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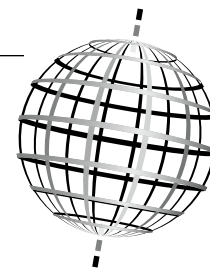
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Résumé de l'article

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# Modeling Entrepreneurship Intentions: An Essay of Typology

## Modéliser les intentions entrepreneuriales : un essai de typologie

## Modelar las intenciones de emprendimiento: Una propuesta de tipología

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### RÉSUMÉ

A partir d'un modèle d'intentions psychosociologique, adapté de la Théorie du Comportement Planifié, nous analysons les facteurs modélisant les intentions entrepreneuriales de 7000 étudiants dans 24 pays. Nous montrons l'existence de différences dans certaines croyances suivant les pays. Nous proposons alors trois facteurs structurant les intentions entrepreneuriales des étudiants (le type de vision de l'entrepreneuriat, l'opinion et la capacité perçue à créer une entreprise). Puis nous construisons une typologie de ces intentions en six classes. Nous concluons que les comportements des étudiants en intention entrepreneuriales sont plutôt supranationaux et ne sont que peu influencés par les systèmes d'éducation nationaux.

**Mots clés :** intentions entrepreneuriales, entrepreneuriat, création d'entreprise, intentions des étudiants, intentions, culture

### ABSTRACT

From the standpoint of a psycho-sociological intention model adapted from the Theory of Planned Behavior, we analyze factors modeling students' entrepreneurship intentions, as expressed by 7000 students of 24 different nationalities. We highlight the existence of differences in certain beliefs between countries. We then propose three structuring factors of student entrepreneurship intentions: type of entrepreneurship vision, opinion, and perceived capacity to create a business. Next, we construct a typology of student behaviors toward entrepreneurship intentions manifesting in six characterized clusters. We find that entrepreneurship intention behaviors are relatively supranational and are only slightly influenced by national education systems.

**Keywords:** entrepreneurship intentions, entrepreneurship, firm creation, business start-up, student intentions, intentions, culture

### RESUMEN

A partir del modelo psicossociológico de intenciones, adaptado de la teoría del comportamiento planificado, se analizaron los factores que modelan las intenciones de emprendimientos de 7000 estudiantes en 24 países. Se evidencia la existencia de diferencias en ciertas creencias entre los países. Se proponen tres factores que estructuran las intenciones (el tipo de visión de emprendimiento, la opinión y la capacidad que se percibe para fundar una empresa). Se presenta una tipología en seis clases. Concluimos que los comportamientos de los estudiantes con intenciones de emprendimientos están débilmente influenciados por los sistemas de educación nacional y relativamente dirigidos hacia ámbitos globales.

**Palabras clave:** intenciones de emprendimiento, emprendimiento, creación de empresas, intenciones de los estudiantes, intenciones y cultura

Business creation is a key factor that represents the vitality and future health of any given economy. While some countries, such as France, are not generally known for their entrepreneurial enthusiasm, others, such as Brazil, have a different reputation in this area. Considering the calculations of the Global Entrepreneurship Monitor (GEM Report, 2013), in order to analyze entrepreneurial activity in 2013, the TEA<sup>1</sup> for innovation-driven economies was observed to vary between 3.4% for Italy and 12.7% for the United States (U.S.). Italy and France have a score almost less than twice the average of innovation-driven economies, and the differences cannot be explained only by environment and economic factors. We can thus try to understand more concretely the reasons for the existence of such differences. Moreover, among all the start-ups recorded

in 2011 in France, only 12% were created by young graduates of higher education (INSEE Première, 2012).

A large amount of literature since the 1980s on entrepreneurship focuses on the concept of entrepreneurial intention, viewing much of this subject as intentional behavior, and the formation of an intention to start a business as a step toward the process of founding an organization (Kautonen *et al.*, 2015; Schlaegel and Koenig, 2014). Entrepreneurial intention studies have been largely dominated by two theories: the theory of planned behavior (TPB) by Ajzen (1991; 2014) and the theory of entrepreneurial event by Shaper and Sokol (1982). Both models have proved robust empirically, even under conditions of misspecification (Kautonen *et al.*, 2013). Although no specific work reconciles these two entrepreneurial intention models into

1. Total Entrepreneurial Activity (TEA), proportion of the population between 18 and 64 years of age, in the process of or having created a business that is less than 42 months old (GEM Adult Population Survey (APS) and IMF, 2013).

a single one, some authors show their compatibility (Boyd and Vozikis, 1994; Krueger *et al.*, 2000). Therefore, the TPB continues to provide the predominant specification (Sahut *et al.*, 2015). However, in this theory, the concept of Perceived Behavioral Control (PBC) is defined as a single concept encompassing a range of both internal and external forms of control, of which the cumulative effects can be difficult to analyze. Therefore, Armitage and Conner (1999; 2001) suggest that a better predictive psychological model could be obtained by splitting PBC into self-efficacy, seen as internal control, and a form of outcome expectancy, or external control.

Following this approach, our paper contributes to the literature by defining PBC with two concepts separating internal and external controls, integrating the concept of self-efficacy in the TPB, and comparing the entrepreneurial intentions between different countries. Using data gathered from students of different nationalities, we hope to, first, verify that measured levels of intention are in fact different, and second, advance our understanding of the structure of these intentions. In particular, we hope to identify the elements that influence intentions: the levels and nature of these elements are likely to explain the differences in intention levels.

In the first part, we present Ajzen's TPB on which we base the theoretical framework of our study, and describe how this model has been used in entrepreneurship intention literature. The second section explains the methodology followed in the study and briefly describes the sample. The first gross results observed from the sample highlight country-based differences in the levels of entrepreneurship intentions. In the following sections of the paper, we therefore try to understand the reasons for these differences: the third section focuses on a comparison of beliefs as manifested in different countries, which can influence entrepreneurship intentions. The fourth section, using data analysis techniques, draws out structuring factors of student entrepreneurship intentions and builds a typology of behaviors related to these intentions. The results of this typology allow us to show differences in the nature of intentions as illustrated by typical behaviors with which certain countries could be linked. A final discussion concludes this study.

### **Intention models and entrepreneurial attitude**

Our theoretical framework is based on Ajzen's TPB (1991; 2014). This predominant theory is robust and enables an advanced understanding of entrepreneurial processes (Krueger, 1993; Kautonen *et al.*, 2015). After a short presentation of this theory, we describe the main results in the field.

#### **THEORY OF PLANNED BEHAVIOR**

According to this model, each intentional behavior can be predicted by the intention to have the given behavior. That is, intentions are assumed to capture motivational factors that influence behavior (Nyock Ilouga *et al.*, 2016). They can thus be interpreted as indications of how hard people are willing to try and how much effort they are planning to exert in order to perform the behavior (Ajzen, 1991: 181). Thus, intention is characterized by its capacity to pull an individual toward action. The predictive character of intention models has however, been

subject to criticism. These criticisms are weaker when the TPB is applied to behaviors that are under volitional control and those for which the period of time that separates intention and act is generally short, than in general cases of intentional behavior. Entrepreneurial intentions seldom fulfil such requirements. Nevertheless, the use of this model remains useful, especially in order to understand students' views and to identify potential sites for influencing or enhancing entrepreneurship intentions.

Schumpeter (Goss, 2005) reinforces this opinion by identifying three ways of describing the entrepreneurial process: entrepreneurial behavior, entrepreneurial motivation, and factors limiting entrepreneurial action. Students are, above all, in a process of learning and in a phase of professional intentions. They are not yet at the point of making decisions, taking action, or of particular behaviors. This population is particularly in phase with the TPB, which permits the examination of motivations (desires, satisfaction) and inhibitors (capacity, fear of social condemnation). Students have yet to experience entrepreneurial behavior, or more broadly, the making of professional choices (choice of a profession, employment, or self-employment, the object and form business creation).

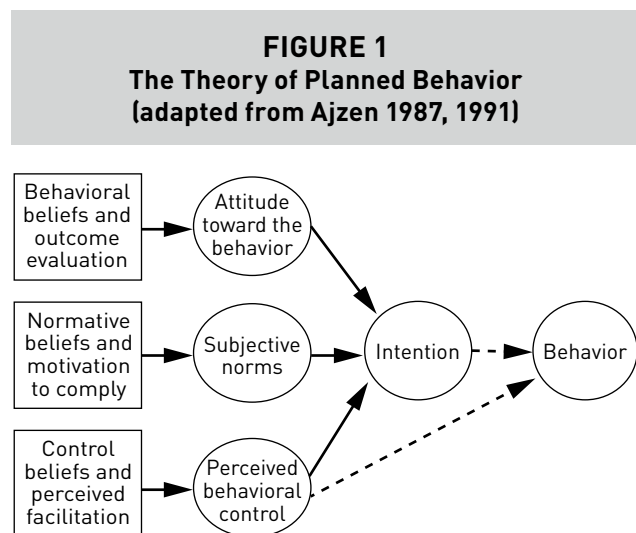
TPB assumes that three elements determine an individual's intention to have different types of behaviors: attitude toward the behavior, perception of subjective norms, and the individual's perceived control over the situation. Attitude toward a behavior refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question (Ajzen, 1987). When applying Ajzen's theory (1991) to the entrepreneurial field, students' attitude toward firm creation would be based on their respective professional values/beliefs (i.e., the professional characteristics they value) and their entrepreneurship vision (i.e., the needs they think will be fulfilled by entrepreneurship).

The subjective norm, also called the perceived social norm, refers to the perceived social pressure to perform (or not) the behavior. Additionally, entrepreneurship intention is stronger when firm creation is perceived as a desirable action. Desirability, in Shapero's terms, reflects the personal attractiveness of performing a behavior, in this case starting a business. In our study, we integrate both these approaches: the subjective norm will be defined by the degree of perceived approval or disapproval held by people whose judgment is important to the student and by the perceived desirability of starting a business (Shapero and Sokol, 1982).

Finally, the last factor of intention is perceived behavioral control. This refers to people's perception of the ease or difficulty of performing the behavior at hand. More specifically, it is the perception of the presence or absence of requisite resources and opportunities needed to carry out the behavior (Ajzen and Madden, 1986: 457). It is related to the perceived feasibility of performing the behavior as used in Shapero's model. In our context, perceived feasibility is the degree to which one feels personally capable of starting a business. These two notions of perceived control and feasibility are closely linked. This latest concept is also compatible with Bandura's (1977, 2002) concept of perceived self-efficacy. This represents either the confidence an individual has about his or her capacity to achieve the actions required to obtain a given result (Bandura, 1977: 193) or one's auto-judgment concerning how well one can execute

courses of action required to deal with prospective situations (Bandura, 2002, p. 122). Ajzen (2002) recently insisted on the differences between perceived behavioral control and perceived self-efficacy. Nevertheless, self-efficacy has previously been linked, both theoretically and empirically, to several managerial issues, as well as entrepreneurship. For instance, Hackett *et al.* (1993), as cited by Krueger *et al.* (2000), reveal that the impact of gender and ethnicity on differences in career choices strongly depends on differences in self-efficacy. Bandura (1986), Lent *et al.* (1994), and Nyock Ilouga *et al.* (2014) revealed correlations between self-efficacy and career intentions. Following the approach of Armitage and Conner (1999, 2001), we split PBC into self-efficacy, seen as internal control, and a form of outcome expectancy, or external control. In our context, self-efficacy refers to the degree to which a student thinks (s)he is able to carry out the process of business creation.

The figure 1 shows the model which underpins our study, and which was built from the previously described theories.



#### MAIN EMPIRICAL FINDINGS IN PRIOR LITERATURE CONCERNING ENTREPRENEURIAL INTENTION

Some entrepreneurial intention studies focused on students, and are therefore, particularly useful for our analysis: Kolvereid, 1996; Autio *et al.*, 1997 (using a different model from Ajzen's, but resulting in similar findings); Tkachev and Kolvereid, 1999; Krueger *et al.*, 2000; Kennedy *et al.*, 2003; Souitaris *et al.*, 2007; and Ismail *et al.*, 2009. However, Schlaegel and Koenig's (2014) meta-analysis highlighted that only three published studies have applied the full TPB and other limitations such as the size of sample, nonrandom sample attrition, and simplicity of regression methods used (generally linear regression techniques), whereas the interactions between variables are complex.

In particular, Kolvereid (1996) studied a sample of roughly 100 Norwegian business school students. His results showed that the intention to be self-employed was significantly correlated to attitudes toward behavior, subjective norms, and perceived behavioral control. The latter two factors had a stronger effect on intention than did personal attitude toward the behavior. No socio-demographic variables (gender, former self-employment

experience, or family background) significantly affected the intention, while they were all correlated to perceived social norms and perceived behavioral control. This is consistent with Ajzen and Fishbein's theory (1980), assuming that such variables only have an indirect influence on intention through attitude, perceived social norms, and perceived behavioral control. The study carried out by Tkachev and Kolvereid (1999) using a sample of nearly 600 Russian students obtained similar results.

Krueger *et al.* (2000) applied Ajzen's model on nearly 100 business school alumni in the U.S. who were facing a career choice. Perceived feasibility and attitudes toward the act significantly predicted intention (with feasibility having a stronger impact than attitude). Consistent with Kolvereid's analysis, feasibility had a stronger effect on intention than did personal attitude. On the other hand, social norms appear to have been insignificant. Such results contradict Kolvereid, who revealed a positive impact of social pressure. Kennedy *et al.* (2003) show that Ajzen's intention model works well on a sample of roughly 1,000 Austrian students with effects of the three types of factors being observed.

The study of Souitaris *et al.* (2007) also contributes to the theories of planned behavior and education. Their findings indicate that entrepreneurship programs raise some attitudes and the overall entrepreneurial intention of science and engineering students, and that inspiration (a construct with an emotional element) is the programs' most influential benefit.

Finally, Ismail *et al.* (2009) confirm the relationship identified by Singh and DeNoble (2003) between the Big-Five Personality, contextual factors, and entrepreneurship intention for Malaysian students. Furthermore, their findings highlight the role of close support from family and friends on entrepreneurship intention, but it is not very surprising in a collectivist culture like Malaysia that emphasizes on cohesiveness. However, these results need to be considered with precaution because of the small size of the sample.

Comparison of these results confirms the relevance of the TPB in explaining entrepreneurial activity (Carrier, 2000; Diochon *et al.*, 2002; Audet, 2004; Emin 2006; Boissin, *et al.*, 2009). In our study, we will use the three main intention determinants: attitude toward the behavior, subjective norms, and perceived control. Furthermore, we consider that each of these determinants, depending on national cognitive factors, could differ among countries. As Busenitz and Lau (1996, pp. 125) state "[Cognitive factors] have yet to be integrated into a cross-cultural framework for understanding why some cultures produce individuals with a higher propensity for entrepreneurial activity.... Understanding cognition is critical if we are to understand entrepreneurship across the international landscape." Thus, the influence of each factor on intention could vary among countries, and may reveal an effect stemming from cultural differences. National culture could well be a factor favorable to entrepreneurship, influencing psychological characteristics and individual values, and it influences the number of entrepreneurs in a given society (Davidsson and Wiklund, 1997; Mitchell *et al.*, 2000; Mueller and Thomas, 2001; Hayton *et al.*, 2002). Hofstede *et al.* (2004) have demonstrated how national culture, namely economic and social institutions, can have either a positive or a negative effect on entrepreneurship. Moreover, Audretsch *et al.* (2010) showed

that regions characterized by a high level of knowledge and cultural diversity form an ideal breeding ground for technology-oriented start-ups. Our study will thus be based on behavioral, normative, and control beliefs.

## Methodology and initial results

### METHODOLOGY

In order to better understand student entrepreneurship intentions, we chose to use a quantitative methodology. This methodology allows us to compare, and thus cross-validate our findings with those of previous studies. A questionnaire was developed largely based on variables considered by the TPB (see above), and a process was defined for its administration.

The questionnaire has several variables. Those concerning attitudes related to creating a business (behavioral beliefs) were adapted from Kolvereid (1996) and Sahut *et al.* (2015). Using Ajzen and Fishbein (1980), variables concerning each type of professional expectation were developed via two distinct questions: one concerning professional life values ("For each of the following elements, indicate the importance it holds for you in terms of the quality of your professional life"), the other concerning values related to business creation ("In your opinion, creating your own business will allow you to..."). These correspond to an evaluation (in terms of degrees ranging from favorable to unfavorable) made by a person concerning business creation.

The questionnaire also has variables related to PBC. Following the approach of Armitage and Conner (1999, 2001), we separated PBC into self-efficacy, and a form of outcome expectancy. On one side, self-efficacy refers to the degree to which a student thinks (s)he is able to carry out the process of business creation. We therefore created 14 items to assess the perception of students' entrepreneurial capabilities based on the self-efficacy scale of Lucas *et al.* (2009), such as "Write a clear and complete business plan," "Sell a brand new product service to a first-time customer," "Persuade investors to put a substantial sum into a new company," or "Recognize and hire good employees for a new project of venture." On the other side, the outcome expectancy refers to a person's estimation that a given behavior will lead to certain outcomes. Our item scale, based on the work of Cooper and Lucas (2004), is an overall statement of success that respondents can "Start a successful business if you want to."

Variables related to subjective norms (normative beliefs) are also dealt with. These variables correspond to the social pressure perceived by the potential creator (Nyock Ilouga *et al.*, 2013) that pushes him or her to either pursue, or not, a given action. In this study, this is simultaneously defined as the degree of approval or disapproval (as perceived by the student) from people whose opinion the student respects, and as the importance (s)he gives to these opinions. Another question concerns the attractiveness of business creation (cf. Krueger *et al.* 2000).

The fourth group comprises Intention variables. Following the guidelines proposed by Kolvereid (1996), intention is measured by considering the professional alternatives of salaried workers vs. entrepreneurs. We also distinguish between what the respondent intends to do (i.e., would like to do) and what they ideally hope to do.

The next group comprises variables concerning education related to business creation: opinions about and participation in educational opportunities related to business creation.

The final group is made of socio-demographic variables.

Answers to questions about belief and intention are solicited using a seven-point Likert scale. Furthermore, we have specified in the questionnaire that business creation should be broadly defined, irrespective of the legal status (company, association, consultant...), and can even include taking over the leadership of a family-owned business.

For the collected data to be homogeneous across the board, and to ensure the studies' integrity, a data collection process was defined: the questionnaire had been administered in the local language of the country (after translation by a native speaker of each language) under observation, to avoid foreign-language-related biases, even if that language is frequently used. It also had to be administered at the beginning of a class to all students present, and collected immediately from all respondents. This was to avoid answer rate biases related to sensitivity to business creation of the responding population. Finally, if the class being surveyed was studying a module on business creation, the questionnaire had to be administered at the beginning of the module.

This international comparison of student entrepreneurship intentions was undertaken in the context of a wide research program organized around an International Observatory of Student Entrepreneurial Intentions, located at the University of Grenoble in France. The program is supported by nearly 50 international partners, corresponding to more than 20 countries, and has gathered a total sample of more than 11,000 usable answers. The data used in this paper were collected in 24 countries. In our sample, we consider only those students with local nationality in the observed countries having sufficiently completed their questionnaires. For building these analyses, we used SAS (statistics software).

The next tables present the context (global and key entrepreneurial framework conditions) of the 24 countries, where data were collected. Table 1, which is adapted from the Global Entrepreneurship Monitor Report, 2013, shows a classification of the countries according their economic development level.

Level	Country
Factor-driven economies	Algeria*, Cameroon***, Iran*, Tunisia***
Efficiency-driven economies	Argentina**, Bolivia***, Brazil**, China, Colombia, Lebanon***, Poland**, Romania, Russia**, Slovakia**
Innovation-driven economies	Belgium, Spain, United States, France, Great Britain, Italy, New Zealand***, Portugal, Sweden, Czech Republic

\* In transition phase between Factor-Driven and Efficiency-Driven

\*\* In transition phase between Efficiency-Driven and Innovation-Driven

\*\*\* Not present in GEM Report



**TABLE 2**  
Entrepreneurial context of the countries

Country	UAI	TEA	GP	EE	CSN	Country	UAI	TEA	GP	EE	CSN
Algeria		4.9	3.2	3.2	3.2	Iran	59	12.3	1.9	2.1	2.2
Argentina	86	15.9	2.0	3.3	3.2	Italy	75	3.4	2.0	2.6	2.1
Belgium	94	4.9	2.6	3.1	2.2	Lebanon	68				
Bolivia						New Zealand	49				
Brazil	76	17.3	2.5	2.4	2.7	Poland	93	9.3	2.6	2.4	2.8
Cameroon						Portugal	104	8.2	2.6	2.9	2.6
China	40	14	2.7	2.7	3.0	Romania		10.1	2.4	2.9	2.3
Colombia	80	23.7	2.8	3.2	3.1	Russia		5.8	1.9	2.7	2.5
Spain	86	5.2	2.3	2.3	2.1	Slovakia		9.5	1.9	2.8	1.9
United States	46	12.7	2.8	3.1	3.9	Sweden	29	8.2	2.7	2.4	3.2
France	86	4.6	3.3	2.7	2.2	Czech Republic	74	7.3	2.0	2.4	2.0
Great Britain	35	7.1	3.0	2.6	3.1	Tunisia					

Source: UAI (Uncertainty Avoidance Index): [www.clearlycultural.com](http://www.clearlycultural.com). Retrieved 10 May 2016; TEA (Total Entrepreneurial Activity), GP (Government Policy: entrepreneurship as a relevant economic issue), EE (Entrepreneurship Education at post-secondary levels), CSN (Cultural and Social Norms): Global Entrepreneurship Monitor Report, 2013, p. 27, 46.

Table 2 presents for each country where figures are available, some key indicators for entrepreneurial conditions. In the first column is the uncertainty avoidance index (UAI), which deals with tolerance for uncertainty and ambiguity: lower it is, higher is the tolerance. The TEA (Total Entrepreneurial Activity) follows. The next columns are indicators built by the Global Entrepreneurship Monitor from experts opinions. We chose three indicators: the GP (Government Policy) indicator shows the extent to which public policies give support to entrepreneurship, through the fact that entrepreneurship is regarded as a relevant economic issue; the EE (Entrepreneurship Education) indicator is consistent with the presence of entrepreneurship education at post-secondary levels; the CSN (Cultural and Social Norms) indicator presents “the extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income”.

#### DESCRIPTION OF THE SAMPLE

In this paper, we analyze the entrepreneurship intentions of 6,888 students from 24 countries. All students belong to the Human and Social Sciences branch of learning. Table 3 shows the sample distribution over the different countries: from 74 individuals in Tunisia to 1,139 in France.

Since our aim is to compare student entrepreneurship intentions between countries, we weight the answers of each country in order to equalize (in the analysis) the proportion of respondents per country. All the following described analyses are built with these weights. We also chose to aggregate the answers into three groups, because on one hand, data analysis techniques require it (sensitivity to few respondents), and on the other hand, to facilitate comparison and presentation of simple statistics. Positive answers are based on the initial answers absolutely (important) and (important). Negative answers bring together the initial answers absolutely not (important) and not (important). Neutral (=) answers fit with the initial answers; neutral, rather (important), and rather not (important).

Considering the entire sample, 44% of the surveyed individuals are male and 56% female. This figure varies country-wise, as can be seen in Table 4, ranging from 31% male respondents in Belgium to 67% in Bolivia. Since we have only retained students in the field of Human and Social Sciences for these analyses, this variation might reflect the differences in the degree of attractiveness of this field of study according to gender, which can again differ country-wise.

In the entire sample, students are on average 22.6 years old, with a standard deviation of 3.3 years. The median of age (which splits the population in both equal parts) is 22 years. 25% of the population are 21 years old or less and 75% are 24 years old or less. The sub-samples are on average, older in Cameroon, Brazil, and Iran; and younger in Spain, Argentina, and Russia. On average, 62% of the students are in undergraduate programs, and 38% are in Masters.

Farmers not included, 29% of the students on average, have an entrepreneur father (entrepreneur is defined broadly in this paper and includes craftsmen, tradesmen, self-employed head

**TABLE 3**  
Sample distribution over different countries

Country	Sample	Country	Sample
Algeria	140	Iran	292
Argentina	100	Italy	540
Belgium	360	Lebanon	273
Bolivia	163	New Zealand	105
Brazil	693	Poland	144
Cameroon	160	Portugal	227
China	228	Romania	149
Colombia	423	Russia	146
Spain	281	Slovakia	149
United States	621	Sweden	99
France	1139	Czech Republic	133
Great Britain	249	Tunisia	74

**TABLE 4**  
Proportion of men and average age

Country	Men	Age	Country	Men	Age
Algeria	39%	22.9	Iran	35%	24.0
Argentina	45%	21.5	Italy	41%	22.5
Belgium	31%	22.5	Lebanon	53%	22.3
Bolivia	67%	22.7	New Zealand	56%	22.3
Brazil	53%	24.0	Poland	22%	21.9
Cameroon	59%	25.3	Portugal	38%	23.9
China	37%	23.3	Romania	33%	21.8
Colombia	39%	21.7	Russia	32%	21.5
Spain	39%	20.6	Slovakia	37%	21.9
United States	55%	22.7	Sweden	42%	23.5
France	46%	22.3	Czech Republic	46%	22.0
Great Britain	58%	21.5	Tunisia	47%	23.7

of a company, and self-employed professionals) and 16% have a mother in the same situation. For the father's job, the rates are the lowest in Argentina (9%), Romania (17%), Sweden (20%), Cameroon (21%), and Poland (23%); and the highest in Lebanon (51%), New Zealand (42%), Colombia (41%), and Russia (41%). When considering the mother's job, we do not necessarily find the same countries with the lowest or highest proportion of entrepreneurs: Iran (5%), Sweden (5%), and Argentina (9%) have the lowest rate; while Tunisia (33%), Colombia (31%), and Bolivia (29%) have the highest rates. Notice that these figures vary according to the structure of the population in terms of socio-professional categories and the relative university attendance rates for children from various socio-professional categories.

Specifically for business creation, on average in the whole sample, 37% of the students have a parent who has already started a business. As can be seen in Table 5, this figure reaches 64% in New Zealand, 60% in Bolivia, 55% in Great Britain, and 54% in Argentina. At the other end of the spectrum, the figure is very low in China, Iran, and Tunisia.

On average, of the entire sample, 73% of the students have already worked for a company. This essentially depends on the conceptual structure of the national education system and the various ways of financing studies: in some countries like Sweden, Russia, France, Tunisia, the Czech Republic, and the U.S., almost all students have already worked for a firm, but this is not the case in Iran, Algeria, or Poland.

Another aspect of the global entrepreneurship environment is constituted of information concerning the creation of an enterprise that is generally diffused in the academic system, often taking the form of training programs, workshops, or classes. On average, 36% of the respondents have already undertaken a course on how to create a company. This figure is very high in Argentina and Tunisia; relatively high in Sweden, Colombia, and France; and quite low in Belgium, Great Britain, Iran, and New Zealand. This can reflect a national concern related to entrepreneurship, and once again, a national conception of the educational system.

#### ENTREPRENEURSHIP INTENTION: FIRST RESULTS

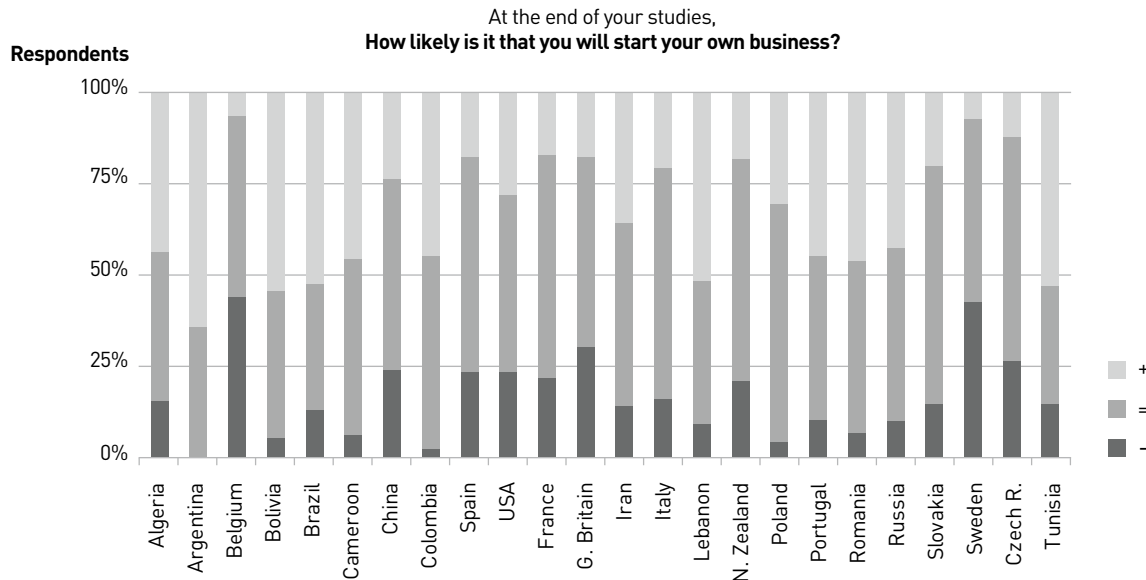
Let us now examine the entrepreneurship intentions expressed by the students in this sample. Considering the whole sample, 33% of the students indicate that there is a positive probability that they will launch a business after their studies. This figure (indicated at the top of Graph 1 as the green horizontally striped section of each bar) varies strongly among countries. Argentina, Bolivia, Tunisia, Brazil, and Lebanon have the highest probabilities of creating a business after studies. In contrast, Belgium, Sweden, the Czech Republic, and, to a lesser extent, France, Spain, Great Britain, and New Zealand have the lowest positive probability of starting a business.

On average, of the whole sample, 17% of the respondents think that they will not create a firm after their studies (i.e., negative probability indicated as the red diagonal striped portion at the bottom of each bar in Graph 1) and 50% are hesitant and do not know (neutral probability: blue section at the center of each bar). The proportion of students indicating negative probabilities of

**TABLE 5**  
Entrepreneurship environment

Country	With a parent business creator	Having ever worked for a company	Having already had a course on how to create a company	Country	With a parent business creator	Having ever worked for a company	Having already had a course on how to create a company
Algeria	25%	47%	17%	Iran	17%	42%	16%
Argentina	54%	78%	100%	Italy	28%	64%	18%
Belgium	23%	71%	10%	Lebanon	40%	82%	25%
Bolivia	60%	59%	31%	New Zealand	64%	80%	16%
Brazil	49%	79%	46%	Poland	39%	55%	22%
Cameroon	28%	73%	29%	Portugal	32%	73%	18%
China	15%	78%	23%	Romania	29%	70%	50%
Colombia	44%	81%	59%	Russia	49%	95%	33%
Spain	39%	73%	43%	Slovakia	41%	87%	43%
United States	45%	91%	28%	Sweden	20%	99%	62%
France	27%	95%	54%	Czech Republic	44%	90%	20%
Great Britain	55%	78%	14%	Tunisia	18%	91%	84%

**GRAPH 1**  
**Probability of starting a business over countries**



starting a business are relatively high in Belgium and Sweden and quite low in Argentina, Colombia, and Poland. In Bolivia, Cameroon, and Romania, this ratio of students is slightly higher than in the second group, all the while being very low.

We also measure entrepreneurship intention by what students would like to do if they could, in an “ideal” situation, if they were free of all constraints (cf. Graph 2). For all countries (except Argentina), more students express a desire to create a business if they could, than the percentage corresponding to those who affirm that they will start a business after their studies. On average, 45% of the students in the entire sample, would like to launch a firm if they were free of constraints. There are constraints (socio-economic, for instance) that weigh very heavily in some countries (Belgium, Italy, Sweden, and Spain) where the ratio between the proportion of students who would like to start a business and that of those who probably will start one, is greater than two. This is not the case in Cameroon, Poland, Brazil, China, and Tunisia where the constraints seem to be less burdensome.

Thus, if they could, 81% of Colombian students, 67% of Lebanese, 66% of Algerian, and 65% of Bolivian students would like to create a firm. On average, in the total sample, only 35% continue to hesitate even if they had the choice and 20% (more than the proportion of students who think there is a positive probability of starting a business after their studies) do not want to create a firm in a situation free of constraints. This figure reaches 39% for Belgium, 34% for Great Britain, 34% for China, and 31% for New Zealand. It is particularly low for Colombia, Bolivia, and Portugal. The ratio between the proportion of students who would not like to start a firm and those who do not expect to, is below one for nine countries, that is, the proportion of students who would not like to launch a start-up is smaller than those who do not expect to. This phenomenon of reduction of the negative

perception of entrepreneurship is particularly true in Sweden (where 25% of students would not like to attempt a start-up), in Italy it is 10%, and 6% in Portugal. Students from these countries are less against entrepreneurship than they seem to be. On the other hand, for many countries, the proportion of students who would not like to start a business is higher than that of students with a negative probability of launching a business after their studies. It is relatively high for Poland (22% of students would not like to start a business), in Cameroon 13% are against the idea, and in Slovakia, it is 30%. Thus, there is real opposition to entrepreneurship in these countries.

### Compared entrepreneurial beliefs

In order to understand what underlies these differences recorded for entrepreneurship intentions between countries, we begin by examining entrepreneurial beliefs. Among all the beliefs proposed in our questionnaire (23 for professional values, 23 for entrepreneurship vision, and 14 for control), we highlight those for which the observed results are clearly different from the mean of the entire sample.

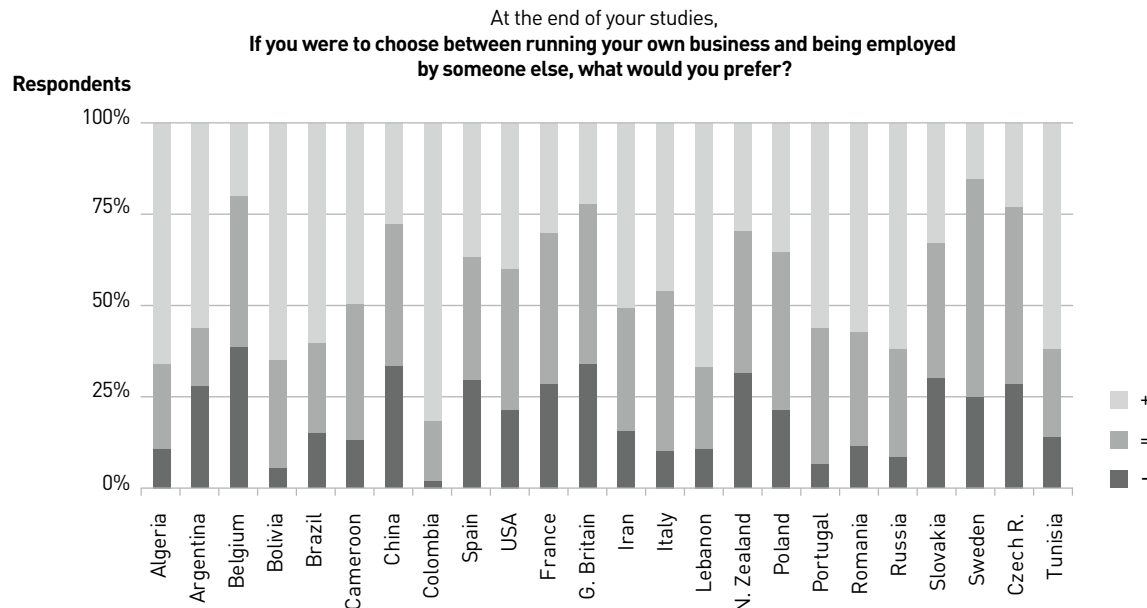
For each proposed item, we consider the variable (that is constituted of the values taken by the frequency of students who agree with this item), measured in each national sub-sample, and we also consider the variable built in the same way from the negative answers. We analyze the dispersion of these variables (over the whole sample) by calculating their standard deviation. We only comment on the extreme positions.

#### PROFESSIONAL VALUES

The variables built on positive answer frequencies are globally the most dispersed, for “having power” (mean 46%, standard deviation 17%), then, with standard deviation of 16%, for being



**GRAPH 2**  
**Desire to start a business across different countries**



autonomous (mean 56%), for being one's own boss (46%), being a member of a respected social group (45%), and taking risks (31%). For more than 70% of Lebanese, Romanian, Bolivian, and Argentinean students, having power is an important element of their future professional life, while less than 30% of Czech, Belgian, Swedish, and French students share this feeling. Being autonomous is positively valued by more than 70% of Bolivian, Portuguese, Iranian, Colombian, and Argentinean students and by fewer than 30% of British, American, and Swedish students.

The largest positive gaps in relation to the average (frequencies of positive answers) are the most numerous for having a job with few responsibilities (mean 14%, Argentina 63%, Algeria 40%, Bolivia and Tunisia around 30% each) and having a simple job (mean 14%, Argentina 54%, Cameroon 39%, and Bolivia 34%). Next, not having too much work and to have power follow with 21% of the countries who have a frequency greater than 1.5 of the average frequency, which is followed by risk-taking.

Conversely, standard deviation is only 10% for having an interesting job (mean 81%) and having an opportunity for career progress (mean 82%); these are the two most common desires for future professional life. To a lesser extent, students agree relatively often on the idea of not having too much work and having free leisure time.

Among the variables built on negative answers, the most dispersed are to have a job with few responsibilities (mean 34%, standard deviation 14%; ranging from quite low for Argentina, China, and Bolivia, to relatively high for Russia, France, and Brazil, where more than 55% students do not care about having a job with few responsibilities) and to have a simple job (mean 32%; standard deviation 12%; a wide range between Argentina 11%, Tunisia 16%, and Bolivia 19%, and Russia 64% and France 55%).

#### ENTREPRENEURSHIP VISION

The most dispersed beliefs among different countries regarding what entrepreneurship can provide (the variables built on positive answers) are job security (mean 48%, standard deviation 20%), an opportunity for career progress (mean 53%, standard deviation 18%), a fixed income (39%, 17%), high earnings (47%, 15%), and free time for leisure (29%, 15%). Here we see that only 14% French and 17% Belgian students think that entrepreneurship could provide them with job security, while 74% of Algerians and Tunisians, 76% of Cameroonians, and 79% of Colombians take the same stance. The proportion of students who express that entrepreneurship would provide them with an opportunity for career progress varies from 15% among Swedish students (and 23% for Czechs) to more than 78% (Colombia 78%, Romania 82%, Portugal 84%, and Bolivia 85%).

For 25% of the countries, the frequencies of students who think that entrepreneurship can allow them to have a simple job and one with few responsibilities is 1.5 times above the mean calculated over the whole sample (14% for the former, 16% for the latter). In both cases, the same countries are concerned: Argentina has the highest proportion, followed by a group including Tunisia, Lebanon, and Algeria, and last (but still more than 1.5 times above the mean), Bolivia and Cameroon.

Conversely, the most commonly shared values (i.e., with the lowest dispersion) relating to what entrepreneurship could allow, are, with a standard deviation of 10%, to take risks (mean 61%), to have an interesting job (mean 71%), and to take part in all aspects of a project from start to finish (mean 71%). Immediately following this are yet other very "universal" beliefs, with a standard deviation of 11%, to be one's own boss (mean 77%), to have responsibilities (81%), to have power (69%), and to use one's creativity (73%).

### BELIEFS ON PERCEIVED ENTREPRENEURSHIP CAPACITIES

Beliefs on perceived capacities to create a business are much less concentrated than those related to professional values or entrepreneurship vision are. As compared to this, countrywise, opinions are more diverse and ideas less commonly held. The most frequently cited tasks, where there is almost a consensus among the proportion of students who feel capable of performing it, are managing (mean 64%, standard deviation 12%), carrying out the administrative formalities related to the creation of an organization (mean 52%, standard deviation 13%), and obtaining proximity funds (mean 43%, standard deviation 14%). On the other hand, the positions are very different for identifying relevant markets and customer information (mean 45%, standard deviation 19%), finding qualified people and organizations to help and advise them (45%, 19%), identifying a product or service idea (45%, 18%), and estimating the risk of the project (54%, 17%). Thus, only 12% of Swedish students feel themselves capable to identify relevant markets and customer information, 21% Chinese, 23% Belgians, and at the other extreme, 72% Russians and Bolivians, each, and 77% Brazilians. In the same way, for carrying out administrative formalities related to the creation of an organization, merely 10% of Swedes feel themselves capable of performing it, 18% Poles, and at the other extreme 69% Cameroonians, 70% Bolivians, 75% Argentineans, and 80% Brazilians.

### Student entrepreneurship intentions: Structuring factors and typology

In order to deepen our understanding of the observed differences in entrepreneurship intentions between students of various countries, we use data mining techniques, which are statistical tools, based on linear algebra. This allows us to consider the multi-dimensional character of this phenomenon. We can thus simultaneously analyze several variables to obtain a more global vision without a priori in order to understand how students' entrepreneurship intentions are formed by identifying the most important variables that structure them. With data mining techniques we can thus have the structure of a multi-dimensional phenomenon emerged without a priori. But, unlike modeling techniques, which are hardly adapted for multi-dimensionality, data mining techniques cannot highlight a causal relationship.

For Multiple Correspondence Analysis (MCA), which technically should be applied when using qualitative variables, individuals with all their features and beliefs about entrepreneurship, are projected on a subspace with the least possible deformation, considering the initial point cloud of individuals. The axes of this subspace structure the primary data. The axes are sorted by order of importance, and as linear combinations of the original variables, can thus be interpreted. The Ascending and Hierarchical Classification analysis (AHC) allows grouping of individuals with similar behaviors related to entrepreneurship into clusters (i.e., categories), always considering the multidimensional features of these opinions and without a priori. These clusters can then be characterized by the initial variables.

We successively apply these two techniques to our data. First, we describe below the results of the Multiple Correspondence

Analysis (the structuring factors), and then we present the typology created by the Ascending and Hierarchical Classification.

We build the correspondence analysis on 15 active variables (which fit with 45 modalities). Six are behavioral beliefs concerning future professional life choices (to have a simple, non-complicated job, few professional responsibilities, taking risks, to be a member of a respected social group, to be your own boss, and to have power), six are behavioral beliefs concerning the vision of entrepreneurship (to have job security, a fixed income, not to have too much work, not to have a stressful job, to have a simple, not complicated job, to have few professional responsibilities), and the 13<sup>th</sup> variable concerns the global perceived control beliefs and both intention variables are finally added. These variables were chosen because they allow us to obtain better quality structuring axes and typology. They also allow us, as previously said, to define an interpretable subspace. The remaining variables (as compared with the active variables) will be also projected on this subspace and allow us to complete its interpretation.

### STRUCTURING FACTORS OF STUDENT ENTREPRENEURSHIP INTENTIONS

We chose to retain three main axes<sup>2</sup> to understand the entrepreneurship intentions observed in our sample. The most important determinant of entrepreneurship intentions is the type of entrepreneurship vision held. Next is the proximity (i.e., familiarity) to the concept of entrepreneurship, which creates a solid stance or a lack of opinion concerning entrepreneurship. Finally, perceived ability to deal with entrepreneurship (control beliefs) comes into play. These three factors are detailed below.

The most structuring axis places in opposition two extreme entrepreneurship visions. On one hand, we find students who think entrepreneurship constitutes a weight, even a constraint. Overall, they see the negative aspects of entrepreneurship; they believe that creating a business will not allow them "Not to have too much work" or "Not to have a stressful job." In the same way, they would neither have free time for leisure, family, nor high earnings. They think they would neither have a simple job, nor one with few responsibilities. Notice that these last two aspects do not frighten them in as much as they said that, for their future professional life, they do not want a simple job or one with few responsibilities. However, for them entrepreneurship is too negatively perceived and too constraining. As a result, they will not start a business after their studies and even in a hypothetical "ideal" situation they prefer not to launch a start-up. On the other hand, entrepreneurship is considered a controllable tool, even a lever, which allows one to build his own professional future. For these students, creating a business would allow them to have a simple job, with few responsibilities, a fixed income, job security, free time, and not have too much work or a stressful job. This entrepreneurship vision of mastered easiness fits with what they expect of their future professional life, and particularly with their need for autonomy (being your own boss) and power. As a result, the probability that they will start a business after their studies is positive, and if they could make a choice free of all constraints, they would choose to create a firm.

The second axis presents a wide range (or lack) of opinions concerning entrepreneurship. On one hand, we find students who do not take a firm position; they hesitate and do not know how to judge the potential benefits of entrepreneurship (gain or lack of job quality, simple or stressful, quantity of work, level of responsibility, job security, fixed income, challenges, etc.). These individuals do not know what they want for their future professional lives either. They do not clearly declare themselves concerning the level of complexity, responsibility, and risk, regarding the job they would eventually like to have. They do not yet know whether or not they want power or responsibility. Simultaneously, they cannot say if they feel capable or not of starting a business (global capacity or self-efficacy, as well as the realization of precise tasks like identifying a product or service idea, planning their creation "roadmap," carrying out the administrative formalities or dedicating themselves entirely to the project). These individuals do not know if, after their studies, they desire to launch a business or not, nor do they know if they will do it. It seems as if they are very far from the concept of entrepreneurship, too far in fact to judge it a priori; it is too foreign and signifies nothing to them.

On the other hand, there are students who have a clear and particular stance about entrepreneurship. Creating a firm does not provide them classical advantages (in the sense that is measured more frequently over the whole sample) such as a simple job with few responsibilities, free time, fixed income, job security or to not have too much work or a stressful job. In fact, they give little or even no importance to any of these themes for their future professional lives. They think, rather, that entrepreneurship could allow them to take risks, to have a challenging, interesting job and responsibilities, to be autonomous in their job and to be their own boss. All these items fit with what they consider important in their future professional lives. Moreover, they feel themselves completely able to launch a business, both globally and considering each particular detailed task. As a result, they would like to create a business after their studies and they say they will probably do so. These students seem to have a very good feel for entrepreneurship. In this group, we find students for whom entrepreneurship is a closed concept, which makes sense for their future professional life, into which they can project themselves and relate to, and in relation to which they can take a defined position (i.e., not neutral). This is contrary to those students described above as neutral (and who are at the other end of this second axis). Notice that implicit in this axis there are simultaneously the notion of maturity in the individuals (illustrated by student involvement in their future professional choices) and different national economic structures with their imperatives concerning the need for students to position themselves regarding their professional life and entrepreneurship.

The third axis is built around the perceived capacity to create a business. It places in opposition students who desire to launch a firm, think they probably will do so after their studies, and think that they are globally able to do it, with students who do not desire to do so, will probably not do it, and feel that they do not have the capacity for it. The first group of students is much

more certain of being able to achieve entrepreneurship than they are concerning what launching a firm could bring to them. For them, starting a business would mainly allow them to realize their dreams, use their creativity, and have an interesting job. They think they have global capacities (self-efficacy), while they also feel themselves capable of performing all detailed tasks to achieve entrepreneurship, particularly to manage, dedicate themselves entirely to the project, plan their creation roadmap, and find qualified co-workers. They are supported in this project by their family, friends, and more globally by their entourage who favor the fact that they would launch a firm. On the other side of this axis, self-efficacy is, as said above, very low. They feel themselves unsuitable for managing, or finding financing for the new business. Their environment (family, friends, and people significant to them) is at best neutral and at worst rather negative concerning their creating a business. Despite this, they appreciate the idea of entrepreneurship, not having too much work or an overly stressful job, and they value these two items for their professional life, but their feelings of incapacity take the upper hand in the development of their intentions.

### A typology of entrepreneurship intentions

Next, we performed a cluster analysis (AHC: see above) on this using the axes obtained by the multiple correspondence analyses (all the axes). We chose to read the database in six categories, as detailed below. Our data is split into three unfavorable categories (26% of the data), for three divergent reasons; one neutral group, whose students do not declare themselves, and two clusters favorable to creating a business (41%).

#### **The Antis, with a negative vision of entrepreneurship (Constituting 9% of the data)**

Students in this cluster think that creating a business will not provide them job security, free time for leisure (...), a simple job with few responsibilities, fixed and high income, and membership of a respected social group. They do not even feel that it will provide them with autonomy or the opportunity to take risks. They also have a negative view of entrepreneurship, which is further increased by their environment. Their relatives would not support them if they were to launch a business, their family is rather unfavorable to such a project, and their friends are neutral. Perceived control does not pose a problem here, they do not know if they are globally able to achieve entrepreneurship (self-efficacy being neutral). As a result, they do not expect to create a business after their studies. French and Belgian students are overrepresented here.

#### **The seemingly obviously Against (Constituting 11% of the data)**

In this cluster, students think they will not launch a business after their studies, and they would not like to do so, even in an ideal situation free of all constraints. In fact, they do not feel capable of succeeding in such an action, their global perceived feasibility is negative (self-efficacy), but when questioned on detailed tasks deemed critical to starting a business. They do not declare a position regarding these tasks; they do not know if they

2. These three axes correspond to 29% of the initial inertia, but it is a multiple correspondence analysis and not a Principal Component Analysis (PCA), thus this percentage cannot be interpreted in the same way.

are or not capable to perform them. In the same way, for many proposed elements (job security, fixed income, high earnings, being a member of a respected social group, opportunity for career progress), they cannot say if these elements will be an advantage (or not) provided by entrepreneurship. Nevertheless, they think that launching a business cannot provide them with a job having few responsibilities or not to have too much work or too stressful a job. It appears that they seem to hold a solid negative opinion on entrepreneurship, which they put forth very directly. If, however, we delve deeper, their global opinions are not based on rational or deliberate arguments, or definite positions. This can be partially explained by their relative distance in relation to entrepreneurship; students who do not have a parent, a close friend, or relative who have created a business are overrepresented here. To a lesser extent, a similar phenomenon is observed for attractiveness; global desirability is negative and the opinions of people who are important to them are rather neutral. Finally, related to their future professional life, they do not care about being their own boss and having power, and when considering the other proposed elements, they are neutral. More often than on average, Swedish, Belgian, Chinese, and Spanish students are present in this cluster.

#### **The Risk-sensitives (Constituting 6% of the data)**

What particularly distinguishes this cluster is individual sensitivity to risk. 99% of the students in this cluster (9% on average over the whole sample) give negative importance to risk-taking in their future professional life. To a lesser extent, they do not care to have power or to be a member of a respected social group, even if they do not refuse to have responsibilities in their future job. 24% of the students in this cluster (17% on average over the whole sample) express that they will not launch a business after their studies. Students who come from a rural background, with a father who is a farmer, are overrepresented here. This behavior is observed, more frequently than on average, in students from Tunisia (19% of all Tunisian students are in this cluster), Cameroon (19%), Algeria (14%), Russia (14%), and Belgium (13%).

#### **The Undecidedes (Constituting 33% of the data)**

Students in this cluster have absolutely no opinion about what creating a business would provide for them. They do not know if entrepreneurship would allow them to have too much work (or not), a simple job (or not), an overly stressful position (or not), with few responsibilities (or not), risk, and free time. In the same vein, for each of the 23 proposed items, they cannot declare themselves as to whether or not it is important for their future professional life. They do not know if they will launch a business after their studies, and are not even capable of saying if they would like to do so or not. Simultaneously, they cannot judge if they have the requisite capacities to start a business. Even for the detailed tasks, they cannot say if they feel capable of performing them or not, particularly those fundamental to the process of creating a business (finding qualified people and organizations to help and advise you, identifying a product or service idea). It seems that they are too immature, as related to their professional future, and cannot project themselves into a notion as foreign as entrepreneurship is to them. Notice that students in this cluster are slightly younger (22.4 years old on average) as compared to the whole sample (22.6 years old), and

those who are at the beginning of their undergraduate studies are overrepresented (21% of the students in this cluster are in the first year of their undergraduate studies, and 23% in their second year). Concurrently, students who have not yet had a course on how to create a company and have not yet worked for a company are overrepresented in this cluster. 59% of the Portuguese students belong to this cluster, 53% of the Polish, 51% of the Iranians, 51% of the New-Zealanders, and 46% of the Italians.

#### **The Realists, desiring to create (Constituting 24% of the data)**

The desire of these students who would like to start a business after their studies (65% of the students in this cluster versus 45% on average over the whole sample) is much greater than the assurance they exhibit concerning starting a business after their studies (45% of the cluster are in this situation, as compared to 33% on average). For these students, creating a business would allow them to have responsibilities, a challenging and interesting job, to be their own boss, to use their creativity, and even to realize their dreams. However, they are conscious that this would prevent them from having a simple job and would provide them with a lot of work, and eventually a stressful job. This does not disturb them, however, because for their future professional life they give little importance to the items they value negatively in entrepreneurship, and great importance to those they value positively. Normative beliefs play a role, via the desirability to create a business (which is high for them) and via the opinions of their family, friends, and significant people (who support them in their project). This sentiment is reinforced by a high perceived capacity to create a business: both global (self-efficacy) and for detailed tasks such as dedicating themselves entirely to the project or managing. More often than on average, they have a parent or a close friend who has started a business that they judge as successful, and they have worked for a company. They are thus familiar enough with and close enough to the idea of starting a business to have quite a realistic view of entrepreneurship. Students from Romania, Russia, and to a lesser extent, Brazil, are overrepresented in this cluster.

#### **The Enthusiasts (Constituting 17% of the data)**

These students positively value each of the 23 proposed items related to entrepreneurship. For them, creating a business will particularly allow them to have a simple job, free of responsibilities, free time for leisure... fixed and high income, job security, to be a member of a respected social group and to not have too much work or an overly stressful job. Simultaneously, they think that, for their future professional life, having a simple job with few responsibilities, power, and being their own boss, taking risks, not having too much work or too stressful a job will be important. Starting a business corresponds completely with what they expect from professional life. As a result, they think there is a positive probability they will launch a business after their studies, and if they had a choice, ideally, they would, in fact, like to create. The normative beliefs are quite strong for them and push them to start a business (desirability, opinions of professors, family and friends). They feel they are able to achieve entrepreneurship, both globally (self-efficacy) and for precise tasks such as finding the needed information and financing to launch a business. Argentinean, Lebanese, Algerian, and Bolivian students are overrepresented in this cluster.

## Discussion and conclusion

We have shown that there are differences not only in the level of student entrepreneurship intentions, but also in their nature. In our typology, we have effectively built six types of behavior related to entrepreneurship intentions. Each is characterized by a very distinct nature of intention generating different levels of intention and each reflects a very typical behavior, which has been described by its underlying behaviors. We have indicated the countries that typically present these intention behaviors. From Ajzen's model, we clearly find the influence of behaviors, and normative and control beliefs on intention. In Table 6 (below), we summarize the results of the typology, and indicate the main characteristics of clusters related to these three large belief families. The sign "+" corresponds to the positive modality of the corresponding type of variable. We highlight the entrepreneurship intentions and the types of beliefs characterizing each cluster found in the data analysis. All effects we mention are statistically significant. Between parentheses, effects are less important but significant, nonetheless. All our test values, for the most part, are above six, except for the cluster of The Risk-sensitives, where the minimum is above four.

In general, behavioral beliefs have the greatest effect on intentions (as represented by the fact that this column in the table is most fully completed) and we find the signs in this column mirrored by those in the column referring to entrepreneurship intentions. Control beliefs affect positive intentions most strongly, while normative beliefs reinforce intentions, whether positive or negative.

The clusters can be interpreted as being classified based on the intensity of student entrepreneurial intentions. They range from the "Antis" who take a strong negative stance against entrepreneurship to the "Enthusiasts" who totally lack objectivity and say they intend to rush into the opportunity to create their own business. Between these extremes, we find two clusters that are rather more lucid in their approach. The first are the Realists who have an experience with entrepreneurship and understanding the realities of the situation are still interested in following an entrepreneurial path. The second cluster, the "Againsts," take a stance that lacks tangible argumentation and

seems based on cultural influences. There is a final neutral cluster that is interesting in terms of future actionability, wherein reside prospects for transforming the behaviors and intentions of students. It appears that the "Undecided" cluster likely presents the greatest possibility for evolution and potential in facing the challenges of entrepreneurship. They are the youngest of the students, and thus present the greatest hope for being capable of developing maturity regarding this idea, leading them to take action. They are also the least fixed in their views concerning entrepreneurship, and therefore remain flexible and open to the idea and its impact on their future professional life.

We attempted to characterize the clusters, when possible, by country. Note, however, that the different clusters are not systematically characterized by a country, that is to say that a country can be found in several clusters and has multiple, distinct, and typical behaviors. Furthermore, not all the countries (24 in total) are systematically representative of a cluster, that is, a given behavior. For these countries, the students demonstrate entrepreneurship behaviors that correspond to, and span all the six clusters. Note also that this typology is really built with multidimensional data and the phenomenon of student entrepreneurship intentions is complex: the created typology is not a simple mirror of the data (five variables) given in Table 2 to describe the entrepreneurial context of the studied countries. Initially, we would have expected that the construction of entrepreneurial behavior is dependent upon the national environment in which it develops. However, with this last observation concerning the fact that certain countries do not emerge from the statistical analysis, we thus conclude that entrepreneurship behaviors are universal, in the sense that they are supranational. For certain countries, national culture has a marked effect, but for the majority (to a greater or lesser extent), regardless of the national culture, entrepreneurial intentions seem to express themselves via these six clusters with a relative frequency that obviously changes from one country to the next.

Our study based on samples of students shows that individual entrepreneurial culture has a greater influence than national culture on entrepreneurial intention. Our study seems to

**TABLE 6**  
Behavior clusters related to entrepreneurship intention

Cluster	Size	Entrepreneurship intention	Behavioural beliefs	Normative beliefs	Control beliefs	Type-country
The Antis with a negative vision of entrepreneurship	9%	(-)	-	(-)	(=)	France, Belgium
The seemingly obviously Against	11%	-	-/(=)	-/(=)	-/(=)	Sweden, Belgium
The Risk-sensitives	6%	(-)	-			Tunisia, Cameroon, Algeria, Russia
The Undecideds	33%	=	=		(=)	Portugal, Poland, Iran, New Zealand, Italia
The Realists desiring to create	24%	+	-/(+)	(+)	(+)	Romania, Russia, Brazil
The Enthusiasts	17%	(+)	+	(+)	(+)	Argentina, Lebanon, Algeria, Bolivia



moderate previous research on influence of the national culture of a country (Sajjad *et al.*, 2012).

In terms of the entrepreneurial education, our results suggest the need to create teaching models that are differentiated by student profiles. That is, to encourage students to manifest some attraction to entrepreneurship, it may be more pertinent to provide tools for developing their awareness, not necessarily increasing their competencies. If some students already intend to create an enterprise though, it makes sense to enhance their entrepreneurial capacity. The various student profiles require very different energy and objectives from their education programs. The existence of the six behaviour clusters indicates the need for schools to design and construct appropriate programs, with distinct expectations, when developing projects to support student entrepreneurship.

This idea of a “universal phenomenon” leads us directly to a sub-conclusion about educational systems; countries do not determine distinct national entrepreneurship intentions given that most educational systems are characteristic of a national culture, or at the very least, have characteristic elements of the country where they were created and developed. This absence of an impact seems to indicate that student entrepreneurial intentions are weakly influenced by educational systems, regardless of their form or content. If entrepreneurship is viewed as a positive and important motor for economic development, there exists a genuine interest in questioning, and perhaps eventually challenging current academic actions and programs concerning student entrepreneurship. However, our analysis does not explore the intention-behavior relationship or explain why a significant proportion of students abandon their creative projects. Thus, further research is necessary to contribute to the advancement of understanding in this area.

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