



UNIVERSIDADE D
COIMBRA



Carolina Alexandre Vicente

**THE ROLE OF THE FAMILY AND HIGHER EDUCATION INSTITUTIONS
IN THE ENTREPRENEURIAL POTENTIAL OF STUDENTS:
WHAT HAS CHANGED IN 10 YEARS IN PORTUGAL?**

Home Tutors:

Carla Carvalho PhD*, Lisete dos Santos Mónico PhD*, Pedro Parreira PhD**

*University of Coimbra and **College of Nursing of Coimbra (ESEnC –
Poliempreende), Portugal

Host Tutor:

José Navarro PhD*

University of Barcelona, Spain



FPCEUC FACULDADE DE PSICOLOGIA
E DE CIÊNCIAS DA EDUCAÇÃO
UNIVERSIDADE DE COIMBRA



UNIVERSITAT DE
BARCELONA

Master in Work, Organizational and Personnel Psychology (WOP-P)

25th of June, 2019

Abstract

The economic growth is far from desirable, further reflecting the effect of the recent crisis on financial markets. Training students to face adversity and search for opportunities to promote social, economic and technological development of each country, is not only desirable but determinant for the success of a nation. In this scenario the family and higher education institutions (HEI) play a determinant role in the development of entrepreneurial competencies in the students and encourage them to innovate and to undertake.

Although it has been studied the influence of family and HEI in the entrepreneurial potential of students, the changes in the last 10 years in Portugal are still unknown. With the aim of analyzing the impact of these influences, 10 years ago and now, we developed a comparative cohort study with two samples composed by Portuguese higher education students. The first sample was collected in 2009 ($N=6430$), under the Poliempreende programme, and the second sample was collected in 2018 ($N=909$).

Questionnaires were applied to the Portuguese students. These questionnaires included different validated scales that allowed a reliable collection of information. We performed confirmatory factorial analysis, an intercorrelation matrix and a multivariate multiple regression analysis, for both samples, to verify two proposed hypotheses: *H1: The influence of the family on student's entrepreneurial potential has decreased after the last 10 years in Portugal*; and *H2: The influence of higher education institutions on student's entrepreneurial potential has increased after the last 10 years in Portugal*.

On the one hand, we concluded that HEI have more influence on the entrepreneurial potential of students now than 10 years ago (confirming *H2*). On the other hand, we realized that the influence of family went from positive to slight negative (which contradicts *H1*), proving that this is no longer a determining factor in the students' entrepreneurial potential, as 10 years ago.

Keywords: Entrepreneurship, entrepreneurial potential, family, higher education institutions, entrepreneurial motivations, resources and incentives to undertake.

Acknowledgments

First, I would like to thank Professor Carla Carvalho, Professor Lisete Mónico and Professor Pedro Parreira for their tireless work, support and advices, whether in Portugal or in Barcelona, they were an invaluable help to accomplish this research successfully.

To the Poliemprende programme without which it would be impossible to develop a comparative study and which provided me with the questionnaire for the data collection of this project.

To the Professors of the WOP-P Master which undoubtedly motivated me and made me a better professional in the field of Organizational and Personnel Psychology.

To my parents and family, who supported me from the beginning and taught me that: however difficult the obstacle is, we should look ahead and never give up. To my father, for his tireless effort in give me the opportunity to study and fulfill my dreams. To my mother, for her unconditional support and effort, for the travels, for the sleepless nights, for the advices and for being the best friend I could ask for.

To my boyfriend, who gave me unconditional support in recent years, who encouraged me to never give up and taught me to look at life in a different way. Thank you for never giving up on me, for waiting for me all these years and for always been there for me.

To my closest friends, who always gave me the strength to continue in the most difficult moments, who walked with me in this journey, every step, and always being there to help me get up.

To my Woppies, without you I would not have been able to complete this step! Thank you for your support, whether in Portugal, Barcelona or Valência, you have always been there to help me and to share experiences and knowledge that have made this experience so rich.

Finally, to the three unforgettable cities where I have lived the best and most stressful moments of my life, where I met people that I will always take with me, where I grew up as a person and as a professional and that will always be my cities: Évora, Coimbra and Barcelona.

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1. Introduction

Defining entrepreneurship is an arduous task given the multiplicity of theoretical perspectives that coexist (Bruyat & Julien, 2000; Gartner, 1988; Jain, 2011; Shane & Venkataraman, 2000; Venkataraman, 1997), but at the same time is a challenge for those who want to investigate in this field. For several authors (e.g., Brinckman, Grichnik, & Kapsa, 2008; Duarte & Esperança, 2012; GEM, 2016-2017) the entrepreneur is identified through its proactive, innovative and risk-taking behavior, and transform ambiguous situations into business opportunities, in order to succeed.

In the present research we will focus on the Shane and Venkataraman (2000) definition, which states that entrepreneurship can be defined as the study of the exploration of opportunities, the processes of discovery and evolution, and the individuals who discover and exploit them. Associated with the creation of goods and services, the development of entrepreneurship undoubtedly contributes to the promotion of the economic, social or technological development of society (Parreira, Brito, & Pereira, 2011).

Portugal is slowly overcoming the last crisis, and given the benefits of entrepreneurship, analyzing and understanding this process in depth is becoming relevant. Looking back, we note the crisis that began in 2007 in the United States, quickly spread to the global financial system, becoming, in the opinion of many authors (e.g., Ribeiro, Frade, Coelho, & Ferreira-Valente, 2015), the worst financial crisis since the Great Depression. The financial fragmentation of the Euro zone caused the Portuguese economy to be among the most vulnerable, leading to the request for economic and financial assistance, agreed in May 2011, between the Portuguese authorities and the European Central Bank, the European Commission and the International Monetary Fund (Banco de Portugal, 2014). As an example of the crisis consequences it is important to mention that, only in 2018, the Portuguese economy recovered and surpassed the dimension it had in 2008 (Varzim, 2018), which makes us reflect that, with the crisis that has set in, Portugal seems to have gone back a decade.

Due the crisis it is increasingly important to value entrepreneurship and strive for a more entrepreneurial society. By encouraging the population to create new businesses, new services and new opportunities, we are supporting the development and growth of societies in various levels from economic to technological (Laranjeira, 2017; Parreira et al., 2011; Parreira, Mónico, Carvalho, & Silva, 2018a).

The Communication from the European Commission (COM, 2012) stated that it was necessary to correct the problems brought by the severe economic crisis of 2008 to lead the European Union to a more sustainable path of development for the future. For this purpose, the COM (2012) suggests, recovering the grow and bettering levels of employment, Europe needs more entrepreneurs and this requires the development of entrepreneurship education and training to ensure a favorable business environment and to apply models of entrepreneurship to reach specific groups.

For this reason, training students is important to face the adversity and look for opportunities, creating conditions for the emergence of successful entrepreneurs, to promote social, economic and technological development of the country. Several authors (e.g., Eghteda, 2018; Javed, Yasir, & Majid, 2018; Laranjeira, 2017; Nguyen, 2018; Parreira et al., 2011; Parreira et al., 2018a) have studied the influence of higher education institutions (HEI) on students' entrepreneurial potential. In fact, HEI play an important role in the development of students' entrepreneurial competencies as they stimulate them to innovate and to undertake (Eghteda, 2018; Laranjeira, 2017; Nabi, Liñan, Fayolle, Krueger, & Walmsley, 2015; Parreira et al., 2018a).

In recent years, and with the COM report (2012), there has been a greater concern regarding the education of entrepreneurship. Policies have been created for HEI in order to increase the entrepreneurial potential of students. These policies have been implemented in HEI led to the creation of curricular units on entrepreneurship, workshops, seminars, and training courses for trainers and facilitators of entrepreneurship, among others (Parreira et al., 2011).

Considering these evidences, it would be pertinent to understand if HEI have influence on the entrepreneurial potential of students, now and 10 years ago, given that this period encompasses the passage of Portugal through the economic crisis as well as the period of overcoming the same (which Portugal is still currently facing).

The family also seems to play an important role in the development of the entrepreneurial potential of the students (Almeida, & Teixeira, 2014; Altinay, Madanoglu, Daniele, & Lashley, 2012; Laranjeira, 2017; Mueller, 2006; Shanker & Astrachan, 1996; Silva, 2018; Zellweger, Sieger, & Halter, 2011), so we consider relevant to know if sons of entrepreneurial parents have more entrepreneurial potential.

Although it has been studied how the entrepreneurs context in the family affects the motivations to undertake and the entrepreneurial potential of the students (Silva,

2018), it is important to study the impact of an entrepreneurial family in the entrepreneurial potential of students, now and 10 years ago.

After 10 years, what has changed on the influence of higher education institutions in the student's entrepreneurial potential? And what has changed on the influence of the family in the entrepreneurial potential of their sons?

In order to deepen the analysis of these relationships and to understand the effect of the last 10 years in entrepreneurship in Portugal, this study aims to investigate the influence of the HEI and the family on the entrepreneurial potential of students (measured through the scales of motivation, incentives and resources to undertake), by comparing two samples, one from 2009 and another from 2018, and carry out an analysis of these relations in two different periods of time.

2. Entrepreneurship

As said before, according to Shane and Venkataraman (2000), entrepreneurship is an area that involves the processes of discovery, the study of the exploration of opportunities and evolution, and the set of individuals who discover and exploit them, aiming to create goods and services. This process constitutes an additional value for the social, economic, technological and organizational development of a nation (Parreira et al., 2011). More recently, in the Global Entrepreneurship Monitor report (GEM, 2013), entrepreneurship was defined as any attempt to create a business by an individual, a team of individuals, or established business.

This phenomenon, like another educational or cultural process, requires learning and accompaniment along its course and growth. Given the importance of entrepreneurship, the development of an entrepreneurial culture to promote students' greater entrepreneurial potential is fundamental to the country's economy (Laranjeira, 2017; Parreira et al., 2011; Parreira et al., 2018a).

2.1. The entrepreneurial potential

The nature of entrepreneurship and the variables covered in this process (psychological, socio-educational and family or relational) have aroused researchers' interest in determining the aspects that most influence the intentions of the students in becoming entrepreneurs (Escolar-Llamazares, Luis-Rico, de la Torre-Cruz, Herrero, Jiménez, Palmero-Cámara, & Jiménez-Eguizábal, 2019).

Intentions precede the behavior (Armitage & Conner, 2001) and determine the willingness to put effort into implement that behavior (Ajzen, 1991, Laspiata, Breugst, Hebllich, & Patzelt, 2012).

According to the Theory of Reasoned Action and the Theory of Planned Behavior (Ajzen, 1987, 1991, 2002; Fishbein & Ajzen, 1975), of social psychology, a specific behavior is determined by a behavioral intent (which results from attitude and subjective norms in relation to that behavior) and, in the second theory, behavior is not only dependent on motivational aspects but also on the perception of easiness or difficulty in the manifestation of this specific behavior (Parreira, Proença, Mónico, & Sousa, 2018c).

Entrepreneurial intent models have emerged from the limitations of models about personality traits (Robinson, Stimpson, Huefner, & Hunt, 1991; Shane & Venkataraman, 2000), since the intention to become an entrepreneur or start a new business depends on the combination of personal and social factors (da Fonseca Oliveira, Vieira, Laguía, León, & Salazar, 2016).

Entrepreneurship is often associated with the personality characteristics of the entrepreneur, since this is the main agent in the implementation of entrepreneurial initiatives (e.g., Parreira et al., 2011; Raposo, Paço, & Ferreira, 2008; Rauch & Frese, 2007). These authors referred that it is possible to clarify the construct of entrepreneurial potential, systematizing the main psychological characteristics of the entrepreneur: entrepreneurial motivations, the psychological, social and the management competences.

Consequently, the literature has focused on the psychological characteristics that differentiate the entrepreneurial individuals (Carland, Hoy, & Carland, 1988; Santos, Caetano, & Curral, 2010).

Several authors (e.g., Shah, Gao, & Mittal, 2015; Parreira, Carvalho, Mónico, & Santos, 2017) added that the capacity to undertake is not only influenced by individual or personality characteristics but is also influenced by the environment in which the entrepreneurial subject is inserted, and by the available opportunities and resources (GEM, 2016-2017). Thus, aspects such as education, culture, environment and life experiences may influence entrepreneurial behavior (Volkman, 2004).

The entrepreneur is identified through its proactive, innovative and risk-taking behavior, integrated into the specificity of the political, cultural, and social economic context in which it is embedded (GEM, 2016-2017). For this reason, the entrepreneur is

recognized for his ability to take risks and transform ambiguous situations into business opportunities, in order to succeed (Duarte & Esperança, 2012).

Due to the literature presented it is possible to perceive that the entrepreneurial potential of students can be understood by characteristics of the personality of the students and by the characteristics of the environment, that make them want to be or not an entrepreneur. Therefore, the entrepreneurial motivations of the student and his perception of the incentives and the resources can influence his choice to be an entrepreneur or not. Thus, we will evaluate students' entrepreneurial potential based on three scales that measure, respectively, the motivations of the students to undertake, their perceptions of the resources available to undertake and the students' perception of the incentives to undertake (Parreira et al., 2011; Parreira et al., 2017).

2.1.1. Entrepreneurial motivations to undertake

To understand the process of creating a company, we must first understand what motivates individuals for entrepreneurship. Driessen and Zwart (2007) stated that motivation seems to depend on the inner ambition, motives, and values of an individual.

When we talk about the motivations to undertake, we speak, for example, of achievement needs, which may be associated with the acquisition of knowledge, which motivates students to create their businesses. Young entrepreneurs may also be motivated to undertake by the need to be accepted and recognized in society (Parreira et al., 2011).

Several authors (e.g., Kautonen & Palmroos, 2010; McClelland, 1965; Schumpeter, 2002; Shane & Venkataraman, 2000) also stated that the motivations for starting a new business are related to economic factors, the search for opportunities, the lack of job opportunities and the need for self-actualization (Ferreira, Loiola, & Gondim, 2017).

In the motivations to undertake family reasons also arise frequently, since family businesses are one of the main sources of job creation in labor markets (Shanker & Astrachan, 1996).

In the GEM report (2014/15)¹, concerning central region of Portugal, the motivations for creating a business state that 77.7% of early-stage entrepreneurs create a

¹ This is the most recent report about Portugal. Although it is not only about Portugal, has several important aspects to take in consideration about the economy of the respective country and from which we can infer about the evolution of entrepreneurship in Portugal to the present day, and so as to better formulate the hypotheses of the present study and to make a better analysis of the results.

business motivated by opportunity and 22.3% are motivated by need. If we compare these data with the GEM report (2010), we can verify that the percentage of individuals motivated by the opportunity has increased. We can also note that, although the percentage of entrepreneurs motivated by the need increased from 2007 to 2010 (according to the GEM report (2010)), this percentage decreased from 2010 to 2014 (GEM, 2014/15).

2.1.2. Perceptions of incentives to undertake

Another factor linked to entrepreneurship is the incentives to undertake, which reflect the support of the state for the development of entrepreneurship.

There are incentives, strategies and tools that make or could make an individual want, more easily to be an entrepreneur (Schoof, 2006). This author indicated five crucial factors for entrepreneurial engagement that should be addressed by appropriate programs to foster youth entrepreneurship. These factors are: (i) the social and cultural attitude toward youth entrepreneurship; (ii) the entrepreneurship education; (iii) the access to finance / start-up financing; (iv) the administrative and regulatory framework; and (v) the business assistance and support.

Governments in their governmental programs should seek to ensure that markets function efficiently, with the identification of the barriers that prevent businesses from functioning and developing effectively. Several authors argue that a higher rate of entrepreneurship is associated with law enforcement, well-defined property rights, transparency and simplicity of administrative processes, efficient political and economic institutions, and efficient regulation of the economic system (Bruton, Ahlstrom, & Li, 2010; Thai & Turkina, 2014).

The international economic and financial crisis was reflected in Portugal, which highlighted structural problems related to low productivity and competitiveness (Lourenço, 2013), making it essential to stimulate entrepreneurship and innovation for economic growth.

The *Quadro de Referência Estratégico Nacional* (QREN) fostered the creation of tools to promote innovation and business investment, called Incentive Systems (for innovation, research and technological development), with a view to increasing productivity and competitiveness of Portuguese companies (Lourenço, 2013).

According to the GEM analysis (2014/15), we can highlight government programs as factors that most promote entrepreneurship. The GEM report (2010) has

already reinforced this idea highlighting the support provided by the science parks and by the incubators to the new and growing companies, considering that this support is becoming increasingly significant and one of the main factors for the promotion of entrepreneurship in Portugal. It is also important to note that these government programs which support entrepreneurship have worsened in relation to the previous analysis in 2007 (GEM, 2010), but they are better now, according to the latest report of GEM (2014/15) about Portugal.

Despite this, it is also relevant to mention that the national experts find unfavorable to entrepreneurship the government policies, financial support and cultural and social norms of the country (GEM, 2014/15), since the national culture does not seem to be oriented towards entrepreneurship.

2.1.3 Perceptions of resources to undertake

Research on how the environment can affect organizational performance has contributed to relevant information for creating the conditions for the development of entrepreneurship.

The environment is constituted by several factors that can provide favorable conditions for entrepreneurship, such as some laws, policies, regulations, and even some kind of knowledge which may influence the creation of new companies (Borges, Mondo, & Machado, 2016).

The availability of resources (and the perception of this availability by those who are going to or want to undertake) is also considered as another important and decisive factor for entrepreneurship, highlighting the existence of financial, human, material and physical resources (Jain, 2011; Herrington & Kew, 2017; Parreira et al., 2017).

The human resources are related to the team and their confidence, which allow the business to be implemented. Equally influential in business creation are the material resources available to productive processes as well as physical resources (Parreira et al., 2011).

2.2. Entrepreneurship in Portugal

Until now, we already perceive that the entrepreneurial potential can be influenced by personal characteristics but also by the environment, specifically by political, cultural, and social economic context in which it is embedded (GEM, 2016-

2017). As a result, it is important to look at the Portuguese context to better understand how it can influence the entrepreneurial potential of the students.

In recent years, several authors (e.g., Galvão, Mascarenhas, Rodrigues, Marques, & Leal, 2017) have used the triple or quadruple helix model to explain innovation and economic development in several countries. The triple helix model was developed by Etzkowitz and Leydesdorff (1995a) to explain the relations between university, government and industry (Etzkowitz, & Leydesdorff, 1995a; 1997b; 2000c). Industry acts as a source of production, while government provides regulations, stability and rules, and universities provide technology and new knowledge (Van Horne & Dutot, 2016). According to some authors (e.g., Galvão et al., 2017; Herrington & Kew, 2017; Van Horne & Dutot, 2016), the growth of innovation led to the development of the quadruple helix model, that argues that the structure of an economy is divided into four helixes constituted by universities, industry, government and civil society, in which their relations generate a development of innovation and economy (Galvão et al., 2017).

With the establishment of this triple and quadruple helix model, we realize the importance of universities, companies and government working together to develop a culture focused on entrepreneurship. In this sense, COM (2012)² states that the crisis situation, affecting the European Union countries, could only be overcome by intervening in three areas: (i) in the development of education and training in the field of entrepreneurship to support business growth and creation; (ii) creating general conditions conducive to entrepreneurship by removing existing structural obstacles and supporting them at crucial stages in the life cycle of enterprises; and (iii) promoting a culture of entrepreneurship in Europe as well as fostering the emergence of a new generation of entrepreneurs.

In Portugal, the only information related to the students' entrepreneurial skills was the student's entrepreneurial profile, in terms of personality traits, student motivations and the influences of the environment that are conducive to the development of the entrepreneurial activity, which was presented by Parreira and his collaborators (2011).

In this sense, and to understand the possible evolution of the entrepreneurial potential of higher education students, today and in 2009 (time when there was not this concern regarding the importance of an entrepreneurial culture, alerted later by the

² COM – Commission of the European Communities

COM (2012)), it seems appropriate to use general data about the evolution of the rate of entrepreneurial activity in Portugal, since there are no data about the evolution of the entrepreneurial potential of the students, in the last 10 years. Because of this, we will focus on the GEM reports about the entrepreneurial activity in Portugal.

The *Global Entrepreneurship Monitor* (GEM) is an important platform in the follow up of the entrepreneurial activity rate of different countries that believes in the transformative benefits of entrepreneurship. It provides assessment tools and presents data on all forms of entrepreneurship, framed in different socio-economic contexts that culminate in policy decisions relevant to the participating countries (GEM, 2017-2018).

In Portugal, the GEM project considered that there were constraints on the strategic level (as the lack of government programs to support entrepreneurship), technical, educational (not including entrepreneurship) and personal or behavioral level (low rate of entrepreneurship activity). These facts demonstrate the importance of adopting policies focused on entrepreneurship education, so that these behaviors can be changed (Parreira et al., 2011).

For this reason, we turned to the GEM (2010) because this report was made after the date of the first sample (2008) and the GEM report (2014/15), which was the last and the most recent assessment about Portugal, although this is not just about this country.

2.2.1. Entrepreneurship in Portugal in 2010

Economic activity has been heavily affected by the spread of the effects of the international economic and financial crisis, with a significant impact on the country's unemployment rate. Given that entrepreneurship contributes to the creation of a dynamic business culture, the recovery and development of the Portuguese economy depend heavily on the emergence of new entrepreneurs capable of identifying and seizing opportunities, investing, generating wealth and employment (GEM, 2010).

National experts identified some favorable and unfavorable structural conditions for entrepreneurship in 2010 in Portugal. The most favorable conditions for entrepreneurship included access to physical infrastructure, the existing number of service providers and consultants to support new and growing enterprises and the role of HEI in raising the level of education in business and management (GEM, 2010).

They also identified some structural conditions in Portugal that might to be less favorable to entrepreneurship, such as the cultural and social norms of the country,

given that it was considered that the national culture is not oriented towards entrepreneurship and the stimulation of creativity and innovation presented a less favorable outcome. In addition to the condition presented, government policies have received one of the least favorable assessments by experts, who point to excessive red tape and tax burden as one of the main obstacles. Furthermore, the difficulty of new and growing companies in gaining access to finance has been identified as one of the main barriers to entrepreneurship (GEM, 2010).

It is important to note that the experts identified government policies, market opening / barriers to entry and transfer of research and development (R & D), as structural conditions that worsened compared to 2007 (GEM, 2010).

In 2010, Portugal registered a TEA (Total Early-Stage Entrepreneurial Activity) of 4.5%, which means that in Portugal there are about 4 to 5 early-stage entrepreneurs for every 100 adult individuals. Although this percentage represents a 4% increase in the results observed in 2004, this is also a reduction compared to the observed results in 2007, which is the 9th lowest of the analyses performed in GEM 2010 (GEM, 2010).

This decrease is in line with the statistical data from national sources that demonstrate a situation that is not conducive to the development of entrepreneurship. According to the National Institute of Statistics, in 2009, employment decreased by 2.8% over previous years and according to the results of the “Enterprise on the Hour” initiative (referred to in the GEM studies in 2010), there was a reduction of 19%, in 2010, of the number of companies incorporated in Portugal, compared to the results presented in 2007 (GEM, 2010).

The degradation noted in the GEM report (2010), regarding the evolution of the TEA tax and some parameters of economic activity and government policies necessary to the development of entrepreneurship, may be associated with the depressive conjuncture caused by the international economic and financial crisis.

2.2.2. Entrepreneurship in Portugal in 2014/15

National experts also identified some favorable and unfavorable structural conditions for entrepreneurship in 2014/15 in Portugal (GEM, 2014/15). The most favorable conditions for entrepreneurship included access to physical infrastructures, education and training, common factors in the 2010 report, and government programs to support entrepreneurship. Some structural conditions in Portugal that appear to be less favorable to entrepreneurship have also been identified, such as government policies,

financial support, cultural and social norms (factors that remain relative to 2010 data), access to information and entrepreneurial capacity (GEM, 2014/15).

In 2014/15, Portugal had a TEA of approximately 7%, depending on the region of the country, which means that there are about 7 entrepreneurs (individuals involved in start-ups or new business management) for every 100 adult individuals. This represents an increase of around 3% in the results observed in 2010, showing an evolution in the rate of entrepreneurs in Portugal (GEM, 2014/15).

3. The role of the family in the entrepreneurial potential

In addition to the aforementioned factors with an impact on entrepreneurial action, the family context may also contribute to the decision of an individual to embark on an entrepreneurial career (Silva, 2018). The literature on family business succession shows that these seem to be one of the great sources of job creation in the labor markets (Laranjeira, 2017; Shanker & Astrachan, 1996). Other studies (e.g., Ratten, Ramadani, Dana, Hoy, & Ferreira, 2017; Shanker & Astrachan, 1996) have highlighted the importance of family entrepreneurship and internationalization as determinants of the global economy and socioeconomic development.

Several studies (e.g., Almeida & Teixeira, 2014; Altinay, Madanoglu, Daniele, & Lashley, 2012; Escolar-Llamazares, et al., 2019; Mueller, 2006; Randerson, Bettinellib, Fayolle, & Anderson, 2015; Zellweger, Sieger, & Halter, 2011), have shown that the entrepreneurial family tradition is an influential factor in the intentions of starting a business and the probability of becoming an entrepreneur, when the parents already worked on their own, is bigger (Almeida & Teixeira, 2014; Mueller, 2006).

Mustapha and Selvaraju (2015) reported in their study, carried out with university students in Malaysia, that the influence of the family and the transmission of an image of successful entrepreneurs, to their descendants, had a positive effect on students' entrepreneurial intent. The results indicated that students with entrepreneurs in their families showed greater entrepreneurial motivation compared to the participants who are not related to entrepreneurs.

In Portugal, a study showed that students who have business parents have more desires to work autonomously or to create their own company than those who do not have entrepreneurial parents (Silva, 2018).

However, in the last 10 years, it could have been altered because of the economic and financial situation of Portugal. Let us see some data from media sources,

but that serve as warnings for the reality that devastated Portugal, especially in the last decade:

- i. On June, 2011, it was reported that every day 17 Portuguese were declared insolvent and that the number of indebted families increased by 187%, compared to the same period of the previous year, according to data from the Instituto Informador Comercial.
- ii. More recently, in 2014, of the 14,625 insolvencies decreed, 10,242 were private individuals or families, a situation that remained in 2015, according to data from the Ministry of Justice.

Zellweger and his colleagues (2011) reported that the commercial experience of a family can demonstrate to their descendants the disadvantages of being an entrepreneur. For this reason, students with a family business background appear to be pessimistic about controlling a company, but optimistic about their capabilities and resources to pursue a business career.

In addition to these authors, Mungai and Velamuri (2011) have also found that parents' failure, when they are self-employed, decreases the intention of their descendants to be entrepreneurs and start their own businesses, given that parents who are not successful in their business become a negative role model for their sons.

Nguyen (2018) found in his recent study that family backgrounds do not have significant influence on entrepreneurial intention, contrary to what had been mentioned in the aforementioned literature.

In order to verify this incongruity in the studies about the influence of the family on the entrepreneurial potential of the students, Wang, Wang and Chen (2018) tested this influence and found that perceived parental entrepreneurial rewards positively affect entrepreneurial intentions of young adults. However, they also found that the family business involvement negatively moderates the relationship between perceived parental entrepreneurial rewards and entrepreneurial intentions.

Thus, and because there is no data about the influence of the family on the students' entrepreneurial potential, after the economic crisis in Portugal, it is interesting to study if, in the last 10 years, the tendency of the sons of business parents to have higher rates than the sons of non-entrepreneurial parents, in terms of entrepreneurial potential, has changed.

It is expected, due to the literature presented earlier, that the influence of the family on the entrepreneurial potential of higher education students has decreased,

since, as mentioned, since the fact that the difficulties that their family went through during the crisis in Portugal, may have decreased the students' intentions to become entrepreneurs and start a new business (Mungai & Velamuri, 2011; Zellweger et al., 2011).

4. The role of higher education institutions in entrepreneurial potential

Another motor the literature emphasizes as having an important role in boosting entrepreneurial activity are the academies. They play an important role in developing the entrepreneurial spirit of students as they stimulate them to innovate and to undertake (Parreira et al., 2011).

As already mentioned, entrepreneurship is like a discipline, and like the others disciplines it can be learned throughout the educational process (Drucker, 1993) promoting growth and development of entrepreneurial skills (Parreira et al., 2011).

The education on entrepreneurship is determinant for society (Vance, Groves, Gale, & Hess, 2012; von Graevenitz, Harhoff & Weber, 2010), for the development of competencies, risk-taking, perseverance and overcoming failures (Markman, Baron, & Balkin, 2005; Simon, Houghton, & Aquino, 2000; Vance et al., 2012), preparing students for the job market (Parreira, Mónico, Sousa, Castilho, Carvalho, & Salgueiro-Oliveira, 2018b).

Volkman (2004) stated that entrepreneurship education began in American universities. Harvard Business School was the first institution to implement a program in entrepreneurship in 1947. Since then, several schools and universities have begun to offer education in this direction and to promote the creation of projects by their students.

It is consensual among several authors (e.g., Javed, et al., 2018; Mars, Slaughter, & Rhoades, 2008; Timmons & Spinelli, 2004; Waghid & Oliver, 2017) that entrepreneurship education strengthens the ability of students to undertake and develop entrepreneurial projects, preparing them for the job market and increasing the probability of them becoming successful entrepreneurs (Ede, Panigrahi, & Calcich, 1998). Escolar-Llamazares and her collaborators (2019) found with their study that participants with high entrepreneurship interest have highlighted the relevance of greater training related to entrepreneurship.

In 2006 the Commission of the European Communities (COM) also revealed that entrepreneurship education has clear benefits, namely making students more

creative and confident in their tasks and projects and acting responsibly. However, only in the COM, presented in 2012, there was a greater concern to invest in entrepreneurship education in order to develop students' entrepreneurial knowledge and a set of essential skills and attitudes (such as creativity, the spirit of initiative, tenacity, teamwork, understanding of risks and a sense of responsibility), bases that help entrepreneurs to turn their ideas into action and which considerably increase employability (COM, 2012).

The COM (2012) added that educational institutions should be encouraged to value a more entrepreneurial approach in order to ensure the development and affirmation of a culture of entrepreneurship and innovation within their mission, stakeholder input, curriculum and learning outcomes.

Several studies have emphasized the importance of entrepreneurship education with the aim of improving the students' profile of competences (Hytti, Stenholm, Heinonen, & Seikkula-Leino, 2010; Matlay, 2006; Nguyen, 2018), problem solving, innovation and teamwork skills (Heinonen, 2007). Given the recognition of the importance of HEI in entrepreneurship education, this training has been increasing throughout Europe (Fayolle, 2005; Hannon, 2007; Hytti et al., 2010). However, in the opinion of the European Commission and of several authors (e.g., Hytti, et al., 2010; Pittaway & Cope, 2007) the research on the impact of education on entrepreneurship continues to be greatly reduced (Parreira, et al., 2018b).

It is interesting to mention that, in 2016, was developed a study about the entrepreneurship education in higher education in European countries. The results of this study stated that, in the case of Portugal, less than ¼ of the students had the opportunity to participate in a course with the subject of entrepreneurship. However, when the researchers asked the students if they perceived the importance of their schooling as a stimulating factor for their initiative and entrepreneurial attitude, 75% of Portuguese students said yes (a percentage that stood out from the rest of the European countries). In addition, this study also showed that 65% of Portuguese students stated that entrepreneurship education played an important role in their decision of becoming entrepreneurs (Saraiva & Gabriel, 2016). These data alert us to the impact of higher education institutions on the entrepreneurial potential of students, as well as demonstrate the importance of developing a more entrepreneurial approach by Portuguese institutions.

Recently, a study developed by Sousa and her collaborators (2019), proposed the use of digital education methodologies and tools in order to develop entrepreneurial capacities in higher education students. In this study, the authors demonstrated that the use of digital methodologies is increasing in education and reinforce the need to increase the use of those methodologies in education in order to prepare students to think critically, have more autonomy in the learning process, and giving them tools to create their own business or to become entrepreneurs.

Since there was only a greater concern to develop a more entrepreneurial approach in universities after the COM (2012) present its solution (in order to decrease the effects of the economic crisis previously experienced in Portugal, creating more entrepreneurs able to retake the growth of the country's economy), it is expected that the influence of HEI on students' entrepreneurial potential has increased in the last years.

In addition, the fact that there is an improvement, by the HEI, to develop a more entrepreneurial approach and a program of studies focused on entrepreneurship could, somehow, have replaced the role that the family had in development of the students' entrepreneurial potential.

5. Research objectives and expected results

This study aims to analyze the perceptions of Portuguese higher education students about the influence of their higher education institutions and their family on their entrepreneurial potential (measured through the scales of motivation, incentives and resources to undertake).

It is also intended to analyze these relationships between these variables, now and 10 years ago, in Portugal (period in which several important events occurred, such as a serious economic and financial crisis that affected all in a decisive way), in order to understand the extent to which this period of time affected somehow or not, the students' desire to undertake.

Thus, the two hypotheses that the present study will propose, taking into account the literature presented previously and the reasons explain above, are:

H1: The influence of the family on student's entrepreneurial potential has decreased after the last 10 years in Portugal.

H2: The influence of higher education institutions on student's entrepreneurial potential has increased after the last 10 years in Portugal.

6. Method

6.1. Samples

This is a comparative study of cohorts (Alferes, 1997), with two samples: one (Sample 1) collected between 2008 and 2009, and the other (Sample 2) collected between the end of the year 2017 and the beginning of 2018. The samples were adjusted according to sociodemographic characteristics, in order to present similar characteristics, to be able to do the cohort analysis. In both samples it was guaranteed that the students' ages were similar, the higher education institutions were the same, the average of female/male students were similar, that the year in which they were confined was the same, and that the courses in which the students had entered were the same or similar.

6.1.1. Sample 1 (2009)

Sample 1 is composed of students from 17 polytechnic institutions of Portuguese higher education that are part of the Poliempreende programme. This was a financed project, which was supported by a team of teachers for the data collection. The data were collected in approximately 1 year and the sample was divided into area of study (health, management, technology and social sciences) and year, as well as by gender, student status, marital status and existence of entrepreneurs in the family. The initial sample included 6532 students but, so that it had the same characteristics as the second sample, it was adjusted, and the final sample included 6430 students. The mean of the ages of this sample was 22 years (minimum age of 18 and maximum age of 59 years), with a standard deviation of 5.3, and that was mainly composed by female students (you should look at the table 1 for more information).

6.1.2. Sample 2 (2018)

Sample 2 is composed of students from Portuguese higher education institutions (both polytechnic and universities) and was divided into area of study (health, management, technology and social sciences) and year, as well as by gender, student status, marital status and existence of entrepreneurs in the family. The data were collected by students, guided by their teachers, in approximately 3 months. The initial sample included 1002 students but, so that it had the same characteristics as the first sample, it was adjusted, and the final sample included 909 students. The mean of the ages of this sample was 22 years (minimum age of 18 and maximum age of 59 years),

with a standard deviation of 4.9, and that was mainly composed by female students (you should look at the table 1 for more information).

Table 1: Sociodemographic characteristics of the samples (1 and 2)

	Sample 1 (<i>N</i> = 6430)		Sample 2 (<i>N</i> =909)	
	<i>n</i>	%	<i>n</i>	%
<i>Gender</i>				
Male	2239	34.8	224	24.6
Female	4167	64.8	685	75.4
No answer	24	0.4	0.0	0.0
<i>Course Area</i>				
Health	1812	28.2	50	5.5
Technology	1630	25.3	98	10.8
Social Sciences	1327	20.6	670	73.7
Management	1490	23.2	89	9.8
No answer	171	2.7	2	0.2
<i>Working Status</i>				
Student	5326	82.8	747	82.2
Working Student	1070	16.6	161	17.7
No answer	34	0.5	0.1	0.1
<i>Marital Status</i>				
Single/Divorced	5889	91.6	863	94.9
Married/Cohabiting	513	8.0	44	4.8
No answer	28	0.4	2	0.2
<i>Entrepreneurs in Family</i>				
Entrepreneurs in Family	4829	75.1	515	56.7
Entrepreneurial Parents	1558	24.2	276	30.4
Entrepreneurial Siblings	275	4.3	112	12.3
Others Entrepreneurs in Family	3590	55.8	167	18.4

6.2. Instruments

Data were collected through a self-administered questionnaire called “Student’s Entrepreneurial Motivations”. The questionnaire was designed by a team of five specialists from different areas (Parreira et al., 2011) and it was used for the first time in an initiative of the Poliempreende project. This questionnaire was based on scales on the reasons for creating a company, social and environmental influences, and support for business creation. All the scales underlying the questionnaire were recently validated by the team of researchers of this line of research. However, we also intend to contribute to the construct validity of the instrument, which is why we performed factorial confirmatory analysis for the scales that were used in this research.

For this study we didn't use all the scales that constitute this instrument, for that reason we next describe the scales that were used and the elements that compose them. In the appendix 1 we present the table 2 with information about the fit indexes of the scales that we used. The most of these indexes are good and others are acceptable, for the both samples.

6.2.1. Scale of personal motivations and factors that facilitate entrepreneurship

The scale was composed of 17 items about motivations and facilitating factors regarding entrepreneurship (Parreira et al., 2011), measured on a 5 point Likert scale (from 1 - of little importance to 5 - very important). The interviewees ranked each item based on the degree of importance they attributed to the motivations to be undertaken. This scale is composed of four dimensions: *familial and societal realization* (which included items like: "give security to my family"); *resources and income* (which included items like: "desire to have high profits"); *prestige* (which included items like: "raise my position in society") and *learning and development* (which included items like: "be innovative and well-informed about new technologies"). In both samples, the Cronbach's alpha indicates a good internal consistency, oscillating between .63 and .90 (see table 4 and 5).

6.2.2. Incentive scale for entrepreneurship

The final version of this scale (Parreira et al., 2011) was composed of 15 items measured on a 5 point Likert scale (from 1 - from minor importance to 5 - very important). Respondents evaluated each item based on the degree of importance they attributed to the incentives and support services to create a company/business. This scale is divided in two different dimensions: *financial and governmental* (which included items like: "loan guarantees") and *educational and consulting* (which included items like: "training courses for entrepreneurs"). In both samples, the Cronbach's alpha indicates a good internal consistency, oscillating between .84 and .93 (see table 4 and 5).

6.2.3. Scale of opportunities and resources to undertake

The scale was composed by 22 items (Parreira et al., 2017) classified in a Likert scale of 5 points (from 1 - of little importance to 5 - very important). Respondents evaluated each item based on the degree of importance they assigned to the

opportunities and resources to create or come to create a company/business. This scale is divided in four different dimensions: *availability of resources*, *business stability*, *economic and political instability* and *business opportunities* (which included items like: “availability of skilled labor” and “expansion of the local economy”). In both samples, the Cronbach’s alpha indicates a good internal consistency, oscillating between .75 and .90 (see table 4 and 5).

6.2.4. Measuring the role of the family and the role of institution of higher education

In order to understand the influence of the family in the entrepreneurial potential of students, items such as "Do you have entrepreneurs in your family?" and "If yes, who?" were used.

Relatively to the evaluation of the role of the higher education institutions on the entrepreneurial potential of students, we calculate a composite score for each sample. The questionnaire had undergone some modifications since 2009, because in the year of the first collection, there wasn’t HEInnovate Self-Assessment scale to measure the role of HEI. For this reason, similar items were selected to make a better comparison of the role of the academies in the two samples. Some examples of the items that were used are: “My course prepares me to open my one business” and “Entrepreneurship is an important part of the strategy of my University”. For the composite scores, in both samples, the Cronbach’s alpha indicates a good internal consistency, .84 (in the first sample) and .81 (in the second sample) (see table 4 and 5).

6.2.5. HEInnovate Self-Assessment scale

In order to evaluate the role of higher education institutions in influencing their students' entrepreneurial behaviors, COM created the HEInnovate (a self-assessment tool aimed at all HEI to assess their level of innovation through the students’ opinions; Heinnovate, 2017).

As the instrument used in 2009 didn’t have the HEInnovate Self-Assessment scale yet, we analyzed the results of this scale related to the 2018 sample, in order to avoid mono-operation-bias (Cook & Campbell, 1979), using a multi-method approach (John & Benet-Martínez, 2000) and, thus, perceive how is the level entrepreneurship of Portuguese higher education institutions currently.

The HEInnovate Self-Assessment scale (available online at heinnovate.eu) was used for students to evaluate the entrepreneurial level of their universities, with 37 items being part of seven dimensions. Respondents evaluated their University using a Likert scale of 5 points (from 1 - of little importance to 5 - very important). The seven dimensions of this scale are: *leadership governance*; *organizational capacity*; *entrepreneurial teaching and learning*; *preparing and supporting entrepreneurs*; *knowledge exchange and collaboration*; *internationalized institution*; and *measuring impact*. Regarding each of these dimensions students had to rate items like: “entrepreneurship is an important part of the strategy of my university”, “business goals are supported by a wide range of sustainable financing and investment sources”, “the university offers several formal learning opportunities to develop entrepreneurial skills”, “the university emphasizes the value of entrepreneurship”, “the university is committed to collaborating and sharing knowledge with the industry, the public sector and society”, “internationalization is an important part of the university's entrepreneurial agenda” and “the university regularly assesses the impact of its entrepreneurial agenda” respectively. The Cronbach's alpha coefficient was .98, indicating a good internal consistency in the new sample.

6.3. Procedure

In the first sample, the questionnaires were distributed and applied to students of HEI in Portugal. The data were collected by the coordinators of the Poliempreende programme, in their respective institution, in approximately one year. In the second sample, the questionnaires were distributed and applied to students of HEI in Portugal, by the research team of which some students were part of, and in approximately three months. All the ethical principles of a research study were fulfilled, the researchers explained the study objectives, the participants gave their informed consent, and the anonymity was assured at all (see the extract of the ata that certify that the study complied with all norms regarding the ethics and deontology of scientific research in Psychology in Portugal, in the appendix 11).

6.4. Data Analyzes

All the analysis was made using the SPSS statistical program and AMOS version 22.0 for Windows (IBM Corp. Released 2013). Confirmatory factorial analysis of the measures in analysis was performed with AMOS (v. 22.0, SPSS Inc, Chicago, IL;

Arbuckle, 2013), estimation method by maximum likelihood (Jöreskog & Sörbom, 2004). The quality of the fit indexes of the factorial models was analyzed by the indexes of NFI (Normed of fit index; good fit $> .80$; Schumacker & Lomax, 1996), SRMR (Standardized Root Mean Square Residual; appropriate fit $< .08$; Brown, 2015), TLI (Tucker-Lewis Index - TLI; appropriate fit $> .90$; Brown, 2015), CFI (Comparative fit index; good fit $> .90$; Bentler, 1990) and RMSEA (Root Mean Square Error of Approximation; good fit $< .05$; Kline 2011; Schumacker & Lomax, 1996).

The fit of the model was improved by modification indexes (MI; Bollen, 1989), leading to correlation of the residual variability between variables with higher MI. We followed Arbuckle's proposal (2013), which consists of analyzing the MIs by their statistical significance ($\alpha < 0.05$). Another criterion was designed by Marôco (2011), which advises to be safer to modify the parameters with MI higher than 11 ($p < .001$).

Reliability was calculated by Cronbach's alpha (Nunnally, 1978). Reliability coefficients higher than $.70$ were considered acceptable for convergence and reliability (Hair, Black, Babin, & Anderson, 2009). In general, the value of $.80$ was taken as a good reliability indicator.

After the descriptive statistics we made an intercorrelation matrix for both samples. Intercorrelations were performed using the Pearson correlation coefficient. The effect sizes of correlations (low, medium, or high correlations) were classified according to Cohen (1988).

We also performed a multivariate multiple regression analysis with AMOS (v. 22.0, SPSS Inc, Chicago, IL). The role of the family and higher education institutions were considered predictor variables and the scales of motivations, incentives and opportunities and resources (that measure the entrepreneurial potential of students) were considered criterion variables. The existence of outliers was evaluated by the square distance of Mahalanobis (Tabachnick & Fidell, 2013). In turn, the normality of the variables was evaluated by uni- and multivariate asymmetry (Sk) and kurtosis (Ku) coefficients. The values of the asymmetry and kurtosis coefficients of the sample did not deviate excessively from those considered adequate for the assumption of the normality assumption if the values of $Sk < 2$ and $Ku < 3$ (Kline, 2011). By calculating the Inflation Variance Factor (IVF), through the SPSS program, we can perceive that there are no problems of multicollinearity between the variables since we obtained values of IVF located between 1,004 and 1,690, in the two samples.

After doing the multivariate multiple regression analysis, and to verify if the differences between the regression coefficients were significant between the two samples, we used the following formula, where we found that these differences between the two independent groups were significant:

$$T = \frac{B_1 - B_2}{\sqrt{\frac{\hat{\sigma}_e^2}{S_{x_1}^2 (n_1 - 1)} + \frac{\hat{\sigma}_e^2}{S_{x_2}^2 (n_2 - 1)}}$$

7. Results

In table 3 we present the means and the standard-deviations of the different scales and factors in the two samples. Regarding the personal motivations and factors that facilitate entrepreneurship scale, the average of the answers is 3.75 (in 2009) and 3.58 (in 2018). On one hand this means indicate that, overall, the average students' scores approach the 4= agree option, indicating a level of motivation to undertake above the intermediate point in both samples. On the other hand this means seem to register a decrease of the entrepreneurial motivations of the higher education students. The dimension that obtained the highest average score, in 2009, was the *familial and societal realization* and, in 2018, was the *learning and development* dimension, what seems to indicate that the motivations of the students changed in the last 10 years from the family to the learning and development.

Regarding the incentives to undertake scale, the average of the answers is 3.93 (in 2009) and 3.96 (in 2018), what seems to indicate a little increase in the perception of incentives by the students, from ten years ago to nowadays. The dimension that obtained the highest average score was the *educational and consulting* dimension, in both samples.

In the opportunities and resources scale, the average of the answers is 3.66 (in 2009) and 3.69 (in 2018), what seems to indicate a little increase in the perception that the students have about the opportunities and resources to undertake, in ten years. The dimension that obtained the highest average score was the *availability of resources*, in both samples.

About the role of the HEI, the average of the answers was 3.05 (in 2009) and 2.92 (in 2018) what seems to indicate that the role of the higher education institutions had a slight decrease in the last ten years.

Concerning the dummy variable “have entrepreneurs in family”, we can verify that, in the first sample, 75% of the students had entrepreneurs in their families, and in the second sample 57% have entrepreneurs in their families. This seems to indicate that,

in the first sample, the students had more entrepreneurs in their families compare to the more recent sample. Besides that, in the first sample, the students referred having more others entrepreneurs in their families, than parents or siblings. But in the second sample, the students affirmed having more parents' entrepreneurs than siblings or others.

Table 3. Means (*M*), standard-deviations (*SD*), number of individuals (*n*) and percentage (%) of the different scales and factors in the sample of 2009 (*N* = 6430) and in the sample of 2018 (*N* = 909).

	2009				2018			
	<i>M</i>	<i>S.D.</i>	<i>n</i>	%	<i>M</i>	<i>S.D.</i>	<i>n</i>	%
Entrepreneurial Motivations Global Scale	3.75	.55	-	-	3.58	.52	-	-
F1. Familial and Societal Realization	4.11	.69	-	-	4.12	.79	-	-
F2. Resources and Income	3.26	.81	-	-	2.89	.79	-	-
F3. Prestige	3.45	.82	-	-	3.29	.89	-	-
F4. Learning and Development	4.10	.59	-	-	4.14	.61	-	-
Incentives to Undertake Global Scale	3.93	.64	-	-	3.96	.59	-	-
F1. Financial and Governmental	3.92	.69	-	-	3.94	.66	-	-
F2. Educational and Consulting	3.94	.68	-	-	3.99	.65	-	-
Opportunities and Resources to Undertake Global Scale	3.66	.54	-	-	3.69	.50	-	-
F1. Availability of Resources	3.86	.68	-	-	4.02	.65	-	-
F2. Business Stability	3.82	.60	-	-	3.85	.52	-	-
F3. Economic and Political Instability	2.95	1.06	-	-	2.90	1.09	-	-
F4. Business Opportunities	3.28	.95	-	-	2.92	1.05	-	-
Role of Higher Education Institutions	3.05	.94			2.92	.90		
Having Entrepreneurs in the Family a)	-	-	4829	75.1	-	-	515	56.7
Have Entrepreneurial Parents a)	-	-	1558	24.2	-	-	276	30.4
Have Entrepreneurial Siblings a)	-	-	275	4.3	-	-	112	12.3
Have Others Entrepreneurs in the Family a)	-	-	3590	55.8	-	-	167	18.4

a) Dummy Variable (0=No; 1=Yes).

In the table 4 we presented the intercorrelations between having entrepreneurs in family and the entrepreneurial potential of students (showed by entrepreneurial motivations, perception of incentives to undertake and the perception of resources to undertake), and the intercorrelations between the role of HEI and the entrepreneurial potential of students, in the first sample (2009).

In the intercorrelation between having entrepreneurs in family and entrepreneurial motivations scale, in the first sample, we find that there is a low but positive and significant correlation ($r=.04$; $p\leq.01$). In the relationship between having

parents entrepreneurs and the entrepreneurial motivations scale, we find that there is a low but positive and significant correlation ($r=.03$; $p\leq.01$).

Regarding having entrepreneurs in the family there is no other significant correlation with the others scales that measure the entrepreneurial potential (the scale of incentives and scale of opportunities and resources).

About the relationship between role of the HEI and scales that measure the entrepreneurial potential, we find low but positives and significant correlations in the three scales (scale of motivations: $r=.18$; $p\leq.01$; scale of incentives to undertake: $r=.06$; $p\leq.01$; and the scale of opportunities and resources to undertake: $r=.12$; $p\leq.01$).

In the table 5 we presented the intercorrelations between having entrepreneurs in family and the entrepreneurial potential of students (showed by entrepreneurial motivations, perception of incentives to undertake and the perception of resources to undertake), and the intercorrelations between the role of HEI and the entrepreneurial potential of students, in the second sample (2018).

Regarding the correlation between having parents entrepreneurs and scale of incentives to undertake, in the second sample, we find that there is a low and negative correlation ($r=-0.07$; $p\leq.05$), what means that the more parents entrepreneurs the students have, the less incentives they will perceived.

In the correlation between having siblings entrepreneurs and scale of incentives to undertake, we find that there is a low and negative correlation ($r=-0.16$; $p\leq.01$). There is also a low and negative correlation between having siblings entrepreneurs and the opportunities and resources scale ($r=-0.09$; $p\leq.01$). These correlations mean that the more siblings entrepreneurs the students have, the less incentives, opportunities and resources they will perceived.

About the relation between have other entrepreneurs in the family and the scale of incentives, we find a low but positive correlation ($r=.09$; $p\leq.05$). Besides of that, there is no significant correlation between having entrepreneurs in family and the scale of motivations, in the second sample.

About the relationship between role of the HEI and scales that measure the entrepreneurial potential, we find positives and significant correlations in the three scales (scale of motivations: $r=.25$; $p\leq.01$; scale of incentives to undertake: $r=.22$; $p\leq.01$; and the scale of opportunities and resources to undertake: $r=.26$; $p\leq.01$).

Table 4: Intercorrelation matrix between the family and higher education institutions and the entrepreneurial potential of students (entrepreneurial motivations, perception of incentives to undertake and the perception of resources to undertake), in the sample 1. Cronbach's alpha (α).

	α	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Entrepreneurs in Family ^a	-	,33**	,12**	,65**	,04**	,03*	,02	,05**	,04**	-,00	,00	-,01	,01	,02	,01	-,01	,02	,05**
2. Parents Entrepreneurs ^a		-	,07**	-,31**	,03**	,01	,01	,05**	,03*	,02	,02	,01	,01	-,01	,02	-,01	,01	,03*
3. Siblings Entrepreneurs ^a			-	-,08**	,00	,01	-,03*	,01	,03**	-,01	-,01	,00	-,00	-,00	-,01	,01	,00	,06**
4. Others Entrepreneurs in Family ^a				-	,02	,02	,02	,00	,03*	-,00	,00	-,01	,00	,02	,01	-,02	,01	,02
5. Entrepreneurial Motivations Global Scale					-,90	,80**	,80**	,80**	,61**	,41**	,40**	,36**	,52**	,45**	,48**	,19**	,31**	,18**
6. F1. Familial and Societal Realization						-,83	,46**	,45**	,44**	,36**	,34**	,33**	,41**	,36**	,40**	,11**	,21**	,12**
7. F2. Resources and Income							-,77	,57**	,30**	,23**	,22**	,19**	,33**	,26**	,29**	,16**	,25**	,13**
8. F3. Prestige								-,77	,27**	,25**	,25**	,19**	,39**	,29**	,33**	,23**	,30**	,15**
9. F4. Learning and Development									-,65	,43**	,39**	,42**	,47**	,50**	,45**	,07**	,16**	,18**
10. Incentives to Undertake Global Scale										-,93	,97**	,84**	,63**	,57**	,61**	,21**	,27**	,06**
11. F1. Financial and Governmental											-,91	,69**	,60**	,53**	,57**	,21**	,26**	,06**
12. F2. Education. and Consult.												-,85	,57**	,54**	,56**	,16**	,22**	,07**
13. Opportunities and Resources Global Scale													-,90	,82**	,89**	,50**	,60**	,12**
14. F1. Availability of Resources														-,89	,67**	,15**	,27**	,10**
15. F2. Business Stability															-,87	,22**	,39**	,12**
16. F3. Economic and Political Instability																-,82	,42**	,02**
17. F4. Business Opportunities																	-,75	,10**
18. Role of Higher Education Institutions																		-,84

^aDummy Variable (0=No; 1=Yes); *Correlation is significant at the .05 level (2-tailed); ** Correlation is significant at the .01 level (2-tailed).

Table 5: Intercorrelation matrix between the family and higher education institutions and the entrepreneurial potential of students (entrepreneurial motivations, perception of incentives to undertake and the perception of resources to undertake), in the sample 2. Cronbach's alpha (α).

	α	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. Entrepreneurs in Family ^a	-	,57**	,33**	,42**	-,00	,04	-,06	,01	,00	-,06	-,06	-,04	-,02	-,04	,04	-,03	-,08*	-,05	
2. Parents Entrepreneurs ^a		-	,13**	-,31**	,02	,02	-,01	,05	-,03	-,07*	-,06	-,07*	-,03	-,02	-,01	,04	-,14**	-,05	
3. Siblings Entrepreneurs ^a			-	-,18**	-,05	,04	-,08*	,00	-,10**	-,16**	-,16**	-,12**	-,09**	-,08*	-,05	,04	-,23**	-,14**	
4. Others Entrepreneurs in Family ^a				-	,00	,01	-,03	-,03	,07*	,09*	,08*	,07*	,06	,02	,09**	-,07*	,13**	,08*	
5. Entrepreneurial Motivations Global Scale					-	,80	,59**	,76**	,75**	,54**	,34**	,28**	,34**	,44**	,35**	,39**	,20**	,28**	,25**
6. F1. Familial and Societal Realization						-	,84	,25**	,29**	,16**	,24**	,18**	,26**	,25**	,19**	,26**	,10**	,13**	,11**
7. F2. Resources and Income							-	,67	,40**	,31**	,22**	,22**	,17**	,35**	,25**	,26**	,23**	,29**	,19**
8. F3. Prestige								-	,75	,12**	,13**	,08*	,17**	,23**	,16**	,20**	,13**	,16**	,12**
9. F4. Learning and Development									-	,63	,37**	,32**	,36*	,36**	,34**	,05	,17**	,27**	
10. Incentives to Undertake Global Scale										-	,89	,93**	,88**	,56**	,53**	,48**	,18**	,31**	,22**
11. F1. Financial and Governmental											-	,84	,64**	,52**	,48**	,44**	,18**	,31**	,19**
12. F2. Educational and Consulting												-	,85	,49**	,49**	,42**	,13**	,24**	,22**
13. Opportunities and Resources Global Scale													-	,86	,75**	,86**	,58**	,61**	,26**
14. F1. Availability of Resources														-	,87	,52**	,14**	,25**	,21**
15. F2. Business Stability															-	,77	,32**	,42**	,21**
16. F3. Economic and Political Instability																-	,86	,39**	,11**
17. F4. Business Opportunities																	-	,79	,25**
18. Role of Higher Education Institutions																		-	,81

^aDummy Variable (0=No; 1=Yes); *Correlation is significant at the .05 level (2-tailed); ** Correlation is significant at the .01 level (2-tailed).

Comparing the two tables of intercorrelations we can conclude that, having entrepreneurs in family, in 2009, was more correlated with the motivations to be an entrepreneur than with the incentives or resources to undertake. But in the new sample, it seems that having entrepreneurs in the family, in general, has a slight negative correlation with two of the three scales that measure the entrepreneurial potential.

This values indicated that, in 2009, having entrepreneurs in the family influenced positively the entrepreneurial potential of students, namely to their motivations to be entrepreneurs. But now, in 2018, having entrepreneurs in family doesn't influence the motivations of students to be entrepreneurs anymore, and it has a slight negative influence in the entrepreneurial potential of students, namely in the perception of incentives and resources to undertake.

Regarding HEI, when we compare the two tables of intercorrelations, we can conclude that the influence of these institutions was more correlated, with the dimensions of entrepreneurial potential, now than 10 years ago.

With the objective of evaluate the impact of having entrepreneurs in family (parents, siblings and others) and of the role of higher education institutions in the entrepreneurial potential of students we performed a multivariate multiple regression analysis with AMOS (v. 22.0, SPSS Inc, Chicago, IL). We can see all the models that were designed in the appendixes (2, 3, 4, 5, 6, 7, 8 and 9). In the table 6 we presented the standardized regression weights (β) and R^2 for the criterion variables, in the sample 1.

We verified that, in the first sample, the level of explained variance were low in every scale (Cohen, 1988). The bigger level is when the models are explaining the fourth dimension of the personal motivations (*learning and development*), indicating a variance of 3% (look at the table 6 for more information about this values).

When we analyse the paths from the predictor variables to the criterion variables, in the first model of the first sample (appendix 2), we can see that the more significant influence, regarding the relation between having entrepreneurs in the family and the scales that measure the entrepreneurial potential of the students, is in the fourth dimension of motivations (*learning and development*) that presents a $\beta=.03$ ($p < .05$) (see table 6).

In the relationship between having parents entrepreneurs and the scales that measure the entrepreneurial potential of the students, in the first sample, we can see that the greater influence is in third dimension of motivations (*prestige*) that presents a $\beta=.05$, where no effect size was verified (see table 6 and appendix 3).

Concerning the relationship between having siblings entrepreneurs and the scales that measure the entrepreneurial potential of the students, in the first sample, we can see that the greater influence is in the fourth dimension of motivations (*learning and development*) that presents a $\beta=.02$, where no effect size was verified (see table 6 and appendix 4).

Relatively the relationship between having others entrepreneurs in the family and the scales that measure the entrepreneurial potential of the students, in the first sample, we can see that the greater influence is in the fourth dimension of motivations (*learning and development*) that presents a $\beta=.02$, where no effect size was verified (see table 6 and appendix 5).

In the relationship between HEI and the scales that measure the entrepreneurial potential of the students, in the first sample, we can see that all the β values are significant, highlighting the two bigger influences in the third and in the fourth dimensions of motivations (*prestige* with a $\beta=.14$ ($p < .001$) and *learning and development* with a $\beta=.18$ ($p < .001$)) (see the table 6 and the appendix 2).

In the second sample we verified that the level of variance was low (Cohen, 1988) in almost every scale, but in general is bigger comparing to the first sample. The bigger level is when the model of having siblings entrepreneurs are explaining the fourth dimension of the opportunities and resources (*business opportunities*), indicate a moderate variance of 10% (look at the table 7 for more information about this values).

When we analyze the paths from the predictor variables to the criterion variables, in the first model of the second sample (appendix 6), we can see that the more significant influence, but negative, regarding the relation between having entrepreneurs in the family and the scales that measure the entrepreneurial potential of the students, is in the fourth dimension of opportunities and resources scale (*business opportunities*) that presents a $\beta=-0.07$ ($p < .05$) (look at the table 7).

Relatively the relationship between having parents entrepreneurs and the scales that measure the entrepreneurial potential of the students, in the second sample, we can see that the more significant influence, but negative, is in the fourth dimension of the opportunities and resources scale (*business opportunities*), that presents a $\beta=-0.12$ ($p < .001$) (see table 7 and appendix 7).

Table 6. The influence of Family and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 1: standardized regression weight (β) and R^2 .

	Personal Motivations								Incentives to Undertake				Opportunities and Resources to Undertake							
	F1. Familial and Societal Realization		F2. Resources and Income		F3. Prestige		F4. Learning and Development		F1. Financial and Governmental		F2. Educational and Consulting		F1. Availability of Resources		F2. Business Stability		F3. Economic and Political Instability		F4. Business Opportunities	
	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Higher Education Institutions	.11***	-	.13***	-	.14***	-	.18***	-	.06***	-	.07***	-	.10***	-	.12***	-	.02*	-	.10***	-
+Entrepreneurs in Family ^a	.02	1%	.02	2%	.04	2%	.03*	3%	.00	0%	-.01	0%	.01	1%	.01	2%	-.01	0%	.01	1%
+ Parents Entrepreneurs ^a	.01	1%	.01	2%	.05	2%	.02	3%	.01	0%	.01	0%	-.01	1%	.01	2%	-.01	0%	.00	1%
+ Brothers Entrepreneurs ^a	.00	1%	-.03	2%	.00	2%	.02	3%	-.01	0%	.00	0%	-.01	1%	-.01	2%	.01	0%	.00	1%
+ Others Entrepreneurs ^a	.02	1%	.01	2%	.00	2%	.02	3%	.00	0%	-.01	0%	.01	1%	.00	2%	-.02	0%	.00	1%

^aDummy Variable (0=No; 1=Yes); R^2 was measured with the association of higher education institutions with having entrepreneurs in family, parents entrepreneurs, siblings entrepreneurs and others entrepreneurs in family. * $p < .05$ ** $p < .01$ *** $p < .001$.

Table 7. The influence of Family and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 2: standardized regression weight (β) and R^2 .

	Personal Motivations								Incentives to Undertake				Opportunities and Resources to Undertake							
	F1. Familial and Societal Realization		F2. Resources and Income		F3. Prestige		F4. Learning and Development		F1. Financial and Governmental		F2. Educational and Consulting		F1. Availability of Resources		F2. Business Stability		F3. Economic and Political Instability		F4. Business Opportunities	
	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Higher Education Institutions	.11***	-	.19***	-	.12***	-	.27***	-	.18***	-	.22***	-	.21***	-	.21***	-	.11***	-	.25***	-
+ Entrepreneurs in Family ^a	.05	1%	-.05	4%	.01	2%	.02	7%	-.05	4%	-.03	5%	-.03	4%	.05	4%	-.03	1%	-.07*	7%
+ Parents Entrepreneurs ^a	.03	1%	.00	4%	.05	2%	-.01	7%	-.05	4%	-.06	5%	-.01	4%	.00	4%	.05	2%	-.12***	8%
+ Siblings Entrepreneurs ^a	.06	2%	-.05	4%	.02	2%	-.06	8%	-.13***	5%	-.09**	6%	-.05	5%	-.02	4%	.05	2%	-.20***	10%
+ Others Entrepreneurs ^a	.01	1%	-.04	4%	-.04	2%	.05	8%	.07*	4%	.06	5%	.00	4%	.08*	5%	-.08*	2%	.11***	7%

^aDummy Variable (0=No; 1=Yes); R^2 was measured with the association of higher education institutions with having entrepreneurs in family, parents entrepreneurs, siblings entrepreneurs and others entrepreneurs in family. * $p < .05$ ** $p < .01$ *** $p < .001$.

Concerning the relationship between having siblings entrepreneurs and the scales that measure the entrepreneurial potential of the students, in the second sample, we can see that there are two more significant influences, but negatives, one in the first dimension of the incentives scale (*financial and governmental*), that presents a $\beta=-0.13$ ($p < .001$), and other in the fourth dimension of the opportunities and resources scale (*business opportunities*), that indicate a $\beta=-0.20$ ($p < .001$) (look at the table 7 and appendix 8).

In the relationship between having others entrepreneurs in the family and the scales that measure the entrepreneurial potential of the students, in the second sample, we can see that there are two more significant influences, one positive and other negative, one in the third dimension of the opportunities and resources scale (*economic and political instability*), that presents a $\beta=-0.08$ ($p < .05$), and other in the fourth dimension of the same scale (*business opportunities*), that indicate a $\beta=.11$ ($p < .001$) (see table 7 and appendix 9).

For the relationship between HEI and the scales that measure the entrepreneurial potential of the students, in the second sample, we can see that all the β values are significant, highlighting the two bigger influences, one in the fourth dimension of the motivations scale (*learning and development*), that present a $\beta=.27$ ($p < .001$), and other in the fourth dimension of opportunities and resources (*business opportunities*), that present a $\beta=.25$ ($p < .001$) (see the table 7 and the appendix 6).

In order to avoid mono-operation-bias (Cook, & Campbell, 1979), using a multi-method approach (John, & Benet-Martínez, 2000), we decide to do a multivariate multiple regression in order to understand more clearly how the higher education institutions, currently, can predict the entrepreneurial potential of students, concerning their personal motivations, incentives and opportunities and resources to undertake (look at the figure 9 for more information).

In this model, the levels of variance were low in every scale (Cohen, 1988). The bigger level is when the model is explaining the scale of opportunities and resources to undertake, indicating a variance of 7% (look at the figure 9 for more information about these values).

Regarding the relationship between the HEI and entrepreneurial potential of students we can see that the bigger influence is in second dimension of Heinnovate (*organizational capacity*) predicting the perception of incentives to undertake, that present a $\beta=.25$ ($p < .001$). Other significant influence is in the last dimension of Heinnovate (*measuring impact*) predicting the perception of incentives by students, that present a $\beta=.17$ ($p < .01$) (look at figure 9).

Another significant influence of the HEI in the entrepreneurial potential of students is relative to the perceptions of opportunities and resources to undertake. The first, the second and the sixth dimension of Heinnovate (*leadership governance; organizational capacity and internationalized institution*) present significant influences in the perceptions of opportunities and resources to undertake of $\beta=.13$ ($p < .05$), $\beta=.18$ ($p < .05$) and $\beta=.12$ ($p < .01$), respectively (look at figure 9). Concerning the Heinnovate predicting the motivations to be an entrepreneur, were not observe any significant regression coefficients (see figure 9).

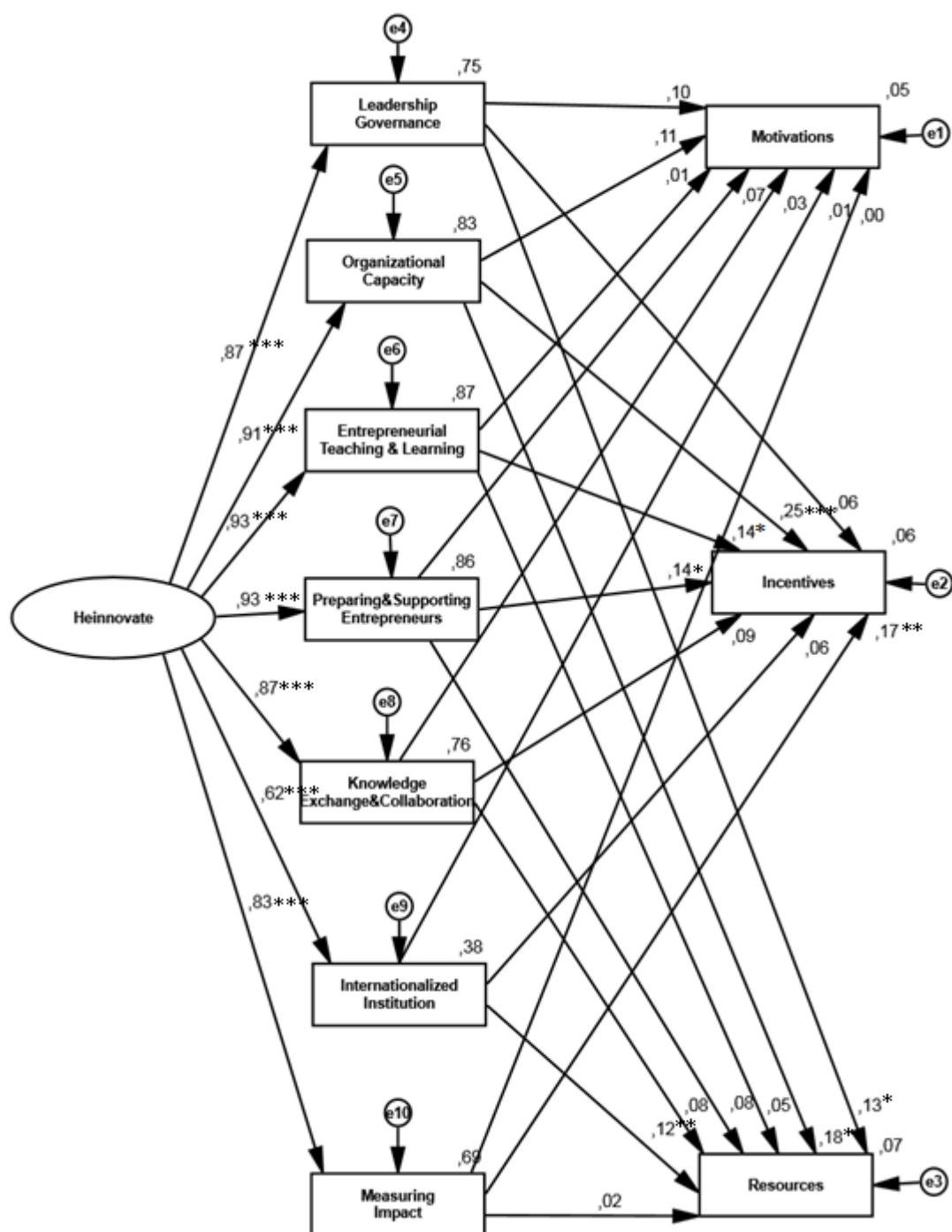


Figure 9. The influence of Higher Education Institutions (measured by the Heinnovate scale) on the entrepreneurial potential of students (measured by the global scale of entrepreneurial motivations, global scale of the incentives to undertake and by the global scale of the opportunities and resources to undertake) in the sample 2: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

8. Discussion

The main objective of this study was to analyze the role of the family and higher education institutions in the students' entrepreneurial potential, comparing two samples, one collected between 2008 and 2009 and other collected between 2017 and 2018. We intend to see if these influences changed taking into account that, during this period of time, several factors in Portugal provided changes and constraints with impact at different levels.

Throughout this research we discussed the personal characteristics of entrepreneurs, regarding their personality characteristics, more specifically what motivate them to be entrepreneurs, and also which incentives, resources and opportunities could be important to them, if they want to be entrepreneurs.

In this context, we also analyzed the literature that highlights the importance of the influence of family (e.g., Almeida & Teixeira, 2014; Altinay, et al., 2012; Escolar-Llamazares, et al., 2019; Laranjeira, 2017; Mueller, 2006; Silva, 2018; Randerson, Bettinellib, Fayolle, & Anderson, 2015; Zellweger, Sieger, & Halter, 2011) and the HEI (e.g., Eghteda, 2018; Javed, et al., 2018; Laranjeira, 2017; Nabi, et al., 2015; Nguyen, 2018; Parreira et al., 2011; Parreira et al., 2018a) on the entrepreneurial potential of students. We realize that the literature stated that the family seems to play an important role in increasing the entrepreneurial potential of students (Almeida, & Teixeira, 2014; Altinay, et al., 2012; Laranjeira, 2017; Silva, 2018). However we could also perceive that when sons see the difficulties that their parents have experienced in being entrepreneurs, it could be a factor that contributes to the decrease of their intentions of starting their own business (Mungai & Velamuri, 2011; Zellweger, Sieger, & Halter, 2011). Thus, we could expect that the economic and financial crisis lived in Portugal could have influenced negatively the entrepreneurial potential of students.

Regarding the role of HEI we could see that, from ten years ago to the present, there have been implemented some policies in order to improve the education in entrepreneurship. For example: the creation of curricular units on entrepreneurship,

workshops, seminars, training courses for trainers and facilitators of entrepreneurship, among others (GEM, 2010; 2013; 2014/15; Parreira, et al., 2011). That policies, and with all the concern by the European Commission (2012) in improving the entrepreneurship in Portugal, could have increased the role of the HEI in entrepreneurial potential of students and, somehow, it could have replaced the influence that the family had.

Concerning our results we could verify that all of the instruments that were used are reliable for the both of the samples.

Relating to the first hypothesis (*H1*), when we analyze the influence of the family in the entrepreneurial potential of the students, in the first sample (2009), we concluded that there wasn't a very significant influence as we expected when we saw the results that the literature pointed. We could see, in our results, that there was a significant influence of the family in the motivations of students, but this was a little influence since it indicated a low coefficient of regression.

When we looked to the results of the sample 2 (2018), the family seemed to have a slight negative influence in the way that the students perceived opportunities and resources (namely the business opportunities), supporting the studies previously shown (Mungai & Velamuri, 2011; Wang, Wang, & Chen, 2018; Zellweger et al., 2011). However it seems that having siblings entrepreneurs had a greater, but negative, influence in the way that students perceived their incentives and resources to undertake, comparing with the influence of having parents entrepreneurs. It was also interesting to see that having others entrepreneurs in family (not parents or siblings) seem to influence positively the entrepreneurial potential of students (in the incentives and resources to undertake).

With these facts our results can't support the first hypothesis because, in general, the family hadn't decreased their influence, in making the students want to be entrepreneurs, but changed it from positive to negative influence. Nevertheless, we can't ignore that having other entrepreneurs in family, seems to have a better influence on the entrepreneurial potential of the students than ten years ago.

Concerning the second hypothesis (*H2*), when we analyze the influence of higher education institutions (HEI) in the entrepreneurial potential of students, in the first sample, we can conclude that they have an influence in the motivations of the students and in the way they perceived the incentives, opportunities and resources to undertake.

Comparing this influence with the sample 2 (2018) we can realize that, in general, the influence of HEI in the students' entrepreneurial potential had increased slightly, what supports the second hypothesis and the previous results showed by the researchers in the

literature in this domain (Fayolle, 2005; Hannon, 2007; Hytti et al., 2010; Javed, et al., 2018; Saraiva & Gabriel, 2016). We can see, in the results of the multiple regression analyzes, that the role of HEI explains better the entrepreneurial potential of students now, compared with the old sample, increasing their role by 4%.

This increase can be due to several facts such as the creation of curricular units on entrepreneurship (GEM, 2010; 2013; 2014/15; Parreira, et al., 2011), but also due to the rapid technological evolution experienced in the last 10 years which has shown to have an influence in the entrepreneurship education (Sousa, Carmo, Gonçalves, Cruz, & Martins, 2019).

In order to better understand the influence of the higher institutions nowadays, we performed a new model only with the influence of HEI in the new sample. When we look at the results we can see that the bigger influence is in the perception of incentives by the students. We also can see that this model supports the results of the regression analysis, because the role of HEI seems to explain 7% of the entrepreneurial potential of students.

The results were somewhat different than we expected, namely in the change of the influence of the family, from positive to negative. Another fact that was different from the expected was in the case of having others entrepreneurs in family, that shown a better influence on the entrepreneurial potential now than 10 years ago. Thus, with this research work we could verify that having entrepreneurs in the family is no longer a determinant factor in the development of young entrepreneurs, as 10 years ago.

On the other hand, the role of HEI seem to had increased in the last years, however, with this research, we intend to alert the institutions to invest more in entrepreneurship, since there is a study that demonstrated that only less than $\frac{1}{4}$ of the Portuguese students had the opportunity to participate in a course with the subject of entrepreneurship. Despite this fact, Portuguese students are the ones who most recognize the importance of education as a stimulator of entrepreneurial potential, compared to other European countries (Saraiva & Gabriel, 2016). These evidences alert us to the need for greater investment in entrepreneurship education in order to increase the values previously shown and, thus, training more successful entrepreneurs.

There is a possibility that HEI, because they play a more decisive role in entrepreneurial potential, have replaced the role of the family in the stimulation of students' entrepreneurial potential. It would be interesting, in future studies, to analyze whether these two variables had influence on each other.

To conclude, with this research work we could verify that having entrepreneurs in the family is no longer a determinant factor in the development of young entrepreneurs, as 10 years ago, and it has a slight negative influence in the entrepreneurial potential of students. We could also verify that the HEI are improving the entrepreneurship education, compared with ten years ago, but they must continue to invest in this field to train more successful entrepreneurs.

9. Conclusion and Limitations

In conclusion, with the results of this research we observed that the family doesn't have as much influence as 10 years ago, but has a slight negative influence in the entrepreneurial potential of students, maybe because of the economic situation lived in Portugal or maybe because of the increase of the role of higher education institutions.

We could also see that the role of higher education institutions had increased their influence in the entrepreneurial potential of student, as we expected. Although we had these results, we want to alert these institutions to improve their education in entrepreneurship in order to develop more young entrepreneurs that really could create their one business and, thus, contribute to a better economy of the country.

We consider that this research has helped HEI realize that, although they have increased their influence in the development of new entrepreneurs, compared with 10 years ago, there is still a lot to be done in the development of this area, to motivate students to undertake and create new business.

In addition, we also consider that this study helped to alert HEI to the fact that families no longer have a preponderant role in the development of entrepreneurs. Therefore, besides the need of a greater investment by HEI in entrepreneurship programs, it may also be interesting that they begin to raise families' awareness for the importance of entrepreneurship for the country's economy, since family opinion can also play an important role in the student's decision to become an entrepreneur and create a new business.

In the present research there are some limitations that we should consider in order to understand some of the conclusions and to take in account for the next studies.

The first limitation that we found is related to the sample. This is a convenience sample and because of that, in the future studies, it should be selected a random number of students from each higher education institution, ensuring the equivalence of the samples in terms of type of higher education institution, gender, age, course area, and others

sociodemographic characteristics. In this sense, it would also be important to continue collecting the second sample, making possible to develop a comparative study with two samples with equivalent N .

Thus, the second sample should be more equivalent to the first sample in terms of quantity and quality (for example have more equilibrated students from the all areas of studies).

The fact that, in the second sample, we have used more students of social sciences may have somehow altered the results, since we know that social science courses have less investment in entrepreneurship than technology courses. However, in order to decrease the probability of bias in this research, due to the variable *course area*, we performed an analysis of the correlations between the family and higher education institutions and the entrepreneurial potential of students in the first sample, divided by *course area* (see appendix 10, table 8). Since we have not observed significant changes in correlations, we concluded that the motivations of students to undertake do not differ, considerably, depending on the course in which the student is enrolled. In future would be important to develop the same analysis, for the second sample, to see if the results are similar.

The fact that the second sample has students from universities and polytechnic institutions may have, somehow, altered the results, since the first sample was collected only in polytechnic institutions.

It is important to think that our samples were composed by Portuguese students what can represent an issue regarding the generalizability of results. To some extent, for future researches, we consider very important and relevant to expand this research to other countries and also to other cultures.

The fact that we used a big questionnaire as the instrument to collect data may have led to bias, implying a distortion in the accuracy of responses. However, as it is part of a national project, it is a long instrument because it gives the possibility of other researchers studying other variables and relations (investigations that are already underway by the research team).

We have also to be alerted for the fact that the scales that we used give us the perceptions of the students, that sometimes is not the same as the reality. Besides that, it is important to think that, even if the students perceived good resources, that supposedly make them want to be entrepreneurs, their personal resources can make them think that they are not able to start a new business by themselves.

Regarding the composite score calculated for the role of the HEI, it should have been the same (and not similar) in the both samples. In the future, this study should be replicated with more specific measures of the role of the family and the HEI in the entrepreneurial potential. On the other hand, future researches should also test which other factors could have influenced in the entrepreneurial potential of students in the last 10 years.

In addition to these suggestions, in the future research, would also be interestingly perceive better the reasons why the role of the family has become negative. In the other hand it will be interesting to study why the siblings seems to influence more negatively the entrepreneurial potential of students than the parents, since there are no Portuguese literature that explains that fact. The same happens regarding the positive influence of having others entrepreneurs in family in the students' entrepreneurial potential, which seems to contradict a little bit our first hypothesis.

It would also be interesting to investigate new factors that may influence students' motivation to become entrepreneurs, as well as the most effective methods that HEI can use to motivate students for entrepreneurship (e.g., the use of new technologies in entrepreneurship education).

Finally, we want to alert the HEI to improve the education in entrepreneurship, in all the areas of studies, in order to train more successful entrepreneurs and, consequently, creating conditions to promote social, economic and technological development of the country.

10. Appendixes

Appendix 1:

Table 2. Adjustment indexes obtained in confirmatory factor analysis in the three scales used to measure the entrepreneurial potential of higher education students and in the HEInnovate scale.

	NFI		SRMR		TLI		CFI		RMSEA	
	2009	2018	2009	2018	2009	2018	2009	2018	2009	2018
Personal Motivations	.91	.87	.06	.08	.89	.86	.91	.89	.07	.08
Incentives	.91	.92	.04	.06	.96	.91	.97	.93	.06	.08
Oportunities and Resources	.95	.87	.05	.07	.95	.86	.96	.89	.05	.08
HEInnovate	-	.93	-	.04	-	.94	-	.94	-	.06

Appendix 2:

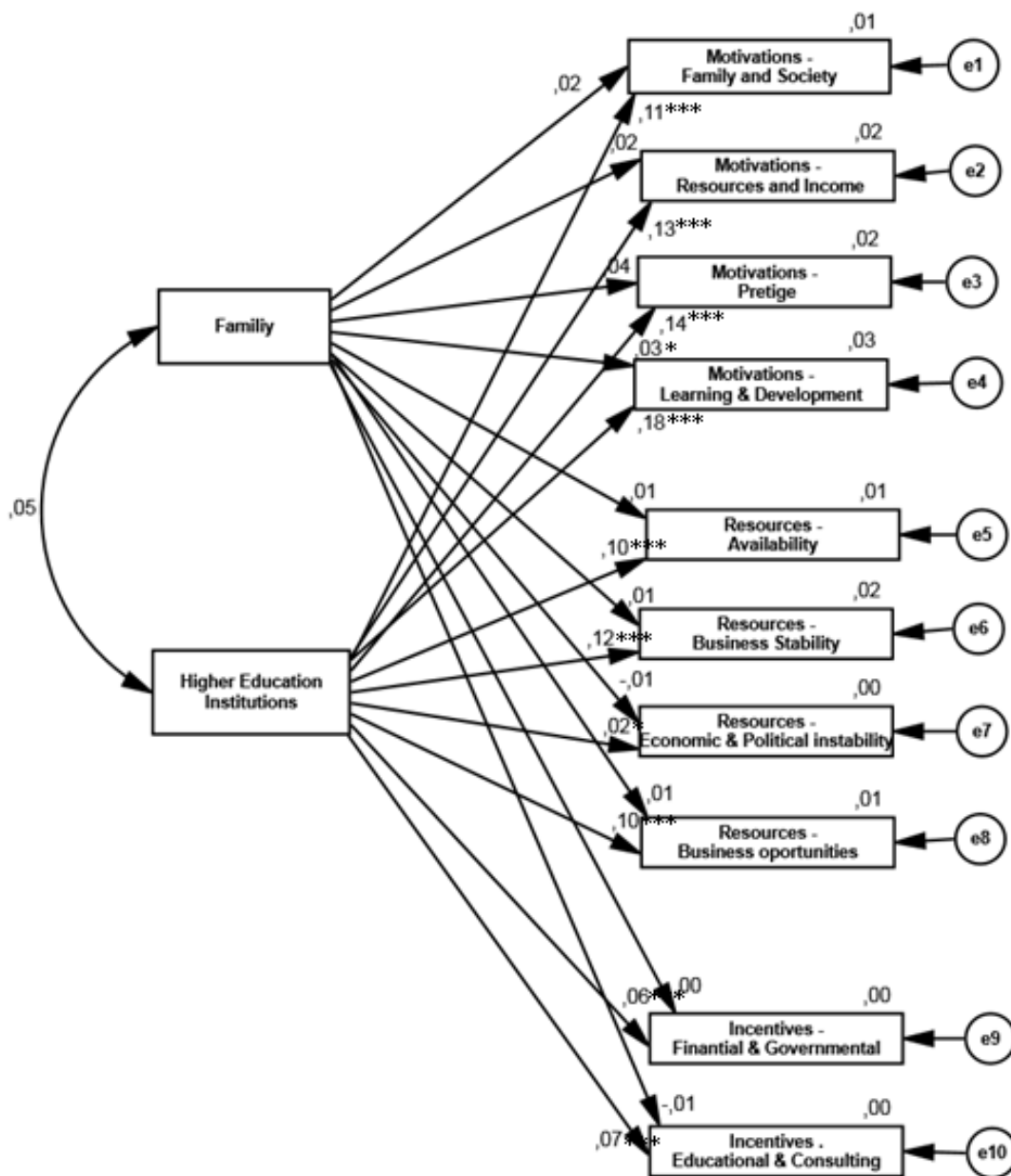


Figure 1. The influence of Family and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 1: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 3:

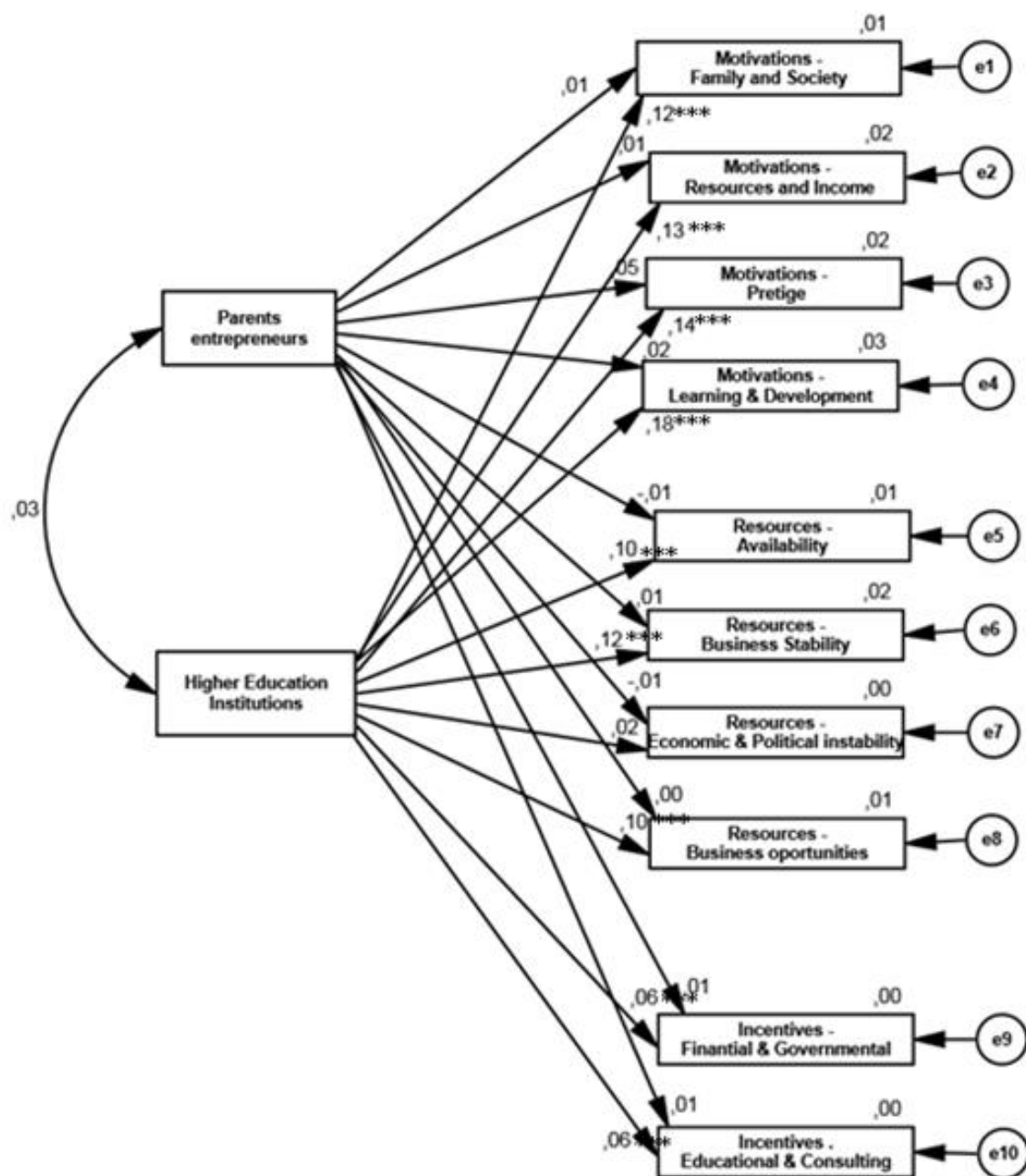


Figure 2. The influence of having Parents Entrepreneurs and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 1: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 4:

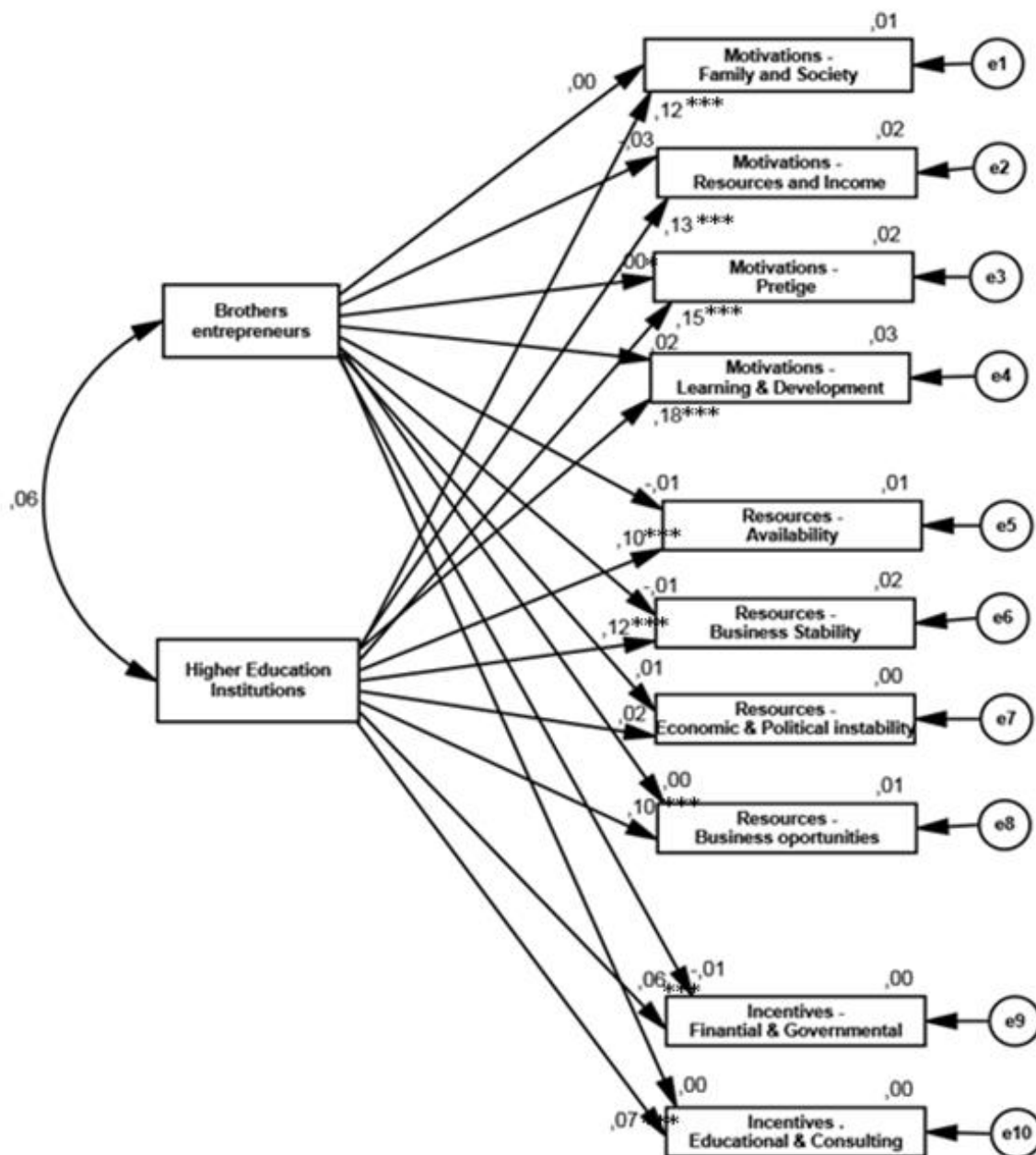


Figure 3. The influence of having Siblings Entrepreneurs and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 1: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 5:

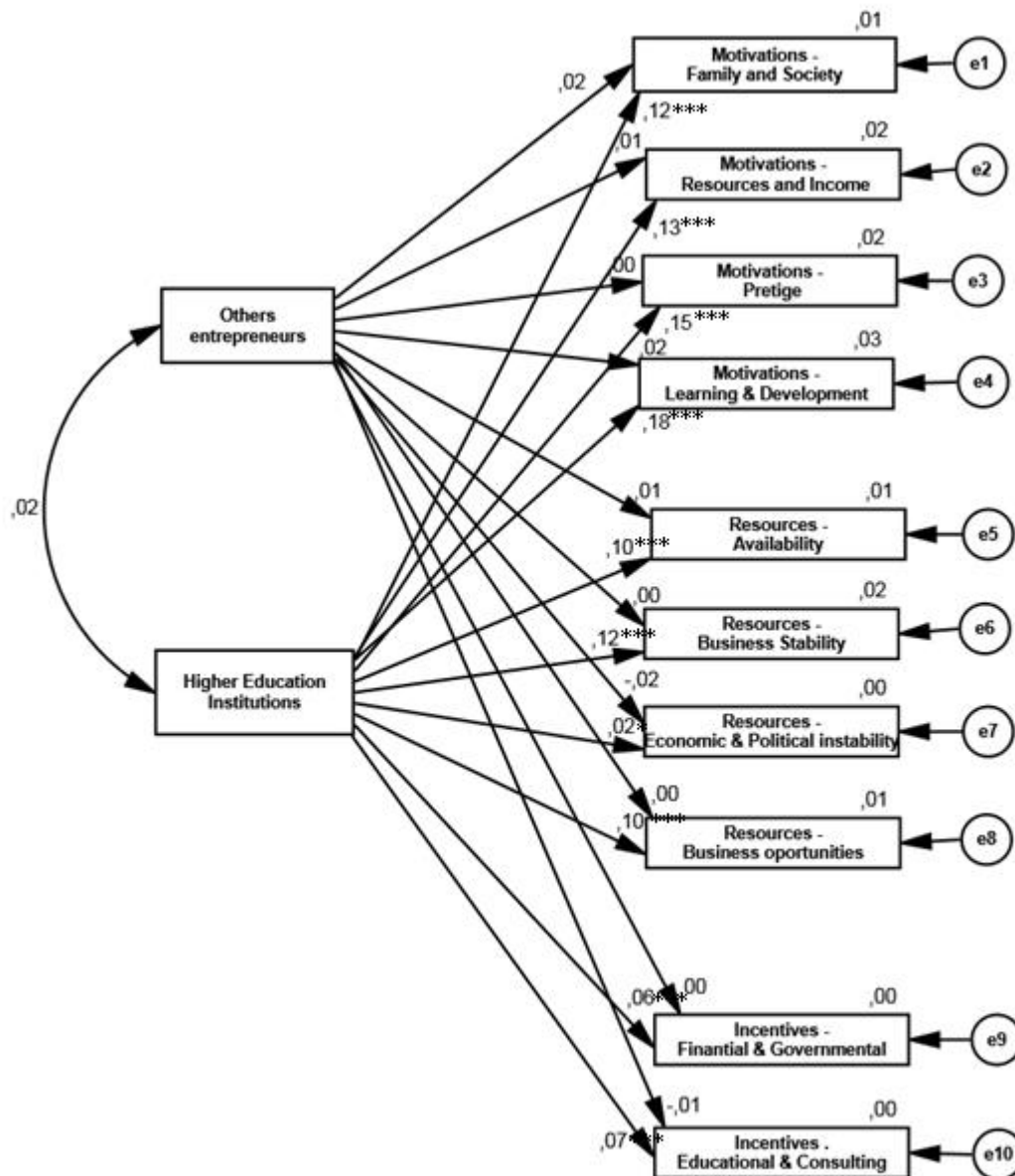


Figure 4. The influence of having Others Entrepreneurs in family and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 1: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 6:

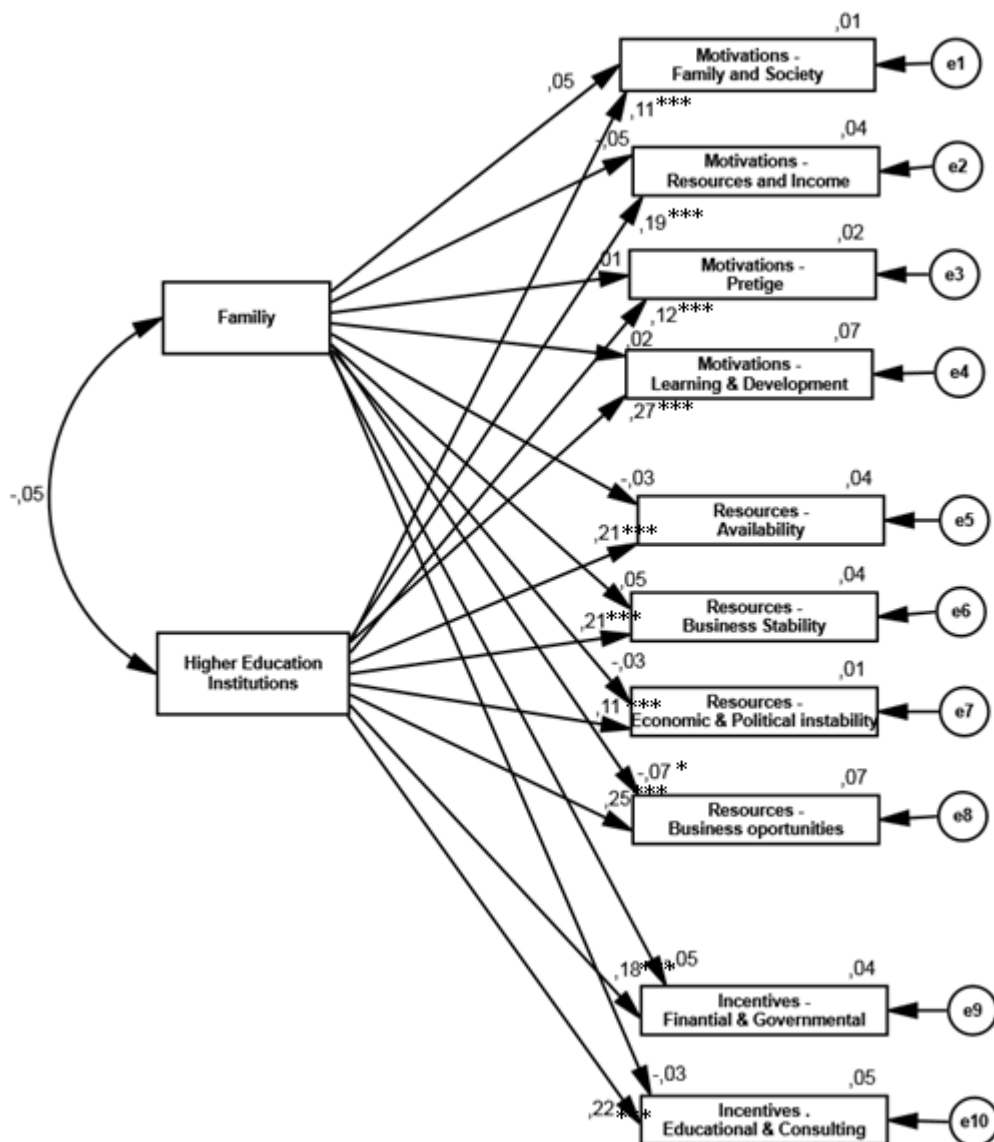


Figure 5. The influence of the Family and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 2: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 7:

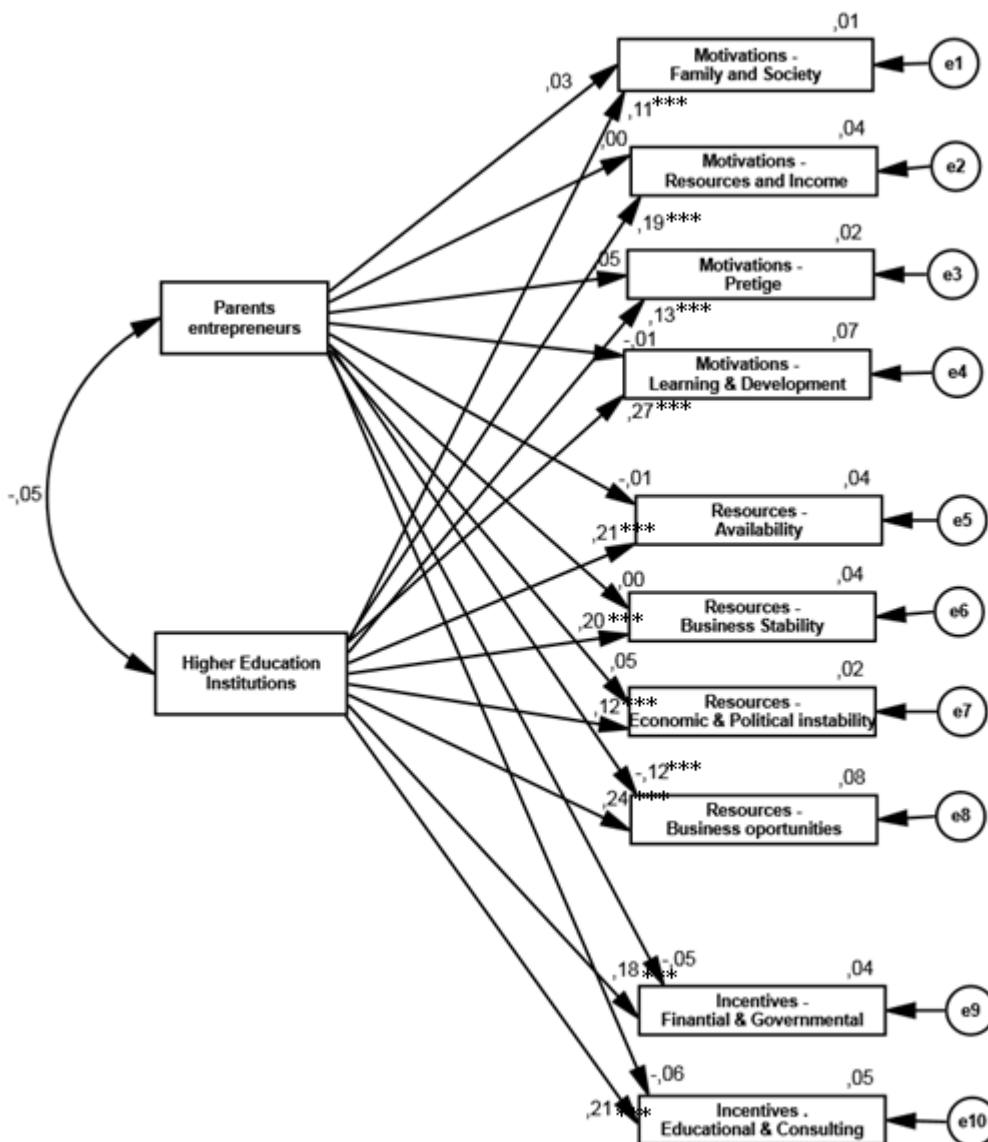


Figure 6. The influence of having Parents Entrepreneurs and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 2: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 8:

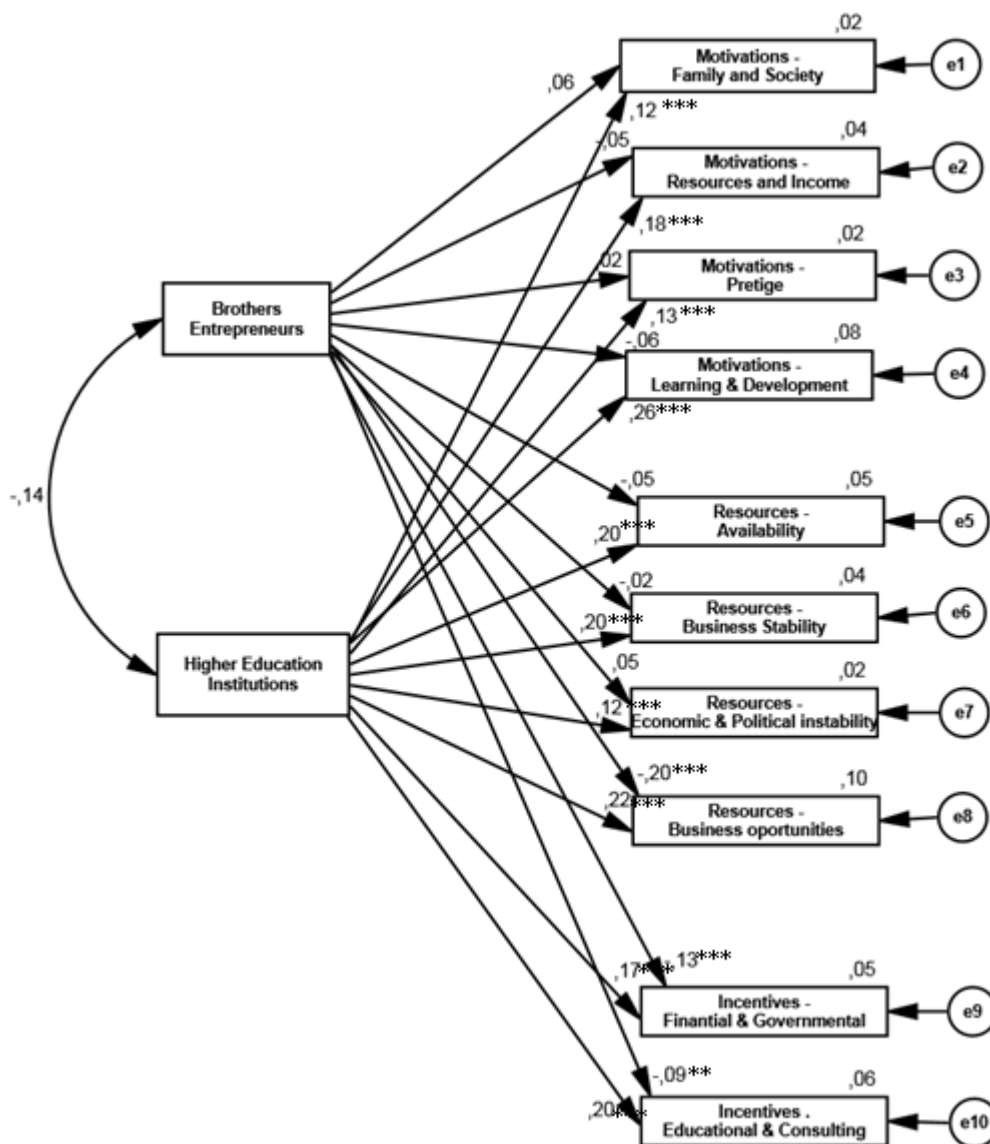


Figure 7. The influence of having Siblings Entrepreneurs and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 2: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 9:

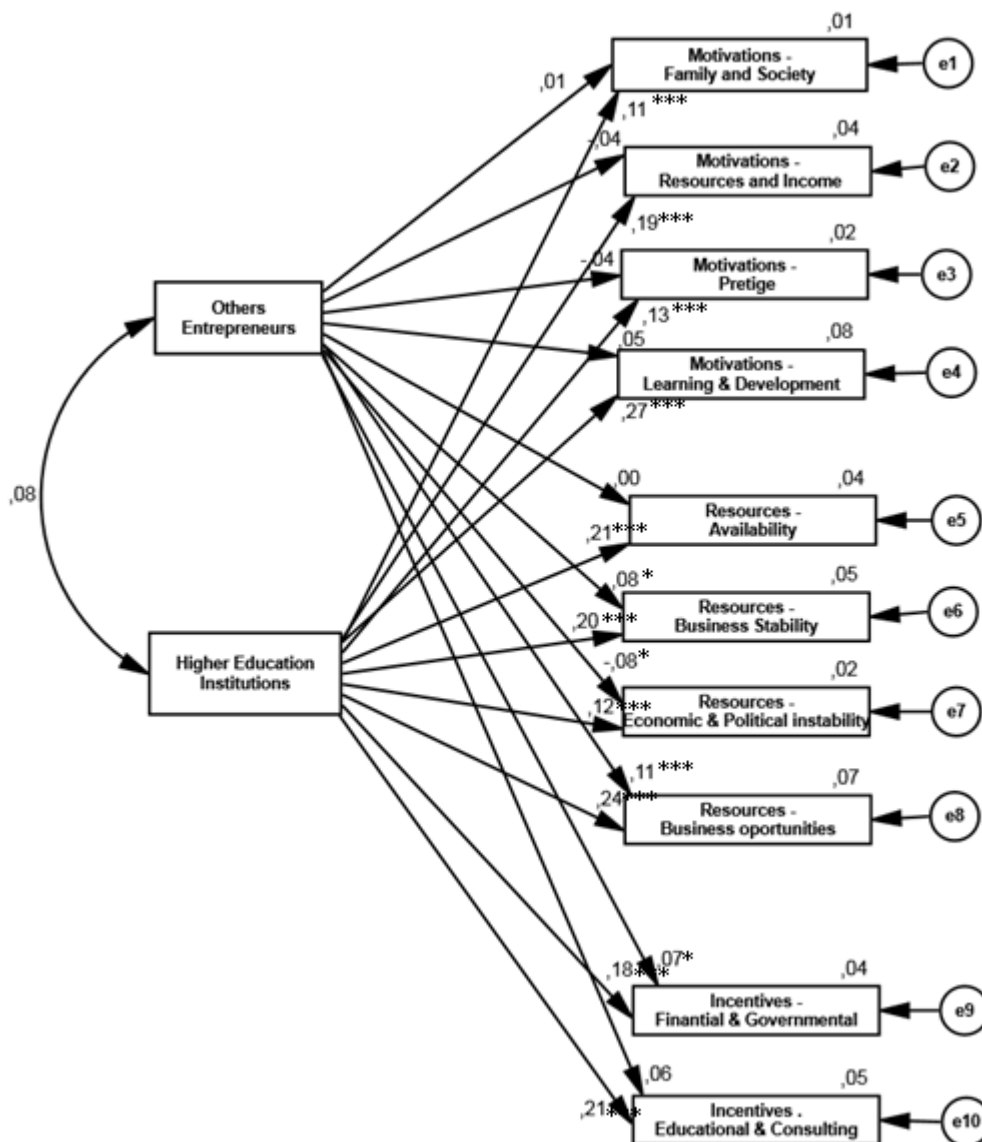


Figure 8. The influence of having Others Entrepreneurs in the family and Higher Education Institutions on the entrepreneurial potential of students (measure by the scale of entrepreneurial motivations, scale of the incentives to undertake and by the scale of the opportunities and resources to undertake) in the sample 2: standardized regression weight (β) and R^2 ; * $p < .05$ ** $p < .01$ *** $p < .001$.

Appendix 10:

Table 8: Intercorrelation matrix between the family and higher education institutions and the entrepreneurial potential of students (entrepreneurial motivations, perception of incentives and the perception of resources to undertake), divided by Course Area, in the sample 1 (2009).

<i>Social Sciences</i>	1	2	3	4	5
1. Role of Higher Education Institutions	1	,04	,17**	,14**	,09**
2. Entrepreneurs in Family ^a		1	,04	-,00	,01
3. Entrepreneurial Motivations Global Scale			1	,56**	,44**
4. Incentives to Undertake Global Scale				1	,63**
5. Opportunities and Resources Global Scale					1
<i>Health</i>	1	2	3	4	5
1. Role of Higher Education Institutions	1	,01	,17**	,12**	,04
2. Entrepreneurs in Family ^a		1	,03	-,01	-,05
3. Entrepreneurial Motivations Global Scale			1	,49**	,38**
4. Incentives to Undertake Global Scale				1	,64**
5. Opportunities and Resources Global Scale					1
<i>Technology</i>	1	2	3	4	5
1. Role of Higher Education Institutions	1	,05*	,18**	,10**	,03
2. Entrepreneurs in Family ^a		1	,03	,04	,03
3. Entrepreneurial Motivations Global Scale			1	,55**	,42**
4. Incentives to Undertake Global Scale				1	,62**
5. Opportunities and Resources Global Scale					1
<i>Management</i>	1	2	3	4	5
1. Role of Higher Education Institutions	1	,06*	,20**	,12**	,11**
2. Entrepreneurs in Family ^a		1	,06*	,01	,01
3. Entrepreneurial Motivations Global Scale			1	,49**	,41**
4. Incentives to Undertake Global Scale				1	,63**
5. Opportunities and Resources Global Scale					1

^aDummy Variable (0=No; 1=Yes); ** Correlation is significant at the 0.01 level (2-tailed);

*Correlation is significant at the 0.05 level (2-tailed)

Appendix 11: Questionnaire

Motivações Empreendedoras dos Estudantes

Este inquérito surge na sequência de uma investigação realizada acerca do impacto das atividades empreendedoras desenvolvidas através do concurso Poliemprende- *Project Innovation Networking* na atitude e comportamento empreendedor dos estudantes. A adaptação do instrumento a esta investigação foi possível por cortesia da coordenação do PIN. Assim, solicita-se a sua colaboração que deverá ocorrer de forma consciente e responsável. Será garantido o anonimato e a confidencialidade das respostas.

Grupo I

Escreva as 5 primeiras palavras ou expressões que lhe vêm à mente ao ler o termo “Empreendedorismo”:

- 1.
- 2.
- 3.
- 4.
- 5.

Grupo II

ACERCA DA SUA VIDA PROFISSIONAL:

1. Tem atividade profissional?

- Não
 Sim, por conta de outrem
 Sim, por conta própria

2. Se já trabalha por conta de outrem, gostaria de ser trabalhador por conta própria (autónomo)?

- Não
 Sim

3. Considera-se capaz de criar uma empresa?

- Não
 Sim

4. Já teve alguma ideia de negócio?

- Não
 Sim

5. Qual a origem da ideia? (escolha a/as opções que considera adequada(s))

- Resultado de investigação
 Necessidade de mercado

6. Qual é o mercado(s) a que se destina a sua ideia? (escolha a/as opções que considera adequada(s))

- Nacional
 Internacional

7. Qual é a atividade na qual a sua ideia/produto se insere? (escolha a/as opções que considera adequada(s))

- Serviços
 Comércio
 Agricultura/Pecuária
 Indústria
 Outros

8. Já implementou a sua ideia de negócio?

- Não
 Sim

Grupo III

Criação do Negócio, Ideia e Meio Envolvente

***De entre as seguintes afirmações classifique cada uma quanto ao grau de importância para criar ou vir a criar uma empresa/negócio, usando a escala: 1 = Pouco importante / 5 = Muito importante**

	1	2	3	4	5
1. Desenvolver uma ideia para um produto/negócio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Elevar a minha posição na sociedade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Ter mais influência na minha comunidade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Ser respeitado pelos meus amigos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Conseguir realizar algo e ser reconhecido por isso	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Contribuir para o bem-estar dos meus familiares	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Contribuir para a sociedade onde vivo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Dar segurança à minha família	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Fazer sentido para a minha vida	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Como um meio para reduzir a carga fiscal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Aceitar um desafio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Desejo de ter proveitos elevados	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Ser inovador e estar a par das tecnologias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Continuar a aprender	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Dar maior flexibilidade a mim e à minha família	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Ter acesso a lucros indiretos tais como isenções fiscais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Existir disponibilidade de capital de familiares e/ou amigos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Grupo IV

***De entre as seguintes afirmações classifique os fatores do meio envolvente quanto ao grau de importância para criar ou vir a criar uma empresa/negócio, usando a escala: 1 = Pouco influentes / 5 = Muito influentes**

1. Disponibilidade de mão-de-obra especializada	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Disponibilidade de gestores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Disponibilidade de mão-de-obra especializada em novas tecnologias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Disponibilidade de fornecedores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Disponibilidade de máquinas e equipamentos de mercado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Disponibilidade de capital nas Instituições financeiras	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Disponibilidade de capital por parte de clientes e fornecedores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Existência de clientes interessados no produto/serviço	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Clientes de fácil acesso	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Expansão da economia local	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Existência de grandes incentivos para encorajar o início do negócio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Existência no mercado de produtos/similares mas não iguais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Clientes na sua maioria locais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Facilidade para identificar o cliente tipo (característico)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. As vendas do setor pretendido serem estáveis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Tecnologia no setor pretendido ser estável	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Existir um grande número de negócios na área onde vivo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Existir um grande número de negócios no setor pretendido	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Existir um grande número de negócios falidos na área onde vivo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Existir um grande número de negócios falidos no setor pretendido	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Existir incerteza política no país	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. As margens de lucro no setor pretendido serem estáveis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Grupo V

***De entre as seguintes afirmações classifique o grau de importância que atribui aos serviços de apoio para criar ou vir a criar uma empresa/negócio, usando a escala: 1 = Pouco importante / 5 = Muito importante**

	1	2	3	4	5
1. Serviços legais ou institucionais de baixo custo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Serviços de consultadoria de baixo custo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Cursos de formação para empresários	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Informação atualizada no mercado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Programas de formação especializados	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Serviços de aconselhamento	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Empréstimos com taxas de juro acessíveis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Subsídios governamentais para a indústria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Subsídios governamentais para a saúde	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Subsídios para a instalação e arranque	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Garantias de empréstimo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Capital público de risco	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Subsídios para apoio de novos produtos e processos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Organismos de apoio às empresas locais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Serviços de contabilidade de baixo custo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Grupo VI

Todas as pessoas têm uma ideia de como são. A seguir estão apresentados diversos atributos, possíveis de o/a descreverem como a pessoa que é. Leia cada questão e responda verdadeira, espontânea e rapidamente a cada uma delas. Ao responder considere, sobretudo, a sua maneira de ser habitual, e não o seu estado de espírito de momento. Preencha a opção que melhor se adequa às suas características.

	1	2	3	4	5
1. Consigo resolver os problemas difíceis se for persistente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Se alguém se opuser, consigo encontrar os meios e as formas de alcançar o que quero	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Para mim é fácil agarrar-me às minhas intenções e atingir os meus objetivos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Estou confiante que poderia lidar eficientemente com acontecimentos inesperados	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Graças aos meus recursos, sei como lidar com situações imprevistas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Consigo resolver a maioria dos problemas se investir o esforço necessário	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Perante dificuldades consigo manter a calma porque confio nas minhas capacidades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Quando confrontado com um problema, consigo geralmente pensar numa solução	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Consigo geralmente lidar com tudo aquilo que me surge pelo caminho	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Grupo VII

Acerca do Empreendedorismo.

1. O seu curso tem ou teve conteúdos de empreendedorismo?

- Não
 Sim

2. Se sim:

- Não frequentou
 Frequentou
 Deseja frequentar

3. Caso tenha frequentado, indique o tipo:

- Unidade Curricular
 Módulo
 Disperso noutra Unidade Curricular

4. Já ouviu falar do Concurso Poliempreeende na sua escola?

- Não
 Sim

5. Se sim, já participou?

- Não, e não considero participar
- Não, mas considero vir a participar
- Sim, apenas nas ações de divulgação e/ou oficinas
- Sim, com projeto no concurso regional

Grupo VIII

A sua perspetiva perante o Empreendedorismo. Avalie cada afirmação abaixo de acordo com a maneira como **NORMALMENTE** se sente, usando a escala: **1 = Discordo totalmente / 5 = Concordo totalmente.**

	1	2	3	4	5
1. É fundamental delinear por escrito os objetivos de um negócio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Gosto de pensar que sou uma pessoa criativa.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Nunca terei a certeza se o negócio terá sucesso.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Quero que o meu negócio cresça e se torne forte.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. A coisa mais importante que farei será o planeamento do meu negócio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Gosto de abordar as situações de uma perspetiva analítica.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Não vou descansar até que o meu negócio seja o melhor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. O planeamento deve ser feito por escrito para ser eficaz.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Penso que irei passar provavelmente demasiado tempo de volta do negócio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Costumo deixar a cabeça controlar o coração.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Uma das coisas mais importantes na minha vida será o meu negócio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Sou responsável por pensar e planear o negócio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. As pessoas que trabalharem para mim terão de trabalhar arduamente.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Se gerir o meu negócio se tornar demasiado simples, iniciarei outro negócio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Considero-me uma pessoa imaginativa.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. O desafio de ser bem-sucedido é tão importante quanto o dinheiro.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Estou sempre à procura de novas maneiras de fazer as coisas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Penso que é importante ser lógico.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Gosto mais do desafio da invenção do que de qualquer outra coisa.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Vou passar tanto tempo a planear como a gerir o meu negócio.
21. Nada é rotineiro na gestão de um negócio.
22. Prefiro pessoas imaginativas.
23. Em alguns aspetos seremos melhores do que a concorrência.
24. Os meus objetivos pessoais vão girar em torno do negócio.
25. Gosto da ideia de tentar superar a concorrência.
26. Se quisermos superar a concorrência, teremos de correr alguns riscos.
27. Pedir um empréstimo é apenas mais uma decisão empresarial.
28. A qualidade e o serviço não são suficientes. Teremos de ter uma boa imagem.
29. As pessoas consideram-me uma pessoa trabalhadora.
30. Se quisermos que o negócio cresça, temos de assumir alguns riscos.
31. Penso que não vou perder grande coisa se optar por não trabalhar por conta de outrem.
32. Estou preocupado com os direitos das pessoas que irão trabalhar para mim.
33. É mais importante ver as várias possibilidades numa situação.

Grupo IX

Como é a minha Universidade. Avalie cada afirmação abaixo de acordo com a avaliação que faz do grau de empreendedorismo da sua Universidade, usando a escala: 1 = **Discordo totalmente** a 5 = **Concordo totalmente**

- | | 1 | 2 | 3 | 4 | 5 |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. O empreendedorismo é uma parte importante da estratégia da minha Universidade. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. Existe um alto compromisso na implementação da agenda empreendedora. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. Existe um modelo de coordenação e integração de atividades empreendedoras em toda a Universidade. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. A Universidade encoraja e apoia as suas faculdades e unidades a atuarem de forma empreendedora. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. A Universidade é um motor do empreendedorismo e da inovação no desenvolvimento regional, social e comunitário. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. Os objetivos empresariais são apoiados por uma vasta gama de fontes de financiamento e investimento sustentáveis. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. A Universidade tem capacidades e uma cultura que permitem construir novas relações e sinergias em toda a instituição. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8. A Universidade está disposta a contratar e recrutar indivíduos com atitudes, comportamentos e experiências empreendedoras.
9. A Universidade investe no desenvolvimento dos seus colaboradores para apoiar o empreendedorismo.
10. São concedidos incentivos e recompensas aos colaboradores que apoiem ativamente a agenda empreendedora.
11. A Universidade oferece diversas oportunidades de aprendizagem formal para desenvolver competências empreendedoras.
12. A Universidade oferece diversas oportunidades e experiências de aprendizagem informal para estimular o desenvolvimento de competências empreendedoras.
13. A Universidade valida os resultados da aprendizagem empreendedora que impulsionam a conceção e concretização de um currículo empreendedor.
14. A Universidade concebe e disponibiliza o currículo aos seus parceiros.
15. Os resultados da investigação em empreendedorismo são integrados nas novas propostas de educação em empreendedorismo.
16. A Universidade sensibiliza para o valor do empreendedorismo.
17. A Universidade apoia os seus alunos e colaboradores para passarem da geração de ideias para a criação de empresas.
18. É oferecida formação para apoiar alunos e colaboradores a iniciarem e desenvolverem um negócio.
19. É oferecido apoio, *mentoring* e outras formas de desenvolvimento pessoal por indivíduos experientes da academia ou indústria.
20. A Universidade facilita o acesso a financiamento aos seus empreendedores.
21. A Universidade oferece ou facilita o acesso ao desenvolvimento de negócios.
22. A Universidade está empenhada na colaboração e no intercâmbio de conhecimentos com a indústria, o setor público e a sociedade.
23. A Universidade demonstra um envolvimento ativo em parcerias e relações com uma vasta gama de partes interessadas.
24. A Universidade tem fortes ligações com parques científicos e outras iniciativas externas.
25. A Universidade proporciona oportunidades para que os colaboradores e estudantes participem em atividades inovadoras com o ambiente empresarial/externo.
26. A Universidade integra atividades de investigação, educação e indústria para explorar novos conhecimentos.
27. A internacionalização é parte integrante da agenda empreendedora da Universidade.
28. A Universidade apoia explicitamente a mobilidade internacional dos seus colaboradores e dos seus estudantes.
29. A Universidade procura e atrai colaboradores internacionais e empreendedores.
30. As perspetivas internacionais estão refletidas na abordagem do ensino da Universidade.
31. A dimensão internacional reflete-se na abordagem da Universidade em matéria de investigação.

32. A Universidade avalia regularmente o impacto da sua agenda empreendedora.
33. A Universidade avalia regularmente a forma como os seus colaboradores e os recursos vão ao encontro da sua agenda empreendedora.
34. A Universidade avalia regularmente o ensino e a aprendizagem no que respeita ao empreendedorismo em toda a instituição.
35. A Universidade avalia regularmente o impacto do apoio ao arranque de negócios.
36. A Universidade avalia regularmente a colaboração e o intercâmbio de conhecimentos.
37. A Universidade avalia regularmente as atividades internacionais da instituição em relação à sua agenda empreendedora.

Grupo X

Informações Gerais

1. Género: <input type="radio"/> Feminino <input type="radio"/> Masculino	2. Idade: _____ anos	3. Estado Civil: <input type="radio"/> Solteiro(a)/Divorciado(a)/Viúvo(a) <input type="radio"/> Casado(a)/União de Facto
4. Tem empresários na família? <input type="radio"/> Não <input type="radio"/> Sim	5. Se sim, quem? <input type="radio"/> Pais <input type="radio"/> Irmãos <input type="radio"/> Outro: _____	6. Nacionalidade: _____
7. Já realizou algum programa de mobilidade (Ex: Erasmus)? <input type="radio"/> Não <input type="radio"/> Sim	8. Universidade em que estuda atualmente: _____	9. Tipologia do Curso: <input type="radio"/> Licenciatura <input type="radio"/> Mestrado Integrado <input type="radio"/> Mestrado <input type="radio"/> Doutoramento
10. Nome do Curso: _____ _____	11. Ano do Curso <input type="radio"/> 1º Ano <input type="radio"/> 2º Ano <input type="radio"/> 3º Ano <input type="radio"/> 4º Ano <input type="radio"/> 5º Ano	12. Condição perante o Ensino: <input type="radio"/> Estudante <input type="radio"/> Trabalhador-Estudante

Appendix 12:



FCEUC FACULDADE DE PSICOLOGIA
E DE CIÊNCIAS DA EDUCAÇÃO
UNIVERSIDADE DE COIMBRA

Extrato das Deliberações da Comissão de Ética e Deontologia da Investigação Reunião extraordinária de 25 de janeiro de 2018

Aos vinte e cinco dias do mês de Janeiro de 2018, pelas 9 horas e 30 minutos, reuniu a Comissão de Ética e Deontologia da Investigação da Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra. Entre outros assuntos, aprovou, por unanimidade, o projeto de investigação “Motivações Empreendedoras dos Estudantes”, apresentado pelos Doutores Pedro Miguel Dinis Santos Parreira, Carla Maria Santos de Carvalho, Lisete dos Santos Mendes Mónico, Fabricia Teixeira Ribeiro, César Fonseca e Luciene Muniz Braga.

Coimbra, 25 de Janeiro de 2018

P^{la} CED

Maria Jorge Santos-Ferreira Rama Ferro
(Professora Auxiliar)

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