

FOSTERING ENTREPRENEURSHIP AT THE UNIVERSITY: A SPANISH EMPIRICAL STUDY*

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Abstract

This study aims to suggest best practices for improving the effectiveness of entrepreneurship education programs in the European area, based on their impact on expected attitudes of undergraduate students towards business start-up as a career choice. Particularly, the paper presents some results from a study carried out in two Spanish universities aimed at validating a structure of entrepreneurship education based on a double component of curricular teaching and extracurricular support, and to analyze their effect upon undergraduates' entrepreneurial self-efficacy and outcome expectations as immediate antecedents of entrepreneurial intentions and behaviors. Sample was comprised of 800 university students, and statistical treatment of data was based on factorial and regression analyses. Findings underline the very limited involvement of Spanish universities in entrepreneurship education as perceived by students, together with the existence of different effects of curricular and extracurricular elements when fostering entrepreneurial careers among future graduates. Implications of these results and limitations of the study are discussed.

1. Introduction

In the context of the wide-ranging social and economic changes that have been occurring in industrialized countries over recent decades, new, small enterprises have become a key element in creating employment, wealth and social welfare in all modern, competitive economies. This is true to such an extent that encouragement for entrepreneurship is currently at the heart of a host of requirements and public standards in the countries of the EU, in an effort that has reached out to affect economic, social, employment and educational policies.

As a sign of this political awareness, contemporary educational systems are seeing their missions expanded by the assignment of a further responsibility to provide a socio-economic boost, taking the form of the channeling of future generations of the working population towards entrepreneurial goals in accordance with the new needs of the productive sector. Among all educational institutions, the universities' response to this aim is of particular relevance, since these are organizations with a high capacity to generate and disseminate specialized knowledge in the context of a social reality in which access to higher education is more and more general in developed countries.

Despite the fact that this political awareness has turned entrepreneurship education into a frequent topic in the specialized literature over the last three decades, (Gibb, 1983, 1987, 1993, 1996, 2002; McMullan and Long, 1987; Robinson and Hayes, 1991; Gartner and Vesper, 1994; Vesper and Gartner, 1997; Fayolle, 2000; Fiet, 2000a, 2000b; Katz, 2003; Henry *et al.*, 2005; Kuratko, 2005; Vázquez *et al.*, 2006, 2009a, 2009b, 2010; Liñán, 2007; Matlay and Carey, 2007; Pittaway *et al.*, 2009), its systematic inclusion in university programs is still a pending matter in most European countries.

In this sense, most university academic programs in Spain have been centered so far on training wage-earner professionals, this prevalent approach becoming insufficient since unemployment, flexibility and over-qualification have become the more representative descriptors of young people's work insertion over the last decade in this country (García-Montalvo, 2007; National Institute of Statistics [INE], 2008; García-Montalvo and Peiró, 2009) and Europe in general (Eurostat, 2009; Organization for Economic Cooperation and Development [OECD], 2009a, 2009b).

For this reason, in the middle of the process of adaptation of the Spanish university system to the requirements of the new European Higher Education Area (EHEA), it is important to reconsider whether the transformations undertaken, both in the university's aims and in the way in which these must be reached, will enable a better response to the social needs and expectations frequently assigned to university institutions. Therefore, since entrepreneurship can be seen as a promising option of work insertion and professional development of recent university graduates at the service of broader objectives of sustainable socio-economic welfare, some efforts are nowadays devoted to set up normative models for the articulation of coherent strategies to foster entrepreneurship initiatives in contexts of higher education, based on the functions assigned to universities and the resources available to them. From this framework, the identification of the elements encompassed by entrepreneurship

education and their potential effects on future graduates' career choices should be a priority concern.

Following the steps of this purpose, this paper is organized as follows. First, we review the guidelines marked by the European common policy with regard to the inclusion of entrepreneurship competences as part of the university academic mission and provide a global description of current entrepreneurship teaching and support in European and Spanish institutions of higher education. Next, we propose a theoretical framework to analyze the effectiveness of entrepreneurship education programs based on the expected attitudes of students towards new venture creation as a career choice. According to that, we present an empirical study carried out in two Spanish universities aimed to analyze the role of higher education, at both curricular and extracurricular levels, in the development of entrepreneurial vocations among students. Finally, conclusions and implications of the study are discussed.

2. Literature review

2.1. European policy for entrepreneurship education

Governmental interest in entrepreneurship education began to be explicit at the Lisbon European Council, in March 2000, which set the objective of developing a dynamic enterprising culture and fostering new firm creation as a source of sustainable competitiveness in Europe (European Commission, 2000a). From this framework, it was contemplated, among others, the need for revising the European educational system and including entrepreneurship into the group of basic competences to be taught from school to university.

Later in the same year, the "European Chapter for Small Enterprises" (European Commission, 2000b), currently renewed by the "Small Business Act" (European Commission, 2008), also stressed the objective of encouraging entrepreneurial initiatives by young people and developing training programs for small enterprises by educational institutions, particularly at secondary and university levels, in so far as they are focused towards service of individuals and society.

This objective has been integrated in different political programs developed over the last decade in Europe as supportive frameworks for new and small enterprises, education and employment.

In the area of business policy, some advances refer to the "Multiannual program for enterprises and entrepreneurship" (Decision 2000/819/CE of the Council), established for the period 2001-2007 and complemented by the more specific "Entrepreneurship Action Plan" (European Commission, 2004), and the subsequent "Entrepreneurship and Innovation Program", which is enshrined in the current "Competitiveness and Innovation Framework Program" (CIP) adopted for the period 2007-2013 (Decision 2006/1639/EC of the European Parliament and of the Council).

Concerning specific milestones in common educational policy, the principal reference is the "Report from the Commission on the concrete future objectives of education systems" (EU Council, 2001), which set as a priority goal the development

of an entrepreneurial culture through the regulated education systems, as expressed in the work programs “Education and training 2010” (Council of the European Union, 2002) and the follow-up “Education and training 2020” (EU Council, 2009).

In the same line, the importance of entrepreneurship education has been ratified in the “European Youth Pact”, which was adopted by the European Council in March 2005, tying in with the European strategies for employment and social inclusion and the mentioned Education and Training work programs (European Commission, 2005).

In the context of this public awareness, different prescriptive and best practices reports have been published as reference guidelines to include entrepreneurship teaching and support as specific missions of educational institutions. Among them, special attention deserves the best report “Education for entrepreneurship” (Enterprise Directorate General, 2002), the “Green Paper on entrepreneurship in Europe” (Enterprise Directorate General, 2003), the “Oslo agenda for entrepreneurship education in Europe” (European Commission, 2006), and the report “Entrepreneurship education in higher education, especially within non-business studies” (Enterprise Directorate General, 2008a), this last one being devoted to suggest best practices for education at the university.

An outcome of the political developments mentioned was the recognition of the sense of initiative and entrepreneurship as a key competence for lifelong learning and its inclusion in a European reference framework of eight competences to be trained from both formal and informal educational systems (Recommendation 2006/962/EC of the European Parliament and of the Council). In this framework, key competences are defined as a combination of knowledge, skills and attitudes appropriate to the context and needed for personal fulfillment and development, active citizenship, social inclusion and employment.

From this view, entrepreneurship as a key competence acts as a source of personal and professional self-realization, active citizenship and social inclusion for individuals. Hence, entrepreneurship education should not be directed only to foster new venture creation, innovation and economic growth, but entrepreneurial spirit is a key factor for all persons, wage- or self-employed, which turn young people into more creative, self-confident and socially responsible person. That’s why it should be developed by the end of compulsory school or training and act as a foundation for further learning as part of lifelong learning.

According to the Recommendation 2006/962/EC of the European Parliament and of the Council the entrepreneurship competence is defined as “(...) 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. This supports individuals, not only in their everyday lives at home and in the society, but also in the workplace in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promote good governance” (p. 17).

From this specification of the competence, the essential knowledge, skills and attitudes related to it are summarized in Table 1.

Table 1: Entrepreneurship competence: knowledge, skills and attitudes

Knowledge	Skills	Attitudes
- Available opportunities for personal, professional and/or business activities - Workings of the economy - Organizational opportunities and challenges - Ethical position of enterprises - Fair trade and social entrepreneurship - ...	- Proactive project management (ability to plan, organize, manage, lead and delegate, analyze, communicate, de-brief, evaluate and record) - Representation and negotiation - Autonomous and collaborative work - Self-knowledge - Risk taking and assessment - ...	- Initiative - Proactiveness - Independence - Innovativeness - Motivation and determination to meet objectives - ...

Source: Adapted from Recommendation 2006/962/EC of the European Parliament and of the Council.

The advisability of promoting entrepreneurial mindsets as part of the academic mission of national education systems has extended to the current Bologna process aimed to build a modern degree structure adapted to the professional profiles required by the current European society. In this context, the project “Tuning educational structures in Europe” (González and Wagenaar, 2003), devoted to the identification of learning results and desirable competences in several thematic areas, has included entrepreneurship into the group of systemic transversal competences to be trained along all levels of university higher education.

When considering the appropriate means to reach such a goal, many authors agree on the adoption of a wide concept of entrepreneurship education, derived from the combination of organized teaching and institutional support (Laukkanen, 2000; De Faoite *et al.*, 2003; Collins *et al.*, 2004; Hartshorn and Hannon, 2005; Liñán, 2007; Soutaris *et al.*, 2007; Corduras *et al.*, 2008). Based on this viewpoint, in this pages it is assumed that promotion of entrepreneurship at the university includes all those actions carried out in the educational-institutional context with the aim to involve students in the development of competences and behaviors oriented to new business creation. From this view, entrepreneurship education is concerned with a double component of:

- curricular teaching included in different qualifications as part of the corresponding academic programs and focused on the development of entrepreneurial competences; and
- extracurricular actions concerned with raising, support and accompaniment services for potential and nascent university entrepreneurs able to drive them towards successful start-ups.

2.2. State of entrepreneurship education in European and Spanish universities

From the previous revision it follows that in most European countries there is nowadays a firm political commitment to promote entrepreneurship. However, advances in this sense do not follow the same pattern in all regions of the continent.

A recent special report of the project Global Entrepreneurship Monitor (GEM) devoted to analyze the current state of entrepreneurship education and training in 30 countries around the world (Corduras *et al.*, 2010), classified participant nations into three groups with similar levels of economic development, from the lowest level group 'factor driven' (Bosnia and Herzegovina etc.), to the middle level 'efficiency driven' (Croatia, Hungary, Latvia, Macedonia, Romania, Serbia, Turkey etc.), and then to the highest level 'innovation driven' (Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Slovenia, Spain, United Kingdom etc.). On the one hand, the report concluded that in all three economic groups young individuals are more likely to have received training in starting a business, this probably reflecting a recent rise in entrepreneurship training offered in the formal education systems. On the other hand, findings point to the conclusion that the amount and type of training varies widely across countries, and it appears to have the greatest effect on early-stage entrepreneurial activity in innovation-driven countries, where institutional contexts are more favorable than in nations with lower levels of economic development.

Focusing the analysis on entrepreneurship education in universities, some other additional results help to complete the picture. Based on the results of the "Survey of entrepreneurship in higher education in Europe" carried out with samples of most European countries (Enterprise Directorate General, 2008b), it is estimated that more than half of the Europe's students at the higher educational level do not have access to entrepreneurial education. This means that about eleven million students have no opportunity to engage in curricular or extracurricular activities that can stimulate their entrepreneurial spirit.

The survey also leads to conclude that, whereas more and more European universities have nowadays some institutional system to disseminate the entrepreneurial culture and give support to new venture creation, entrepreneurship education at curricular level seems to be influenced by type of institution, years of experience and geographic location. As expected, European students are more likely to obtain access to entrepreneurial education if they attend either a business school or a multidisciplinary institution with a business school department. Moreover, the way in which these institutions conduct entrepreneurial education also seems to be different and more elaborate. This can be explained, to some degree, by the fact that these types of institutions have been frontrunners in taking on entrepreneurial education and have therefore worked with it for a longer period of time.

In the same line, time is a factor for implementing entrepreneurship in higher education in Europe, in the sense that the longer an institution has been engaged in entrepreneurial education, the more elaborate it is.

And with regard to geographic location, the survey also points to a difference in access to entrepreneurial education according to the students' country of residence. In general, students in the countries members of the EU have better access to entrepreneurial education than students in non-member countries or in those which have recently joined the EU. In short, more institutions in Western Europe offer entrepreneurial education compared to Eastern Europe. However, the study does not support the assumption that entrepreneurial education in the last countries is less elaborate than in the former. In fact, it seems that more institutions in Eastern Europe have a broader model of entrepreneurial education, with more institutions having entrepreneurial professors and degrees, placing the strategic responsibility at the top-management, and providing recognition for achievements in entrepreneurial education. However, more resources seem to be allocated to entrepreneurship education in institutions in Western Europe.

In this context, the Spanish educational system has begun to take the first steps towards the fulfillment of the purposes marked by the European Commission with regard to entrepreneurship education. Thereby, most public universities have developed and implemented specific extracurricular actions to give support to potential entrepreneurial initiatives emerged from the heart of the university's own fellowship, in the form of an increasing number of University-Enterprise foundations, business chairs, spin-off programs or specific institutional programs and centers on entrepreneurship (Directorate General of Small and Medium Enterprise Policy [DGPYME], 2006; National Agency for Quality Assessment and Accreditation [ANECA], 2007).

Nevertheless, there are reasons to think that efforts made to develop specific entrepreneurial competences and foster favorable attitudes towards entrepreneurship through the university's own academic curricula are yet insufficient and unsatisfactory. Without a doubt, most university programs are much more focused on training wage-earner managers or technicians than offering qualified and responsible entrepreneurs and enterprises to society (Vázquez *et al.*, 2006, 2009b). In this sense, whereas political awareness has resulted in a significant increment of isolated formative actions, both their range and methodological refinement are very limited (DGPYME, 2006).

To be precise, formal instruction in knowledge and abilities concerning new venture creation is usually limited to academic plans of degrees related to business and economic sciences, and is practically absent in the curriculum of other knowledge areas, especially within Humanities and Health Sciences (Vázquez *et al.*, 2006, 2009a). In most cases, starting a new firm is not even considered as a possible labor option for students, thus there is no awareness of the need of teaching basic entrepreneurial competences in the lecture hall, nor a structured action which allows students to learn them in a regulated way. All of this leads to a lack of receptivity and support to potential entrepreneurial initiatives of students, and lots of brilliant business ideas are forced to oblivion.

This must be joined with the lack of an entrepreneurial culture in the university, in the sense that the university's own structure of teaching-learning situations (i.e.,

too many students per classroom, rigidity of the evaluation criteria etc.) often prevents students to internalize personal qualities such as creativity, proactiveness or risk-taking, which makes the development of useful skills to behave entrepreneurially very difficult (Vázquez *et al.*, 2009a, 2010).

In the same regard, some studies carried out in Spanish universities point to the conclusion that students of all types of faculties and degrees perceive a general underrepresentation of entrepreneurship issues in the university agenda, and express a global desire of a greater curricular and extracurricular treatment of the enterprising spirit (Vázquez *et al.*, 2006, 2009a). At the same time, it has been observed that, when comparing students in their first and last academic year at the university, the former show higher expectations of entrepreneurship education than their future graduated pairs, thus concluding a poor effect of the transit through university on the entrepreneurial vocations of students (Vázquez *et al.*, 2009a, 2009b).

This lack of entrepreneurship education in Spanish universities is due to many factors affecting most institutions of higher education in European countries, particularly the shortage of human and financial resources, the rigid organizational structure of higher education institutions, the poor multidisciplinary tradition in the organization of academic programs, and the low motivation and training of professors in entrepreneurship issues (Enterprise Directorate General, 2008a, 2008b). As a consequence of these factors, entrepreneurship education is very difficult, and a deep restructuring, both in the own internal structure of institutions and in the mindsets of the university fellowship, is needed in order to make the change possible.

2.3. Effects of entrepreneurship education

Shortages in university entrepreneurship education are congruent with the poor involvement of young university graduates in business initiatives. For example, in Spain, only 7.3% of new enterprises created in 2009 were initiated by entrepreneurs younger than 25 years old, and the average age of entrepreneurs were nearly 40 years old. What is more, despite the fact that 35.3% of Spanish entrepreneurs rely on higher education, they tend to start their business years after finishing the university degree (De la Vega *et al.* 2009). The same pattern of results has been observed in other European countries with a similar economic level (European Commission, 2007; Bosma and Levie, 2009).

In this context, justification of greater entrepreneurship education in universities is inherent in the potential outcomes derived from it in students. Hence, it should be a priority concern to develop practical models which help to identify the curricular mechanisms and institutional supports needed to articulate a new strategy in the university aimed to facilitate the emergence of entrepreneurial interest and initiatives among students.

On these lines, cognitive models of entrepreneurial intentions derived from the Model of the Entrepreneurial Event (Shapero and Sokol, 1982) and the Theory of Planned Behavior (Ajzen, 1991) have been the approaches most often applied over the

last few decades to the study of entrepreneurial behavior in university environments. In simple terms, these models take it that business start-up derives from the formation of an entrepreneurial intention, which in turn is a direct consequence of individual attitudes towards the perceived desirability and feasibility of that behavior which convey the potential effects of other endogenous or exogenous variables such as education.

While it is true that some successes have been achieved by this line of research when explaining the effect of entrepreneurship education on undergraduates' entrepreneurial prospects (Liñán and Rodríguez, 2005; Soutaris *et al.*, 2007; Corduras *et al.*, 2008; Toledano and Urbano, 2008; Vázquez *et al.*, 2009a, 2009b), several limitations have been recently noted with regard to its vague specification of the psychological constructs and educational variables used as predictors of entrepreneurial intents, together with other criticisms doubting the validity of the approach in predicting the entrepreneurial behavior of university students over the long term (Robinson *et al.*, 1991; Chandler and Lyon, 2001; Hemmasi and Hoelscher, 2005; Linán and Chen, 2009).

From this framework, general career models adopted from vocational literature may provide a better and more adjusted explanation of undergraduates' entrepreneurial behavior and its educational triggers, from the specific academic and professional reality experienced by students as they end their higher education. For instance, Social Cognitive Career Theory by Lent *et al.* (1994) provides a suitable framework to understand the mediational processes in the effect of learning experiences on the development of career interests and choices at undergraduate levels. Based on Bandura's Social Cognitive Theory (1986, 1997), the model emphasizes the relevance of two psychological variables in explaining the establishment and development of career goals: self-efficacy and outcome expectations.

Self-efficacy refers to "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). That is, self-efficacy is an attribution of personal competence and control in a given situation. It is linked to initiating and persisting in behavior under uncertainty, to setting higher goals, and reducing threat-rigidity and learned helplessness (Bandura, 1986, 1997).

In the context of careers, self-efficacy refers to the perceived personal capability to do a specific job or set of tasks. That is why the level of self-efficacy predicts career choice and occupational interests (Bandura, 1997), including the entrepreneurial option. People avoid careers and environments which they believe exceed their capacities, and undertake careers for which they consider themselves capable. From this view, entrepreneurial self-efficacy has been defined as the person's belief in their own abilities to perform the various skill requirements necessary to pursue a new venture opportunity (Chen *et al.*, 1998). Some research studies have demonstrated the predictive power of entrepreneurial self-efficacy beliefs on entrepreneurial intentions and behaviors (De Noble *et al.*, 1999; Zhao *et al.*, 2005; Moriano *et al.* 2006; Sequeira

et al., 2007; Wilson *et al.*, 2007; McGee *et al.*, 2009; Vázquez *et al.*, 2009a, 2010; Townsend *et al.*, 2010).

Whereas self-efficacy beliefs are concerned with one's response capabilities (i.e., "Can I do this?"), outcome expectations involve the imagined consequences of performing particular behaviors (i.e., "If I do this, what will happen?"). Several theories place a heavy emphasis on the relation of expected outcomes and action. For example, Vroom's (1964) model view choice behavior as being largely dependent upon the subjective probability that certain acts will produce particular outcomes, together with the value one places on those outcomes.

Based on these arguments, Social Cognitive Theory suggests that "people act on their judgments of what they can do, as well as on their beliefs about the likely effects of various actions" (Bandura, 1986, p. 231). In this respect, Bandura (1986, 1997) distinguished between several classes of outcome expectations with potential to affect career behavior, such as the anticipation of physical (economic incomes), social (approval), and self-evaluative (self-satisfaction) outcomes.

Several studies carried out with samples of university students show a positive relationship between anticipation of positive consequences and entrepreneurial intentions and behaviors (Brenner *et al.*, 1991; Kolvereid, 1996; Douglas and Sheperd, 2002; Carter *et al.*, 2003; Cassar, 2007; Edelman *et al.*, 2010; Vázquez *et al.*, 2009a, 2010).

Furthermore, some previous works assume that both entrepreneurial self-efficacy and outcome expectations can be easily enacted by educational situations (Segal *et al.*, 2007; Vázquez *et al.*, 2010). In fact, previous research suggest that participation in specific entrepreneurship education programs derive in perceptions of competence for business start-up (Hartshorn and Hannon, 2005; Zhao *et al.*, 2005; Moriano *et al.*, 2006; Soutaris *et al.*, 2007; Vázquez *et al.*, 2009a, 2010), favorable attitudes towards self-employment (Johannisson, 1991; Krueger and Brazeal, 1994; Gorman *et al.*, 1997; Hegarty, 2006; Vázquez *et al.*, 2009a, 2010), and related entrepreneurship preferences and intentions (Vesper and Gartner, 1997; Chen *et al.*, 1998; Moriano *et al.*, 2006; Vázquez *et al.*, 2009a, 2010).

While this line of research backs up the positive effects of entrepreneurship education, identification of specific elements affecting undergraduates' entrepreneurial behavior has received less attention in the literature. In this sense, educational constructs most often used as independent variables in previous studies correspond to generalities in terms of academic level, area or performance, and subjective perceptions regarding the availability or participation in poorly defined learning situations. At the same time, samples have often consisted of participants in specific and voluntary courses or programs, thus leading to a frequent self-selective bias linked to individuals with certain predisposition towards entrepreneurship (Gorman *et al.*, 1997; Fayolle *et al.*, 2006).

In short, previous empirical evidence does not seem to offer a clear stamp of what educational components influence on what individual dimensions and with which effects.

To fulfill this gap in the literature, the principal aim of this paper is twofold. First, we intend to validate a structure of entrepreneurship education based on a double curricular and extracurricular component of teaching entrepreneurship contents (including specific knowledge, abilities and attitudes) and institutional support to business start-up. Second, we seek to analyze the effect of both components on undergraduates' entrepreneurial self-efficacy and outcome expectations as immediate antecedents of entrepreneurial choices and intentions. Based on these purposes, the next section describes a self-reporting study carried out with a sample of undergraduates in Spain.

3. Research methodology and results

3.1. Sample

In order to make the generalization of results possible to different institutional contexts, the study sample consisted of undergraduate students at two Spanish universities with different tradition, size and international prestige: the Complutesian University of Madrid and the University of León.

Established in the XVI century, and with more than 87,000 students, the Complutesian University of Madrid is one of the universities of reference in Spain, occupying favorable positions in many international classifications –such as the Academic Ranking of World Universities of the Shanghai Joao Tong University – based on research quality criteria, formative capacity and demand, availability of physical and human resources, international presence etc.

On its part, the University of León belongs to the majority group of Spanish universities of less age and moderate dimensions, being composed of nearly 13,000 students after 30 years of history.

Despite the discrepancies described, both universities fit the requirements of the research, since they are engaged in several initiatives aimed to foster entrepreneurship among students, in the form of business chairs and specific institutional foundations and programs. Thus, according to the research purposes, the exposure of students in the study to some degree of entrepreneurship education was ensured.

Once justified the choice of the two universities mentioned, data collection was performed from February to June 2010. Participants were registered from the final year of former First and Second Cycle that are being phased out in Spain, in order to provide evidence of the state of the matter in students with enough previous university experience and derive recommendations of use in determining the structure of the new Bachelor-level degrees suited to the EHEA¹.

The total sample comprised a total of 800 university students (400 from each university), ensuring a criterion of representativeness of 95% (being $e = \pm 5\%$; $p = q = 0.50$).

1 The new Bachelor-level degrees suited to the EHEA began to be implemented in some Spanish universities during the 2008-09 and 2009-10 academic years, completing 47.8% of the process to be ended in the course of the 2010-11 academic year (Ministry of Education, 2009).

Participants were selected through a procedure of stratified sampling, in accordance with the real distribution of students by field of study in each university. Based on this procedure, 53.1% of respondents indicated a main academic background on Social Sciences and Law, 14.6% on Technical Subjects, 12.3% on Health Sciences, 11.3% on Experimental Sciences, and 8.8% on Humanities. Among the total of participants, 530 were females (66.3%) and 270 males (33.8%), aged 18 to 48 years old, the mean age being 23.16 ($SD = 3.14$).

3.2. Measures

In gathering data for the study, we developed a self-reporting questionnaire following a careful procedure to ensure an adequate content validity of scales. Specifically, we used a deductive approach based on the operational definition of the theoretical constructs arising from an in-depth review of the specialist literature on the topic and other similar tools for measurement, intended to identify specific indicators upon which to build up the scales. Similarly, the final version of the questionnaire was the product of refining the items included based on the opinions of three experts in the field about the suitability of the proposed indicators for measuring the variables of interest.

Data collection was based on a procedure of collective voluntary self-administration of the final questionnaire to groups of students. This was done in the context of timetabled university classes, randomly selected for each knowledge area, after obtaining approval from the academic member of staff responsible in all cases and in the presence of a researcher trained for this end.

The questionnaire administered comprised various scales for measuring the variables included in the model: entrepreneurship education in terms of both curricular teaching and extracurricular institutional support, and the potential results of entrepreneurial self-efficacy and outcome expectations.

Measurement of entrepreneurship curricular teaching was based on academic experiences reported by students in learning ten conceptual contents ("contribution of enterprises to socioeconomic development", "the process of identification and assessment of business ideas", "steps in business start-up" etc.), ten skills ("leadership and management", "planning and organization", "risk-taking and assessment" etc.), and eight attitudes ("initiative", "proactiveness", "creativity") specified according to the "European Framework on Key Competences for Lifelong Learning" (Recommendation 2006/962/EC of the European Parliament and of the Council). Respondents were asked to rate the perceived importance assigned to each content in their respective academic programs, on a eleven-point Likert-type scale from 0 ("not important at all") to 10 ("very important").

Entrepreneurship extracurricular support was assessed through nine items about the perceived home university implication in actions aimed to provide resources and support to potential entrepreneurial initiatives of students ("campaigns to raise the entrepreneurial spirit", "business start-up counseling", "financial resources" etc.).

For each item, participants had to answer on a Likert-type scale ranging from 0 (“not implicated at all”) to 10 (“very implicated”).

To assess entrepreneurial self-efficacy we asked students about their perceptions regarding the competence to execute ten typical entrepreneurship activities, for example, “to identify a business opportunity in the market”, “to gather the resources needed to pursue a business opportunity”, and “to manage a new enterprise”. For each entrepreneurial activity, responses were ranged on a Likert-type scale from 0 (“completely incapable”) to 10 (“perfectly able”).

Outcome expectations were measured by using a scale of 14 items referred to potential rewards derived from becoming an entrepreneur, such as “economic incomes”, “social approval” and “self-satisfaction”. Respondents were asked to report their degree of accordance with the possibility to obtain each outcome on a Likert-type scale from 0 (‘strongly disagree’) to 10 (‘strongly agree’).

According to sample description purposes, in a final section of the questionnaire respondents were invited to indicate some socio-demographic information concerning their gender, age, home university and academic discipline.

3.3. Construct validity

Once data was collected and processed, we used principal components factor analysis with the SPSS 15.0 program to test the construct validity of the variables included in the model.

Prior to performing factor analysis, the suitability of data was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .30 and above. Also, the Kaiser-Meyer-Ohlin value was .94, exceeding the recommended value of .60 (Kaiser, 1970, 1974) and the Barlett’s Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of eight factors with eigenvalues exceeding 1, explaining a 66.86% of the total variance. Nevertheless, using Catell’s (1966) scree test, it was decided to retain only seven components for further investigation.

To aid in the interpretation of the seven components identified, Varimax rotation was performed. The rotated solution presented in Tables 2 and 3 revealed, firstly, the multidimensionality of the entrepreneurship curricular teaching scale, according to the three dimensions of knowledge, skills and attitudes adopted in the “European Framework on Key Competences for Lifelong Learning” (Recommendation 2006/962/EC of the European Parliament and of the Council). In this sense, every item had a loading above .40 in its respective construct, explaining the 9.72%, 6.63%, and 10.68% of the variance.

Otherwise, entrepreneurship institutional support and entrepreneurial self-efficacy were confirmed as one-dimensional constructs of nine and ten indicators respectively, explaining 11.08% and 11.33% of the total variance.

Finally, the outcome expectations construct was better explained as a dimensional variable of two components which explained 9.42% and 6.23% of the variance. The

first component, called intrinsic outcome expectations was composed of eight items concerned to the potential rewards of entrepreneurial initiative in terms of one’s own interest and self-satisfaction inherent to that activity. Secondly, a component of extrinsic outcome expectations was identified, composed of six items about the positive consequences derived from business start-up as an instrumental behavior, such as economic incomes or social approval.

In total, the seven components identified explained 65.10% of the variance. Moreover, all the scales retained were associated to Cronbach’s α values of reliability over the recommended .70 (Nunnally, 1978).

Table 2: Factor analysis results for educational variables

	Entrepreneurship curricular teaching			Entrepreneurship extracurricular support
	Knowledge	Skills	Attitudes	
Teaching contents				
Economic entrepreneurship contribution	.756			
Entrepreneurs' work functions	.712			
Factors of business success	.687			
Social entrepreneurship contribution	.687			
Identification of business opportunities	.685			
Business structure and functioning	.674			
Business start-up as a career choice	.673			
Business models by academic area	.654			
Steps to start a business	.573			
Entrepreneurship local resources	.561			
Negotiation abilities		.682		
Executive abilities and leadership		.643		
Delegation abilities		.629		
Planning and organization abilities		.615		
Management abilities		.605		
Analysis and assessment abilities		.507		
Self-knowledge abilities		.505		
Communication abilities		.492		
Risk-taking and assessment		.455		
Autonomous work abilities		.445		
Proactiveness			.763	
Responsibility			.758	
Goal self-direction			.755	
Creativity			.725	
Initiative			.722	
Innovativeness			.721	
Independence			.720	
Change flexibility			.719	

	Entrepreneurship curricular teaching			Entrepreneurship extracurricular support
	Knowledge	Skills	Attitudes	
Extracurricular activities				
Entrepreneurship counseling				.848
Business plan assistance				.829
Access to resources for business start-up				.829
Information about business creation				.817
Entrepreneurship training courses				.792
Motivation and encouragement actions				.772
Mentorship and monitoring				.745
Receptivity to alumni's interest				.687
Raising the entrepreneurial spirit				.629
Percentage of variance explained	9.72%	6.63%	10.68%	11.08%
Cronbach's α reliability	.92	.91	.92	.95

Table 3: Factor analysis results for behavioral variables

	Entrepreneurial self-efficacy	Outcome expectations	
		Intrinsic	Extrinsic
Perceived competences			
To manage a new business	.876		
To organize the production functions of a new venture	.862		
To organize the resources needed to start a business	.851		
To plan the different areas of a new venture	.832		
To develop a business idea in a viable project	.789		
To commercialize products and services on the market	.783		
To gather the resources needed to start a business	.774		
To identify a business opportunity	.748		
To recruit and manage the workforce of a new venture	.747		
To administer and do the accounts of a new business	.698		
Expected rewards			
Learning opportunities		.841	
Doing a challenging and interesting work		.828	
Personal self-realization		.803	
Work satisfaction		.795	
Self-esteem and positive self-image		.758	
Fit between personal abilities and job requirements		.764	
Variety of tasks		.734	
Autonomy and independence in the workplace		.668	
Opportunities for professional promotion			.777

Social status			.764
Work security and stability			.754
Conciliation of work and personal life			.735
Economic incomes			.699
Social prestige and approval			.673
Percentage of variance explained	11.33%	9.42%	6.23%
Cronbach's α reliability	.95	.93	.91

Table 4 presents the means, standard deviations and correlation coefficients among the factors identified. In descriptive terms, entrepreneurship education efforts were poorly valued by students, with average scores under the intermediate value of 5 on the 0 to 10 scale in the four constructs of curricular teaching of entrepreneurial knowledge ($M = 3.41$), skills ($M = 4.07$) and attitudes ($M = 4.56$), and institutional support to business start-up ($M = 2.56$).

Otherwise, participants showed moderate perceptions of competence to become self-employed, with a mean score of 5.12 in the entrepreneurial self-efficacy scale. At the same time, potential outcomes linked to entrepreneurial careers were favorably assessed by students at both intrinsic ($M = 7.82$) and extrinsic levels ($M = 6.83$).

Correlations displayed in the table point to many positive significant relations among variables, these being higher among educational variables on one hand (with r values between .48 and .71) and behavioral dimensions on the other (with r values between .27 and .63), thus supporting the convergent and discriminant validity of the scales.

Table 4: Means, standard deviations (SD), and correlations among variables

	Mean	SD	1	2	3	4	5	6
1. Knowledge	3.41	1.94						
2. Skills	4.07	1.96	.66**					
3. Attitudes	4.56	2.07	.48**	.71**				
4. Support	2.56	1.95	.61**	.53**	.48**			
5. Self-efficacy	5.12	2.11	.29**	.20**	.13**	.24**		
6. Intrinsic OE	7.82	1.64	.01	.10**	.09**	-.01	.27**	
7. Extrinsic OE	6.83	2.06	.07*	.12**	.13**	.06	.32**	.63**

* $p < .05$; ** $p < .01$.

3.4. Regression analysis

To test the effect of entrepreneurship curricular and extracurricular education on the behavioral results of entrepreneurial self-efficacy and outcome expectations and analyze the predictive validity of the measures employed, we ran three regression models as shown in Table 5.

Model 1 tested the effect of perceived learning of entrepreneurship knowledge, skills and attitudes and institutional support on entrepreneurial self-efficacy. It was

found that, collectively, the educational variables explained a significant proportion of the variance in self-efficacy ($F = 19.81, R^2 = .09, p < .001$), whereas only perceived learning of entrepreneurial knowledge ($\beta = .23, p < .001$) and entrepreneurship extracurricular support ($\beta = .11, p < .05$) caused a significant effect on that dependent variable. Curricular teaching of entrepreneurship skills and attitudes, however, were not significantly related to perceived self-efficacy.

Model 2 was used to analyze the relationship between the four educational dimensions previously mentioned and intrinsic outcome expectations. The overall equation was significant ($F = 3.53, R^2 = .02, p < .005$), and so was the coefficient for perceived education of entrepreneurship skills ($\beta = .14, p < .05$). In this case, neither perceived learning of entrepreneurship knowledge and attitudes, nor perceived extracurricular support affected the intrinsic rewards expected from self-employment.

Finally, model 3 tested the effect of curricular and extracurricular entrepreneurship education on the third dependent variable of extrinsic outcome expectations. Again, the overall effect was significant ($F = 3.79, R^2 = .02, p < .005$), but only the coefficient of perceived curricular teaching of entrepreneurial attitudes reached statistical significance ($\beta = .10, p < .05$), whereas the reminded educational variables did not affect the extrinsic outcomes anticipated from new venture creation.

Table 5: Results of regressions

	Model 1 (Self-efficacy)		Model 2 (Intrinsic OE)		Model 3 (Extrinsic OE)	
	β coefficient	t-statistic	β coefficient	t-statistic	β coefficient	t-statistic
Knowledge	.23***	4.58	-.07	-1.32	-.01	-0.26
Skills	.04	0.67	.14*	2.30	.07	1.14
Attitudes	-.06	-1.13	.05	1.05	.10*	1.82
Support	.11*	2.37	-.06	-1.29	-.01	-0.17
F	19.81***		3.53**		3.79**	
R ²	.09		.02		.02	
Adj. R ²	.08		.01		.01	

* $p < .05$; ** $p < .01$; *** $p < .001$.

4. Discussion

Entrepreneurial activities act as one of the main driving forces for economic and social development around the world. European governments have become increasingly aware of that in the last decade and a great amount of political measures have been suggested to include entrepreneurship education as part of the academic curricula in higher education institutions. However, most high level programs seem to be much more centered on training wage-earner managers or technicians, than offering qualified and responsible entrepreneurs and enterprises to society.

In this context, the identification of the elements encompassed by entrepreneurship education and their potential effects on future graduates' career choices should be a priority concern. To this end, this paper has presented some results from a study

carried out in two Spanish universities aimed to validate a structure of entrepreneurship education based on a double curricular and extracurricular component of teaching entrepreneurship contents (including specific knowledge, abilities and attitudes) and institutional support to business start-up, and to analyze their effect on undergraduates' entrepreneurial self-efficacy and outcome expectations as immediate antecedents of entrepreneurial choices and intentions.

In general, the results obtained made it clear that there is very limited involvement by Spanish universities in entrepreneurship education as perceived by students, together with the existence of three main different effects of curricular teaching and extracurricular support when fostering entrepreneurial careers among students.

First, undergraduates' entrepreneurial self-efficacy seems to be mainly enacted by learning experiences of entrepreneurship knowledge and support to business start-up at the university. In applied terms, this finding backs up the premise that understanding of what entrepreneurship is and of how to become an entrepreneur, together with raising, support and accompaniment services lead students to feel confident on the feasibility of choosing an entrepreneurial career.

Second, training of entrepreneurial skills such as project management, representation and negotiation, autonomous work, self-knowledge, and risk taking has a positive effect on the anticipation of intrinsic outcomes in entrepreneurial pursuits. Hence, the larger the future graduates' acquired entrepreneurial abilities, the higher their expectations to obtain self-evaluative rewards by means of entrepreneurship.

And third, curricular teaching of entrepreneurial attitudes only influenced extrinsic outcome expectations, thus pointing to the conclusion that development of personal characteristics to behave entrepreneurially has a positive impact on the external rewards expected in business start-up. That is to say, attitudinal training leads students to become more aware of the real instrumental benefits derived from entrepreneurial careers.

In sum, this pattern of results reaffirms the need to reinforce the joint potential of universities' curricular and extracurricular attempts in the design of specific procedures applicable to the setting up of an integrated strategy for entrepreneurship education.

At a curricular level, the climate of change currently reigning thanks to the progressive establishment of new degree programs adapted to the EHEA offers an excellent opportunity to work on the design of teaching programs meeting the requirements to encourage entrepreneurship. To serve this curriculum planning effort, and by way of suggestions for good practices, the empirical model arising from the work described above sets the adoption of a skill-based teaching model that will place the knowledge, abilities and attitudes necessary for an adequate development of entrepreneurship at the very heart of any educational intervention.

With the support of these prescriptions, the adoption of student-centered strategies for teaching, fundamentally by means of a diversification from theoretical methods of training into experiential and co-operative forms of learning, must be seen as the most effective approach for the purposes of entrepreneurship education at university.

Similarly, and in view of the effects attributable to extracurricular programs encouraging entrepreneurship upon perceived self-efficacy for the creation of enterprises, it is also possible to argue in favor of increasing the amount of institutional resources devoted to this purpose. This would attempt to favor access by undergraduates to resources appropriate to their needs, converting entrepreneurial initiative into a viable occupational alternative that potentially could be put into practice immediately at the end of their studies.

The results obtained in the study must be interpreted in the light of certain methodological limitations, which leave the door open for further work in this field. In this respect, it should be noted that the majority of scales used for measuring the variables in the model were drawn up *ad hoc* for the purposes of this investigation. Hence, they will require future validation to check their usefulness for the purposes assigned to them in this work. At the same time, further longitudinal analyses are needed to give an account of the development of initial processes of selection of entrepreneurial careers into the tangible form of new successful enterprises in the market-place. This would be by means of following up the entrepreneurial sequence as it develops over time among the same group of students.

Furthermore, it would be appropriate to expand the focus of the investigation adopted here through the inclusion of other endogenous or exogenous factors with a potential to cause direct influences or moderate many of the relationships found between variables. Such a line of work would constitute a more decisive advance towards the identification of the personal, behavioral and environmental processes likely to be affected by higher education in attempts to encourage student entrepreneurial initiatives.

Finally, while the fact that the empirical study was carried out in two different Spanish universities demonstrates that the conclusions drawn from it are sufficiently solid, further studies are required to allow generalization of the results to other Spanish or European institutions. It would even be appropriate to consider other models of tertiary education with the aim of gaining greater precision in the identification of the factors in curriculum planning or the institutional environment itself that determine the level of effectiveness attained in encouraging entrepreneurial initiative in the young.

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