	0.66	9.37	**
<i>Tolerance for ambiguity</i>												
It is more fun to tackle a complicated problem than to solve a simple one	1.93	1.93	2.05	1.80	0.11	1.57	1.44	-0.37	-0.48	0.87	2.39	
Many of my most important decisions are based upon insufficient information	2.00	1.17	2.14	0.96	0.14	2.26	1.05	0.26	0.12	0.67	1.00	
Often the most interesting people are those who don't mind being different	4.83	1.56	4.95	1.05	0.12	5.26	0.69	0.43	0.31	0.62	0.24	*
Mean of tolerance for ambiguity	2.92	0.82	2.99	0.88	0.07	3.03	0.53	0.11	0.04	0.58	0.07	*

(continued)

Table II.
The impact of the
MBA on
psychological
characteristics

Table II.

Variables	Before MBA		During MBA		After MBA		γ - α	W	Sphericity Significance	ANOVA F	ANOVA Significance
	M(α)	SD	M(β)	SD	M(γ)	SD					
<i>Need for achievement</i>											
I want to achieve more than most other people want to achieve	5.23	1.10	5.00	1.41	5.39	1.16	0.16	0.39	0.80	0.91	
I am ambitious	4.93	0.94	4.48	1.25	5.04	0.64	0.11	0.57	0.94	3.29	*
Mean of need for achievement	5.08	0.84	4.74	1.09	5.22	0.65	0.13	0.48	0.92	2.77	
<i>Risk propensity</i>											
I am willing to take risks	5.07	0.87	5.43	0.60	5.74	0.45	0.67	0.31	0.63	7.40	**
I tend to take my chances, even when I run the risk of bearing a considerable loss	4.47	1.20	4.10	1.61	4.74	1.86	0.27	0.64	0.67	0.82	*
I realize new things deliberately	4.27	1.64	4.86	0.91	5.13	0.97	0.86	0.27	0.53	5.14	**
When I discover opportunities, I bring them to fruition	5.43	0.77	5.10	0.70	5.26	0.69	-0.17	0.17	1.00	2.06	*
Mean of risk propensity	4.81	0.73	4.87	0.66	5.22	0.74	0.41	0.35	0.68	3.85	*

Notes: ** $p < 0.01$, * $p < 0.05$

Variables	Before MBA		During MBA		After MBA		γ - α	W	Sphericity Significance	ANOVA F	Significance
	M (α)	SD	M (β)	SD	β - α	M (γ)					
<i>Creativity</i>											
I often come up with new ideas	5.17	0.99	5.10	1.17	-0.07	5.00	1.00	-0.17	-0.10	0.74	0.11
I openly question how things can be improved	5.30	0.65	5.30	0.86	0.00	5.74	0.54	0.44	0.44	0.89	*
I have a vivid imagination	5.13	0.63	5.20	0.77	0.07	5.52	0.59	0.39	0.32	0.95	**
Mean of creativity	5.20	0.59	5.20	0.76	0.00	5.42	0.53	0.22	0.22	0.94	*
<i>Entrepreneurial knowledge</i>											
I know what determines successful entrepreneurship	4.83	0.91	4.65	1.04	-0.18	4.74	0.86	-0.09	0.09	0.90	-
I am able to distinguish between good and bad entrepreneurs	4.63	1.16	5.20	0.95	0.57	5.61	0.58	0.98	0.41	0.69	**
Mean of knowledge	4.73	0.76	4.93	0.91	0.19	5.17	0.58	0.44	0.25	0.69	**
<i>Flexibility</i>											
I easily anticipate and adapt to unforeseen events	4.73	0.78	5.10	0.72	0.37	4.96	1.22	0.22	-0.14	0.78	1.89
I am able to handle different situations easily	5.10	1.16	4.95	0.94	-0.15	4.83	1.19	-0.27	-0.12	0.99	0.32
Mean of flexibility	4.92	0.79	5.03	0.72	0.11	4.89	1.02	-0.03	-0.13	0.86	0.95
<i>Networking</i>											
I try to meet people who may be important to me	4.80	0.89	4.80	0.89	0.00	5.30	0.70	0.50	0.50	0.83	**
I am an active networker	4.77	0.73	5.30	0.66	0.53	5.39	0.66	0.62	0.09	0.96	2.92
I maintain contacts outside my inner circle	5.07	0.74	4.90	0.72	-0.17	5.09	0.79	0.02	0.19	0.38	**
I like to talk to people who I do not know yet	4.60	0.93	4.85	0.81	0.25	5.26	0.81	0.66	0.41	0.83	4.41
Mean of networking	4.81	0.52	4.96	0.53	0.15	5.26	0.47	0.45	0.30	0.95	6.83
<i>Analysis</i>											
I am able to make high-quality analyses	4.90	0.76	4.95	0.76	0.05	4.96	0.88	0.06	0.01	0.85	0.75
In a pool of information, I tend to see the broad outlines quickly	4.57	1.30	5.05	0.76	0.48	5.09	0.73	0.52	0.04	0.31	**
I can list and weigh advantages and disadvantages well	4.50	1.11	5.05	1.19	0.55	5.57	0.66	1.07	0.52	0.21	**
Mean of analysis	4.66	0.86	5.02	0.73	0.36	5.20	0.54	0.55	0.19	0.04	**

Notes: ** $p < 0.01$, * $p < 0.05$

Table III.
The impact of the
MBA on skills and
knowledge

After the MBA program, participants chose higher scores for items related to entrepreneurial knowledge (a significant positive effect of participants' perceived ability to distinguish between good and bad entrepreneurs equal to +0.98), but reported lower scores on items related to their perceived flexibility (a negative effect equal to -0.27 for the item "I'm able to handle different situations easily"). During the interviews, most participants discussed the ways in which the MBA program increased their entrepreneurial knowledge by bridging the gap between a business idea and its implementation. One participant said:

Now I know what I have to do. I've structured my business idea in a better way, focusing on the more profitable areas of business. Now I know which steps are practical to follow and that it is not useful to go fast.

Similarly, another participant stated: "From the first lesson, I realized what was going well in my business idea, what I could actually do, and what I should change".

Discussion

Several limitations reduced the generalizability of our results. First, the analysis was performed on a single entrepreneurial education institution in Ghana. Additionally, without a control group, the interpretation of the pre and post-test differences can be disputed, as it is not possible to determine unequivocally the causal relation between the intervention and results. Participants may improve because they mature or may regress because they become fatigued. Measuring the outcome variables several times before, during, and after an intervention can lessen the impact of maturation. Though our study does have limitations, the multi-method, multi-measure approach compensates for many of the design weaknesses in specific components of our evaluation. In any case, it can be reasonably assumed that any differences are due to the MBA program, as the content of this MBA is very specific and is not replicable in other structures.

Recognizing limits of the research, our findings are consistent with some results from prior studies. They confirm that attendance of an EEP can positively influence participants' entrepreneurial intentions, even for postgraduate students in fast-growing countries (Souitaris *et al.*, 2007; Light *et al.*, 2009; Sánchez, 2013). The results of this study indicate that, at a general level, some psychological characteristics and personal skills and knowledge can be taught and strengthened.

Findings support the idea that an entrepreneurial personality can be fostered through entrepreneurial education (Erikson, 2003; Sánchez, 2013; Dana, 1993). We found that EEPs have a positive effect on participants' entrepreneurial self-efficacy and risk propensity. EEPs influence psychological antecedents, confirming previous findings that EEPs influence young people's psychological development (Groves *et al.*, 2011). As noted above, participants are engaged in the start-up process of a real business during the EEP. This serves as practical experience and increases participants' entrepreneurial self-efficacy (Gist and Mitchell, 1992). According to Fayolle (2005) and Kickul *et al.* (2008), self-efficacy significantly influences entrepreneurial intentions. Thus, supporting students' self-efficacy is important for enhancing entrepreneurial intentions (Zhao *et al.*, 2005; Raposo *et al.*, 2008a, 2008b).

Moreover, our results show that EEPs affect participants' entrepreneurial knowledge and networking. Through EEPs, participants learn not only how to create a business, but also how to start and manage their networks. The qualitative results show that they are successfully able to do so. A successful entrepreneur needs to not only manage the internal operation of his firm, but also establish external networks. Moreover, the analytical, technical, and networking skills developed as a result of the EEP are relevant tasks required

by potential entrepreneurs to recognize business opportunities (Henry *et al.*, 2005; Shepherd and DeTienne, 2005).

Implications

The results of our research have both academic and managerial implications. On the former side, the research confirms the opportunity to include (and deeper analyse) the change in antecedents of entrepreneurial intention among impacts of EEPs. In this sense, the study highlights that theory of planned behaviour is a proper framework to analyse the effectiveness of efforts in educational programs aimed at advance entrepreneurial actions. Hence, this study underlined that entrepreneurial action is far from a result of personal and invariable antecedents, but it also the consequence of experience of potential entrepreneurs such as the attendance of an EEP.

On the managerial side, the understanding of positive impacts of EEPs on antecedents of entrepreneurial action reinforce the effort of universities, schools, and private organizations in developed countries that have invested in EEPs over the past several decades (Katz, 2008), particularly in areas such as Africa, where interest in EEPs has progressively increased (Jesselyn and Mitchell, 2005; Karimi *et al.*, 2010). EEPs are effective tools for developing the antecedents of entrepreneurial intentions of participants and, as suggested in prior studies (Souitaris *et al.*, 2007; Sánchez, 2013), more attention could be paid to instructors' training (academics, trainers, lecturers). They should receive specific training so that they are able not only to teach entrepreneurship topics, but also to act on students' psychological characteristics and personal skills and knowledge.

In addition, the results suggest to the policy makers the opportunity to use EEPs to foster the economic development in a geographical area. Policy maker use to consider availability financial benefits and special tax reduction for new established enterprises as the main governmental action to increase entrepreneurial actions in their country. These policies could be more effective if they are supported by integrative EEPs aimed at increase the entrepreneurial intentions and extend the number of potential entrepreneurs that could benefit of the existing policies.

Conclusions

At a time when there is increased interest in fostering entrepreneurial initiatives in fast-growing countries via EEPs, the research show that EEPs strongly and positively affect the physiological characteristics, skills, and knowledge of participants in Ghana, a country characterized by both a high propensity to engage in entrepreneurial activity and a large gap between necessity and opportunity in entrepreneurship initiatives. Our findings suggest that this kind of EEP could be successfully replicated in countries in which students have a positive attitude about becoming involved in the start-up process of a real business (Oosterbeek *et al.*, 2010).

To enhance our understanding of the impact of entrepreneurship education on entrepreneurship intentions and actions, we have identified three avenues for further research. The first concerns the replication of the research in different countries to compare and improve the analysis. The comparative element helps to assess the expected or accepted level of impact of an EEP on antecedents of entrepreneurial intentions. Comparing the results from different programs, regions, and categories of entrepreneurship would be possible. Assessing the impact of entrepreneurship education in different countries offers a fertile area for research, particularly in light of the expansion of EEPs to diverse populations and disciplines.

A second stream of research could address relevant questions which remain open on relation between EEPs and antecedents of entrepreneurial action. Further research could reach a deeper understanding of whether different features of EEPs influence their effectiveness on entrepreneurial intention and on how EEPs impact on entrepreneurial action in other fast-growing economies grounded in different historical culture (such as Latin America, Asia, etc.).

In addition, the theory of planned behaviour and its extension can be a valuable tool for evaluating the relationships between EEPs, antecedents, and entrepreneurial behaviour, such as beginning a new venture. The impact of intervention can be evaluated in terms of the number of companies started after an EEP, the number of surviving start-ups (companies that are on the market 3–5 years after start-up), the number of jobs created, and whether these start-ups are entering prospering or dead-end markets.

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