

Entrepreneurial intentions: is education enough?

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Abstract Entrepreneurship education has played an important role in promoting entrepreneurial intentions and furthering the development of enterprising citizens. Thus, education and training can contribute towards increasing management knowledge and developing the psychological attributes and behaviours associated with entrepreneurship. This study therefore seeks to compare the psychological attributes and behaviours associated with entrepreneurship, as well as entrepreneurial intentions among girls attending a business school and boys attending a sports school. It was expected that the scores recorded for entrepreneurial behaviour and intentions would be higher at the girls' business school, where entrepreneurship education is deeply incorporated into the curriculum, but the results showed that, despite their not receiving any kind of entrepreneurship education, the boys at the neighbouring sports school, tended to have a greater intention of starting up a business, which suggests that there are other factors influencing entrepreneurial intentions.

Keywords Entrepreneurship education · Gender · Psychological attributes · Entrepreneurial behavioural · Entrepreneurial intentions

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Introduction

Why do some individuals become entrepreneurs and others don't? This is one of the most keenly debated questions in entrepreneurship research. In the earliest discussions of this phenomenon, the situation was believed to be due to the presence of certain specific personal characteristics in entrepreneurial individuals (e.g. Brockhaus 1980; Carland et al. 1988; Chell and Haworth 1993). Some researchers defend the idea that there may be certain genetic aspects that tend to determine whether some people become entrepreneurs while others do not. However, the view that specific (economic and socio-cultural) environmental aspects could influence a person's intention and decision to become an entrepreneur has recently won more supporters. In fact, some investigations have come to support the idea that the psychological attributes related to entrepreneurship can be culturally acquired (Gibb and Ritchie 1982; Ajzen 2001). Other studies have focused on the importance of certain moderate variables, such as gender, discovering a persistent gap between males and females regarding their respective levels of entrepreneurial activity, entrepreneurial orientation, motivation and intention to become entrepreneurs (Mueller and Dato-On 2011). However, previous research is not conclusive about this matter, since it has found both similarities and differences between male and female entrepreneurs (Lim and Envick 2011).

Various investigations undertaken in the area of business creation suggest that individual differences are the main reason why some people are actively involved in creating their own businesses and others are not (Baron 1998; Krueger et al. 2000; Shane and Venkataraman 2000; Mueller and Dato-On 2008; Narayanasamy et al. 2011; Shinnar et al. 2012). In turn, behaviourists (e.g. Bird 1989; Gartner 1989) believe that an entrepreneur is an individual with entrepreneurial behaviour, regardless of his or her personal characteristics. According to the behavioural approach, behaviours can be learned, through both formal and informal processes. This is where "*entrepreneurship education plays a critical role in orienting and developing future entrepreneurs, by providing them with the requisite mix of knowledge, skills and aptitude to launch and operate new business ventures*" (Dutta et al. 2011:165).

In spite of the differences to be noted in both the personal and the behavioural approaches, education plays a critical role in the development of enterprising citizens, by identifying and triggering vocations in individuals, promoting entrepreneurial mindsets and skills and entrepreneurial intentions and behaviours (Oosterbeek et al. 2010). In this sense, education and training, based on a solid learning theory, can contribute to increased management knowledge and to developing the psychological attributes and behaviours associated with entrepreneurship (Lee et al. 2006). This can make a great difference in generating a new breed of entrepreneurs.

This is an opinion that is also defended by the European Union in its *Green Paper on Entrepreneurship* (European Commission 2003). One year later, *The European Commission's Action Plan: The European Agenda for Entrepreneurship* (European Commission 2004), which sought to provide a strategic framework for the advancement of entrepreneurship, mentioned fostering entrepreneurial mindsets through education as one of the most relevant actions for the promotion of entrepreneurship. The definition of "entrepreneurship" adopted by the European Commission (2006:20), also reflects this emphasis on individual (cap)abilities: "*Entrepreneurship refers to an individual's ability to turn ideas into action. It includes*

creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives”.

In spite of the fact that education is seen as an important instrument for fostering entrepreneurship in a society, it is still not clear whether education in itself is sufficient to counteract the socialisation process and the cultural aspects that are linked to gender. In fact, several studies have revealed that males, in comparison with females, consider entrepreneurship to be more desirable than other careers and have a greater preference for business creation (Díaz-García and Jiménez-Moreno 2010).

Thus, since entrepreneurship and education are both socially and culturally embedded, the aim of this study is to understand which of the two forms of socialisation (formal education or gendered socialisation) most influence entrepreneurial characteristics and intentions. In order to achieve this aim, we will compare psychological attributes and behaviours associated with entrepreneurship, as well as entrepreneurial intentions among girls attending a business school and boys attending a sports school. Both schools are secondary-level vocational schools, and their students have an age range of 11 to 16 years old.

This paper is structured as follows. Firstly, we present some of the theoretical background relating to entrepreneurship education, entrepreneurial intentions and the variables that influence them (gender, behavioural and psychological constructs), and we state our hypotheses. This is followed by a description of the methodological issues, including the sample that was used, the measures that were made and the respective analysis. Next, the findings are stated and discussed. The paper ends with some concluding remarks highlighting a number of important implications for researchers, practitioners and educators.

Literature review

Entrepreneurship education

Entrepreneurship education has played an important role in promoting entrepreneurial intentions. But, meanwhile, the international financial and economic crisis that arose in 2008 and the subsequent global recession have given rise to a new economic period with significant implications for entrepreneurship education (Rae 2010). Entrepreneurship education, both in theory and practice, is, however, still very far from reaching its maturity. The first courses in entrepreneurship, in the United States, date back to the 1940s. Since then, entrepreneurship education has grown significantly in the developed world (Vesper and Gartner 1999; Nabi et al. 2010). This trend was particularly evident in the 1990s in universities in the United States, Canada and France (Kyrö 2006).

However, for Byabashaija and Katono (2011), one construct in the intentions theory that has not featured enough in literature is entrepreneurial education. The effect of general education has been explored, but only a few studies have looked at entrepreneurship education, as is the case with Dutta et al. (2011), who found that specialised entrepreneurship education has a positive relationship with a person's predisposition for future business creation. Additionally, Sánchez-Escobedo et al. (2011) state that participation in programmes that motivate business creation tends to significantly increase a person's perception of the viability of actually starting up a new

venture. Furthermore, individuals who consider their business education to have been a positive experience tend to score higher in terms of such perceived viability than those who report a negative educational experience.

Education seems to be an important way of stimulating entrepreneurship for various reasons (Reynolds et al. 1999; Sánchez 2010). Firstly, education provides individuals with a sense of independence, autonomy and self-confidence. Secondly, education makes people aware of alternative choices of career. Thirdly, education expands people's horizons, making them more able to perceive opportunities; and finally education provides knowledge that can be used by individuals to develop new business opportunities. Through an appropriate entrepreneurship education, an individual can acquire the skills and knowledge needed to launch and develop a new business. For Drucker (1985), entrepreneurship is a course, and, like any course, it can be learned.

In the European Union, most Member States are now committed to promoting the teaching of entrepreneurship in their education systems by implementing various educational programmes designed to contribute to the stimulation of entrepreneurial abilities. Hisrich and Peters (1998) say that the various skills required by entrepreneurs can be categorised as technical skills, business management skills, and personal entrepreneurial skills. Henry et al. (2005) state that the development of these personal skills distinguishes an entrepreneur from a manager. Thus, very different skills, abilities and knowledge may be required to fulfil the different aims of entrepreneurship training programmes (Dutta et al. 2011).

However, some of these programmes only connect entrepreneurship to new venture creation and business management, and consequently teach people *about* entrepreneurship and enterprise, rather than educating them *for* entrepreneurship. Only rarely is the focus on the development of the students' skills, attributes and behaviours (Kirby 2004). Instead, the focus is on the tangible and quantifiable outcome of a business plan (Rae 2010). Byabashaija and Katono (2011) perceive entrepreneurship education from a broader perspective, and thus consider that it should contribute towards stimulating abilities such as flexibility, creativity, a predisposition to think conceptually and to see change as an opportunity. These aspects should be added to everything that constitutes the basic skills needed to start and manage a business. This idea is reinforced by Rae (2010), for whom students' expectations are changing, as was, in fact, highlighted by the 2009 Eurobarometer survey, which showed that most higher education students agreed that programmes should include general competences such as communication skills, teamwork, and "learning to learn". It also stressed that it is essential that curricula should provide the knowledge and skills necessary for employability in the labour market, and help to boost personal development.

The role of gender in entrepreneurial intentions and influencing variables

Entrepreneurial intentions

Understanding what factors influence and shape students' intentions about starting a business is vital for developing the programmes and policies needed to promote entrepreneurial behaviour (Barkovic and Kruzic 2010). Therefore, given the high regard in which entrepreneurship is held by society (Miller et al. 2009), investigating what factors determine the Entrepreneurial Intention (EI) is a crucial issue in

entrepreneurship research, and especially for entrepreneurship education. EI has been described as a conscious state of mind that directs attention (and therefore experience and action) towards a specific object (goal) or the pathway to achieve it (means) (Bird 1989).

Bosma et al. (2011), the authors of GEM 2011, briefly describe the diversity of entrepreneurial activity in the economies of 52 countries. The report reveals considerable variations in the participation rates of females in the early stages of the entrepreneurial process, when compared with males. The study itself shows that for the three groups of countries (identified according to their levels of economic development and the different geographies of the world) women have both high and low participation rates compared to men. The reasons for these variations are complex, probably resulting from context-specific issues that justify the need to deepen our knowledge about the factors that lead to the involvement of females in entrepreneurial activity and the variables that have a significant impact on the economic development of countries.

DeMartino and Barbato (2003) looked at other studies and noted that most previous research suggests that there are several similarities between male and female entrepreneurs in terms of personality factors, but that, as far as motivation is concerned, there are a number of important differences. Brush (1992) states that a significant percentage of females are motivated by their dissatisfaction with their current employment and view starting up their own businesses as a job alternative that is more compatible with their lifestyle since it helps them to achieve a balance between work and family. Compared to males, females are less motivated by factors such as wealth creation and economic advancement (DeMartino and Barbato 2003).

For Zhang et al. (2009:94), “*If the environment provides different levels of resources, opportunities, and support for women versus men, it is then possible that there may be gender differences in the environmental effects on entrepreneurship for males versus females.*” Authors such as Brush (1992) state that, even when people have similar backgrounds, there is a higher prevalence of entrepreneurship among males than among females, and this gender disparity tends to be robust across cultures. This trend in some countries indicates that gender has a major effect on the propensity to engage in entrepreneurship. Based on previous evidence used to explain this gender difference, Zhang et al. (2009) state that females are, to some extent, discriminated against at various stages of entrepreneurship, facing more difficulties than males in the business start-up process. Because females are likely to face a more demanding environment for their entrepreneurial activities than males, it is probable that “*gender could moderate the magnitude of genetic influences on entrepreneurship*” (Zhang et al. 2009:95).

Díaz-García and Jiménez-Moreno (2010) suggest that gender may lead to changes in the antecedents of entrepreneurial intentions and thus influence intentions in an indirect way, indicating that several studies reveal that males, in comparison with females, consider entrepreneurship to be more desirable than other careers and have a higher preference for business creation. Díaz-García and Jiménez-Moreno’s study (2010) supports the core entrepreneurial intention model and focuses on the role of gender, showing that men have a greater predisposition to think about creating a business. Also, after an intensive analysis of the literature, Sánchez-Escobedo et al. (2011) found that women have fewer business intentions than men. Nevertheless, both genders, with a firm entrepreneurial intention, perceive successful entrepreneurs to have feminine attributes (Díaz-García and Jiménez-Moreno 2010).

Bearing all these considerations in mind, our first hypothesis was formulated:

H₁: There are significant differences between girls and boys, as far as their Entrepreneurial Intention is concerned.

Behavioural approach

Researchers (e.g. Krueger et al. 2000; Ajzen 1991, 2001; Nabi et al. 2010; von Graevenitz et al. 2010) typically attribute EI to three general factors: (i) a person's perception of his or her behaviour; (ii) perceived social norms; and (iii) the person's self-efficacy, which will influence intentions. Additionally, Crant (1996) defines EI as one's judgements about the likelihood of owning one's own business. According to Ajzen (1991), intentions are a good predictor of planned behaviour; and, by definition, entrepreneurial action can be included in the category of intentional behaviour (Byabashaija and Katono 2011).

Intentions are considered to be a more advanced stage in the behavioural process. Intentions are presented in the Theory of Planned Behaviour (Ajzen 1991) and are explained by the perception of opportunity (which includes people's attitudes towards entrepreneurship and their perception of social norms) and the perception of the possibility for creating a business. Ajzen and Fishbein (1975) stressed that people cannot take a purely economic decision, or otherwise, on a strictly rational basis because they are influenced by their perceptions of the norms of their society. Another model based on intentions is provided by Shapero (1982), who presents the model of the business event, arguing that entrepreneurial intentions depend on personal desire, the opportunity of achieving them and the propensity to act.

EI has proven to be a primary predictor of future entrepreneurial behaviour (Krueger et al. 2000). According to this theory, individuals will stimulate their entrepreneurial potential if they accept it as true that they have the ability, that there are environmental possibilities and that there is social support (Kirby 2006).

After analysing some studies, Mueller and Dato-On (2011) concluded that the intention to become an entrepreneur is more likely to be determined by an individual's gender perception of self and values, than by biological sex per se. Also, basing their study on the Theory of Planned Behaviour, Díaz-García and Jiménez-Moreno (2010) state that attitudes towards entrepreneurship are factors that determine the existence of EI and that gender also seems to play a key role. Women may have a negative attitude towards entrepreneurship if they perceive disadvantages in the self-employment option and if they have few female role models with whom they can identify. Females also tend to perceive the entrepreneurial environment from a less favourable point of view than males, because some negative gender stereotypes still persist in society (Baron et al. 2001). Furthermore, women perceive that subjective norms related to entrepreneurship can greatly affect their decision as to whether or not to create a business, since they are highly conditioned by societal norms and the roles associated with females (Welter et al. 2007). As far as perceived behavioural control is concerned, young women consider themselves to have a lower level of self-efficacy than males in certain areas related to entrepreneurship.

Bearing in mind the gender of the respondents, and in order to see if there exist any significant differences between girls and boys with regard to behavioural variables, the second hypothesis was formulated as follows:

H₂: There are significant differences between girls and boys as far as behavioural variables are concerned.

Psychological approach

Entrepreneurship research has defended the idea that entrepreneurs have distinctive psychological characteristics. Several studies have focused on personality dimensions, examining entrepreneurial behaviour through the development of entrepreneurial intentions (Díaz-Casero et al. 2012).

Several scholars have shown that entrepreneurial cognition is an incredibly fertile ground for important and interesting research (Baron 1998; Mitchell et al. 2000; Gaglio and Katz 2001). If the heart of entrepreneurship is a person's orientation towards seeking opportunities, developing a much deeper understanding of this will unlock much of the hitherto black box of entrepreneurship (Krueger 2005).

Theoretical and empirical research has associated psychological characteristics with entrepreneurship (Kennedy et al. 2003; Brice 2004; Bhandari 2006; Li 2006; Hmieleski and Corbett 2006; Florin et al. 2007), and several authors have come to support the idea that the psychological attributes related to entrepreneurship can be culturally acquired (Gibb and Ritchie 1982; Vesper 1990; Radu and Redien-Collot 2008; Wincent and Örtqvist 2009).

Various psychological characteristics have been seen as determinants of EI: the need for achievement (Bygrave 1989; Davidsson and Wiklund 1999), an internal locus of control (Robinson et al. 1991; Ferreira et al. 2012), a tolerance of ambiguity (Mitton 1989; Ferreira et al. 2012), self-confidence (Ho and Koh 1992; Robinson et al. 1991; Ferreira et al. 2012) and a risk-taking propensity (Brockhaus 1980; Davidsson 1989; Baron 1998; Kuip and Verheul 2003; Ferreira et al. 2012).

Some psychological traits can be good predictors of the entrepreneurial orientation. Robinson et al. (1991) state that internal control leads to a positive entrepreneurial attitude and that most students who receive entrepreneurial training may develop a higher level of control and self-efficiency. For Kuip and Verheul (2003), the propensity to take risks is related to the probability of an entrepreneurial activity being successful. Robinson et al. (1991) have found that entrepreneurs tend to have a higher degree of self-confidence in comparison with non-entrepreneurs. Mitton (1989) states that a tolerance of ambiguity may be considered an entrepreneurial characteristic and that those who are more entrepreneurial are expected to display a greater tolerance of ambiguity than others. Ferreira et al. (2012) highlighted the fact that the need for achievement, self-confidence and personal attitude affect secondary-school students' entrepreneurial intentions, and, in a general way, the need for achievement, innovativeness, locus of control and self-confidence can be useful predictors of entrepreneurial attitudes (Robinson et al. 1991).

As far as the psychological evidence revealed in studies relating to gender is concerned, we only found evidence for the variables of risk-taking and innovativeness. According to Lim and Envic (2011), females generally tend to be more risk adverse than males and display a greater aversion to financial risks in particular. Research also indicates that most female entrepreneurs choose to keep their businesses small, which

reduces the need to be innovative. Overall, females are not as adverse to innovativeness as they are to high-risk businesses.

Due to the importance of all these aspects, one final hypothesis was formulated regarding psychological variables:

H₃: There are significant differences between girls and boys as far as psychological variables are concerned.

Methodology

In order to analyse the existence of differences between two groups of students, namely girls and boys attending a business and a sports school respectively, a quantitative study was carried out. Data were obtained through online questionnaires and analysed using quantitative methods, with the aid of SPSS software. Before the survey was uploaded onto both schools' web platforms, a pre-test was applied to 25 respondents in each school to see if all the students understood the questions and the information requested.

The sample was composed of 729 girls studying at an Avonbourne school (International Business and Enterprise College), who were exposed to a secondary school entrepreneurial curriculum, and 286 boys studying at a Portchester school (a specialist Sports College), located in the south of England, more precisely in the Boumemouth region. Both samples had an age range of 11–16 years. It made sense to study this public, since it is believed that the ideal stage for acquiring basic knowledge about entrepreneurship and developing a positive entrepreneurial attitude is during childhood and adolescence (Peterman and Kennedy 2003).

Avonbourne School is a single-sex International Business and Enterprise College, providing girls with an education that inspires them to greater achievements and success throughout life. Each student is supported and encouraged to develop into a mature young woman, being given the chance to become a responsible, independent global citizen who can take an active part in a progressive, modern society. This special focus cuts across the whole curriculum, so that all lessons in all subjects are designed to demonstrate links to the world of work and develop enterprise and employability skills. Furthermore, on every last Friday of each month there is an "Enterprise Day" when students are able to run their mini-companies in school, selling their products or raising awareness about their social enterprise. In turn, Portchester is a specialist sports school for boys, which also benefits the community at large. There is clear evidence that sports colleges help their students to achieve steady improvements in their academic results, sporting excellence, greater access to leisure and greater social and moral awareness. This happens because students tend to find new motivation and self-esteem through a quality sports programme accompanied by the mentoring, self-evaluation and target setting that springs from the ethos of a specialist school. In this latter school, entrepreneurship education is not specifically included in the curriculum.

In order to decide on the most appropriate scales for measuring the constructs of entrepreneurial intentions, behavioural factors and psychological traits, a wide-ranging review was made of the relevant literature. Thus, a questionnaire was developed, using a scale from Liñan and Chen's (2007) study to measure entrepreneurial intention and related constructs, and Koh's (1996) scales to measure psychological traits. The constructs

included in the questionnaire (see [Appendix](#)) were *Entrepreneurial Intention* (EI); *Behavioural Constructs* – Perceived Behaviour Control (PBC), Personal Attitudes (PA), and Subjective Norms (SN); *Psychological Constructs* – Locus of Control (LC), Propensity to Risk (PR), Self-Confidence (SC), Need for Achievement (NA), Tolerance of Ambiguity (TA) and Innovativeness (IN). Furthermore, questions were also included that related to: the awareness of entrepreneurship as a possible career; the attractiveness of being an entrepreneur *versus* being an employee; the perception of the social value attached to entrepreneurship; and the perception of one's own specific skills.

Notice that this study adopts Ajzen's TPB model in which subjective norms (SN) refers to the perceived social pressure to perform (or not) a certain behaviour; perceived behavioural control (PCB) refers to the supposition of facility/difficulty in performing this behaviour; and personal attitude (PA) towards entrepreneurship is defined as the degree to which the individual is committed to the new business or to the idea of becoming an entrepreneur. In turn the psychological variables can be explained this way: locus of control (LC) is the degree to which the individual believes that the reinforcements are dependent on his behaviour (Kuip and Verheul 2003); propensity to risk (PR) refers to the extent to which the individual is prepared to accept risks when entering into an activity (Kuip and Verheul 2003); self-confidence (SC) means having assurance and confidence in oneself and is usually viewed as an entrepreneurial characteristic (Robinson et al. 1991); need for achievement (NA) has to do with the need to reach one's goals, and it is one of the most difficult challenges in business education (Florin et al. 2007); tolerance of ambiguity (TA) happens when there is insufficient information to deal with a context or situation (Koh 1996); and, finally, the last construct, innovativeness (IN), is related to perceiving and engaging in business activities in new and unique ways (Robinson et al. 1991).

Descriptive statistics were compiled of the summated scales and indicators, and a *t*-test for equality of means was performed, as well as Levene's test for the equality of variances, taking both samples into account.

The data collected at the two schools will be analysed in the next section. It is expected that scores will be higher at the Avonbourne school (the girl's business school), showing that the inclusion of entrepreneurship education in the curriculum had a greater effect on female students.

Results

As a first step, descriptive statistics were produced of the summated scales and indicators as shown in [Table 1](#) (summated scales), and [Table 2](#) (EI indicators).

According to the results shown in [Table 1](#), entrepreneurial intentions (EI) are significantly lower for girls (Avonbourne, business school), as are also their entrepreneurial behavioural characteristics, namely Perceived Behaviour Control (PBC) and Personal Attitudes (PA). This supports hypothesis H₁ and partially supports hypothesis H₂. However, as Levene's test also shows significant differences in relation to these indicators, the result reflects the presence of more extreme positive positions in the boys' group affecting the mean of the group, as can be seen in [Fig. 1](#).

As far as psychological indicators are concerned, the only significant difference concerns Locus of Control (LC), which, unlike the above, is higher in the girls' group. This result only partially supports hypothesis H₃. It should also be noted that, in the

Table 1 Descriptive statistics

Variables description	Girls		Boys		Girls vs. Boys		
	Mean	Std. Dev.	Mean	Std. Dev.	Mean Diff.	t	Levene's W
Entrepreneurial Intention (EI)	2.771	.544	2.921	.643	-.150	-3.484***	5.025*
Behavioural constructs							
Perceived Behaviour Control (PBC)	2.887	.463	3.044	.622	-.157	-3.88***	15.856***
Personal Attitudes (PA)	3.078	.513	3.195	.627	-.117	-2.818**	3.925*
Subjective Norms (SN)	3.680	.820	3.618	.857	.063	1.081	.53
Psychological constructs							
Innovativeness (IN)	3.235	.546	3.278	.552	-.044	-1.145	.209
Locus of Control (LC)	3.307	.453	3.212	.421	.095	3.075***	1.248
Need for Achievement (NA)	2.963	.477	3.001	.468	-.037	-1.13	2.074
Propensity to Risk (PR)	3.097	.356	3.128	.407	-.031	-1.123	4.233*
Self Confidence (SC)	3.110	.440	3.106	.429	.004	.136	.344
Tolerance to Ambiguity (TA)	2.840	.452	2.840	.427	-.001	-.019	.162

$n_g=729$; $n_b=286$ * $p<.1$ ** $p<.05$ *** $p<.01$

case of Propensity to Risk (PR), there are also significant differences in the variances, revealing much greater variability in the boys' group (see Fig. 1).

Focusing now on EI indicators (see Table 2), the analysis reveals that the more significant differences occurred in questions EI2 and EI4, both of which are related to the stated "determination" to take up entrepreneurship as a professional career. These two indicators are substantially higher for boys. Levene's test, however, indicates that,

Table 2 Descriptive statistics - EI indicators

Variables description	Girls		Boys		Girls vs. Boys		
	Mean	Std. Dev.	Mean	Std. Dev.	Mean Diff.	t	Levene's W
EI1. I am ready to do anything to be an entrepreneur	2.632	1.103	2.769	1.203	-.137	-1.733	1.48
EI2. My professional goal is to be an entrepreneur	2.137	1.095	2.629	1.226	-.492	-5.924***	9.611***
EI3. I will make every effort to start and run my own business	3.250	1.243	3.343	1.240	-.093	-1.073	0.208
EI4. I am determined to create a business venture in the future	2.772	1.112	3.182	1.134	-.410	-5.249***	0.002
EI5. I have very seriously thought of starting a firm	3.158	1.207	3.252	1.089	-.094	-1.199	6.527**
EI6. I have the firm intention to start a firm some day	3.008	1.238	3.147	1.267	-.139	1.594	1.070

$n_g=729$; $n_b=286$ * $p<.1$ ** $p<.05$ *** $p<.01$

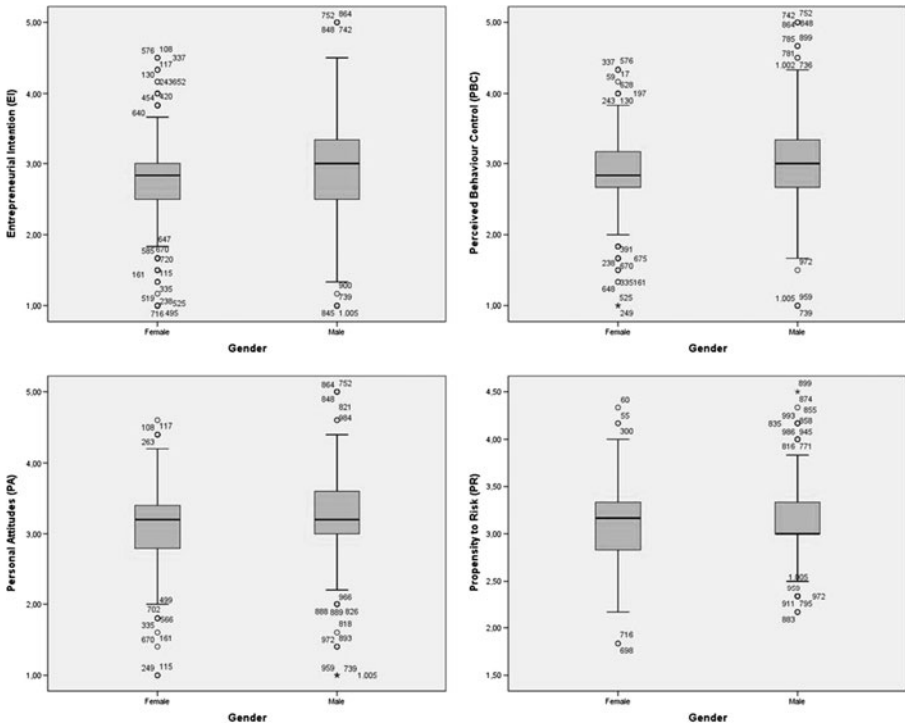


Fig. 1 Distribution of variables with significant variance differences

for question EI2 (“My professional goal is to be an entrepreneur”), variability is quite different between the two groups, with the girls’ group being more homogeneous.

These results are consistent with the findings of Diaz-Garcia and Jiménez-Moreno (2010) and Sánchez-Escobedo et al. (2011), which showed that females have fewer business intentions than males.

In order to address the issue of awareness of entrepreneurship as a possible professional career, the results of the question “Have you ever seriously considered becoming an entrepreneur?” were analysed (Table 3). In spite of the fact that there was a higher percentage of boys who had considered becoming an entrepreneur, the difference was not statistically significant (at the confidence level of 90 %).

In order to discover the differences between the two schools regarding the level of agreement about the relative attractiveness of being an employee or an entrepreneur, two questions were asked (see Table 4). Results indicate that the idea of becoming an entrepreneur is significantly more attractive for boys than for girls.

Table 3 Answers to the question “Have you ever seriously considered becoming an entrepreneur?”

	Girls	Boys
Yes	194 (26.6 %)	88 (30.8 %)
No	535 (73.4 %)	198 (69.2 %)
n	729	286

$\chi^2=1.770$, $df=1$, exact $p=.106$

Table 4 Being an employee vs an entrepreneur

	Girls		Boys		Girls vs. Boys		
	Mean	Std. Dev.	Mean	Std. Dev.	Mean Diff.	t	Levene's W
B1. Considering all advantages and disadvantages. I'm very attracted towards being an employee	3.166	1.038	3.108	1.039	0.058	0.795	0.979
B2. Considering all advantages and disadvantages. I'm very attracted towards being an entrepreneur	2.774	1.098	2.993	1.158	-0.219	-2.819***	0.689

$n_g=729$; $n_b=286$ * $p<.1$ ** $p<.05$ *** $p<.01$

These results are in line with the conclusions drawn by Diaz-Garcia and Jiménez-Moreno (2010), namely that, when compared to females, males consider entrepreneurship to be more desirable than other careers and have a greater preference for business creation.

In order to see the differences between the two schools regarding the question of Social Value (the level of agreement about the values that society places in entrepreneurship), eight questions were asked, which were to be answered according to a five-point Likert scale (see Table 5).

Table 5 Perception of the social value attached to entrepreneurship

	Girls		Boys		Girls vs. Boys		
	Mean	Std. Dev.	Mean	Std. Dev.	Mean Diff.	t	Levene's W
C1. My immediate family values entrepreneurial activity above other activities and careers	2.818	1.042	2.969	1.010	-.151	-2.123*	5.787**
C2. The culture in my country is highly favourable towards entrepreneurial activity	3.248	1.036	3.203	1.016	.045	0.632	.908
C3. The entrepreneur's role in the economy is generally undervalued in my country	2.680	.905	2.948	1.009	-.267	-4.093***	1.844
C4. My friends value entrepreneurial activity above other activities and careers	2.590	.948	2.825	1.055	-.235	-3.444***	.603
C5. Most people in my country consider it unacceptable to be an entrepreneur	2.096	1.078	2.469	1.132	-.373	-4.884***	1.406
C6. In my country entrepreneurial activity is considered to be worthwhile. despite the risks	3.347	.922	3.308	.946	.039	0.607	.025
C7. My colleagues value entrepreneurial activity above other activities and careers	2.789	.872	2.983	.979	-.194	-3.075***	.360
C8. It is commonly thought in my country that entrepreneurs take advantage of others	2.923	.920	3.157	1.053	-.234	-3.3***	10.418***

$n_g=729$; $n_b=286$ * $p<.1$ ** $p<.05$ *** $p<.01$

These results indicate that boys tend to attach greater importance to the social value that society places in entrepreneurship (note the higher means for most cases). Sánchez-Escobedo et al. (2011) state that the image of the entrepreneur is associated with cultural values and a set of social norms that in turn will affect business creation. Thus, social acceptance can be considered one of the factors of the social environment that has a significant impact on business behaviour. In this case, it seems that boys tend to be more sensitive to social acceptance than girls.

In the case of Specific Skills (how you rate yourself in relation to a set of abilities), students were asked to rate their own specific skills on a five-point Likert scale. The questions and their respective results are presented in Table 6.

According to the figures shown in Table 6, both boys and girls tend to recognise “creativity” as the main skill possessed. However, for girls, this skill is perceived significantly more clearly than it is for boys. Other significant differences were noted between boys and girls, although these pointed in the opposite direction. Such differences related to the self-recognition of the following skills: “Development of new products and services” and “Networking skills”, which tended to be higher in boys.

Conclusions

The results of this study show that male students scored higher than female students in relation to four indicators (from a set of six) of Entrepreneurial Intentions. However it was only possible to find significant differences in two of these indicators. Moreover, the construct of Entrepreneurial Intentions taken as a whole presented a higher (and significant) mean value for boys. These results are similar to those of other research studies that have found differences between male and female entrepreneurs (e.g. Díaz-García and Jiménez-Moreno 2010; Sánchez-Escobedo et al. 2011).

Initially, it was expected that scores would be higher at the Avonbourne school (a girls’ business school), assuming that the inclusion of entrepreneurship education in the curriculum would have a greater effect on female students. Curiously, we found that,

Table 6 Perception of the own Specific Skills

	Girls		Boys		Girls vs. Boys		
	Mean	Std. Dev.	Mean	Std. Dev.	Mean Diff.	t	Levene’s W
D1. Recognition of opportunity	3.305	.928	3.392	1.066	-.087	-1.213	14.034***
D2. Creativity	3.971	.981	3.773	1.060	.198	2.74**	14.224***
D3. Problem solving skills	3.540	1.002	3.598	1.044	-.057	-.812	2.370
D4. Leadership and communication skills	3.624	1.055	3.577	1.117	.047	.631	2.281
D5. Development of new products and services	3.368	1.039	3.524	1.015	-.157	-2.178*	.049
D6. Networking skills, and making professional contacts	3.299	1.010	3.451	1.087	-.152	-2.11*	3.805

$n_g=729$; $n_b=286$ * $p<.1$ ** $p<.05$ *** $p<.01$

even without the presence of any specific kind of entrepreneurship education in their curriculum, boys tend to have a greater propensity for business creation. In contrast, girls attending the business school, where entrepreneurship education is incorporated into all levels of the curriculum, recorded lower scores in this construct and showed less desire to become entrepreneurs. Such a result is in line with Dutta et al. (2011), who note that entrepreneurship education facilitates the creation of new businesses, but is not in itself sufficient to explain successful entrepreneurship. These authors maintain that a diversity of educational experiences can make a critical difference, and that it is important to identify what extra educational content might be added to entrepreneurship courses in order to play a positive role in fostering future entrepreneurial activities.

Given the disparities found in the results for boys and girls, Díaz-García and Jiménez-Moreno (2010) believe that long-term solutions need to be introduced into the educational system to reduce the gender gap in entrepreneurship, and, in this case, it is important to analyse the aspects related with gender that need to be treated more carefully in educational programmes. Furthermore, the authors suggest that educators should promote a female vision of entrepreneurial success (fighting against the stereotypes) especially among women. Probably Avonbourne School could usefully make some adjustments to its programme in order to improve some indicators.

In the case of behavioural variables, we found higher (and significant) scores for boys in the case of Personal Attitudes and Perceived Behaviour Control. As far as this last construct is concerned, this result is in line with previous studies that found that young women consider themselves to have a lower level of self-efficacy in male areas related to entrepreneurship (e.g. Díaz-García and Jiménez-Moreno 2010). In this case, Mueller and Dato-On (2011) state that Perceived Behaviour Control can be raised through a suitable intervention in the area of education or training. Subjective norms related to entrepreneurship are higher in girls, and, as stated by Welter et al. (2007), can affect their decisions regarding business creation.

As far as psychological variables are concerned, boys tend to score higher in relation to the Propensity to Risk, with a significant p value. Accordingly, Lim and Enrick (2011) found that males prefer, and are more likely to engage in, ventures that require a high degree of risk taking. These authors also found that males engage in Innovativeness more often and at a higher level than females, but, in our study, curiously, both boys and girls presented the same mean score for this construct. Locus of Control presented a more significant score in the case of females.

Like all studies, this one has a number of limitations that can also be regarded as opportunities for reformulating and improving future research. For example, the different size of the samples can be identified as one such limitation. Variables such as the students' backgrounds and their ages also require deeper analysis. Data were analysed using simple student t -tests and Levene's test; however, alternative techniques, such as structural equations modelling, could be used to either confirm or reject the results obtained. Moreover, our data are cross sectional, limiting the possibility of obtaining a more robust analysis, which is why the students should be "evaluated" again in the future. As stated by Littunen and Virtanen (2006), more work needs to be undertaken to understand the exact nature of the relationship between entrepreneurship education and training, especially in the case of specific aspects relating to the success of new ventures. Thus, in the future, it would be useful to extend the research period and to study students' attitudes both before and after the entrepreneurial programme.

These studies are useful because they enhance our understanding of the core socio-cultural factors motivating entrepreneurial behaviour, especially those related with gender socialisation. In this way, they can provide policymakers and educators with a better understanding of the phenomena and help them to be more effective in the intervention in order to increase the number of nascent entrepreneurs. They also give some orientation to educators in the development of programmes that are designed to build a stronger entrepreneurial class, providing guidance that will help to make educational projects more effective and appropriate, as well as promoting a real entrepreneurial culture.

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Appendix

Table 7 Constructs and indicators of the questionnaire

Construct	Items
EI Entrepreneurial Intention	<p>I am ready to do anything to be an entrepreneur</p> <p>My professional goal is to become an entrepreneur</p> <p>I will make every effort to start and run my own firm</p> <p>I am determined to create a firm in the future</p> <p>I have very seriously thought of starting a firm</p> <p>I have the firm intention to start a firm some day</p>
PBC Perceived Behaviour Control	<p>To start a firm and keep it working would be easy for me</p> <p>I am prepared to start a viable firm</p> <p>I can control the creation process of a new firm</p> <p>I know the necessary practical details to start a firm</p> <p>I know how to develop an entrepreneurial project</p> <p>If I tried to start a firm, I would have a high probability of succeeding</p>
PA Personal Attitudes	<p>Being an entrepreneur implies more advantages than disadvantages to me</p> <p>A career as an entrepreneur is attractive for me</p> <p>If I had the opportunity and resources, I'd like to start a firm</p> <p>Being an entrepreneur would entail great satisfaction for me</p> <p>Among various options, I would rather be an entrepreneur</p>
SN Subjective Norms	<p>If you decided to create a firm, would people in your close environment approve of that decision? Indicate from 1 (total disapproval) to 5 (total approval).</p> <p>Your close family</p> <p>Your friends</p> <p>Your colleagues</p>
IN Innovativeness	<p>I avoid changing the way things are done. ^R</p> <p>While others see nothing unusual in the surroundings, I am able to perceive in them opportunities for business.</p>

Table 7 (continued)

Construct	Items
LC Locus of Control	I am able to get around difficulties through strokes of ingenuity and resourcefulness.
	I believe there are always new and better ways of doing things.
	I find it difficult to come up with new, wild or even crazy ideas. ^R
	People's misfortunes result from the mistakes they make. ^R
	Many of the unhappy things in people's lives are partly due to bad luck. ^R
	I do not enjoy outcomes, no matter how favourable, if they do not stem from my own efforts.
NA Need for Achievement	I am willing to accept both the positive and the negative consequences of my decisions and actions.
	It is I, not luck or fate, who influences the outcome of events in my life.
	I cannot wait and watch things happen; I prefer to make things happen.
	I believe success is a product of luck and fate rather than personal effort. ^R
	I take pleasure in responding to challenges, so competition makes me work harder.
	I do not like a well-paid job if I cannot derive a sense of achievement and satisfaction from it.
	I want to earn only as much as possible to attain a comfortable way of life. ^R
I do not mind routine, unchallenging work if the pay is good. ^R	
PR Propensity to Risk	When I do something, I see to it that it does not only get done, but is done with excellence.
	I hire people on the basis of friendship and other relations (for their loyalty) rather than on the basis of competence.
	I do not care if the profit is small so long as it is assured and constant. ^R
	I am willing to take high risks for high returns.
	I do not mind working under conditions of uncertainty as long as there is a reasonable probability of gains from it for me.
SC Self Confidence	I do not fear investing my money in a venture whose dividends I have calculated.
	I will consider a risk worth taking only if the probability for success is 60 % or more. ^R
	I fear moving into a new undertaking I know nothing about.
	I accomplish most when I am alone, under no direct supervision from anyone.
TA Tolerance of Ambiguity	I have confidence in my ability to achieve.
	I have weaknesses and fears that are far from being resolved. ^R
	Job security is extremely important to me. ^R
	A good job is one with clear instructions as to what is to be done and how it is to be done. ^R
	I enjoy working in unstructured situations.
	I have a work schedule which I try to follow very carefully. ^R
	It bothers me when several people have overlapping responsibilities. ^R
	In unclear situations, I like to make decisions and take the "lead".

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