



Promoting entrepreneurial intentions from adolescence: The influence of entrepreneurial culture and education

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ABSTRACT

From a young age, entrepreneurship intentions depend heavily on the culture of countries and the entrepreneurial contexts that will shape entrepreneurial archetypes about what defines an entrepreneur, and the influence of role models. All these aspects depend on the would-be entrepreneurs' personal characteristics, and are influenced by the entrepreneurship education they receive when they are young.

Most of the studies on youth entrepreneurship focus on university students. However, it is in adolescence that the personal characteristics of entrepreneurs are formed. This may be the reason why these studies mostly reach contradictory results about the importance of these programs.

From our sample of 1750 Portuguese students, we confirm the importance of entrepreneurial culture and education to promote entrepreneurial self-efficacy and develop entrepreneurial intentions.

Our results contribute to ascertaining the importance of entrepreneurial educational programs delivered in adolescence, adapted to the specific characteristics of the target populations (potential entrepreneurs) on the development of entrepreneurship intentions. Thus, it helps with the subsequent definition of educational policies to foster entrepreneurship development from adolescence.

1. Introduction

Entrepreneurship is important for economic development (Amorós et al., 2021; Donthu & Gustafsson, 2020; Galindo-Martín et al., 2021a; Guo et al., 2022; Gustafsson et al., 2018; Gebauer et al., 2011; López-Núñez et al., 2020; Metalana et al., 2021; Porter & Donthu, 2008; Ribeiro-Navarrete et al., 2021) and for sustainable development (Bouncken et al., 2022; Galindo-Martín et al., 2021b; Gu & Wang, 2022; Méndez-Picazo et al., 2021).

Analyzing entrepreneurship's potential among secondary school students means looking into what may influence their entrepreneurial intentions (Fayolle & Klandt, 2006). Entrepreneurial intentions consist of the desire to start a business, and thus are the basis of good predictions for development based on entrepreneurship (Krueger et al., 2000a), being a result of a state of mind of the entrepreneur.

Entrepreneurial intentions derive from the observance of certain entrepreneurs' characteristics, and are influenced by education

(Garrido-Yserte et al., 2020; López-Núñez et al., 2020; Fayolle and Linán, 2014; Block et al., 2011), existent entrepreneurial archetypes (Becker & Neuberger, 2019), and role models (Block et al., 2011). In particular, entrepreneurship education impacts on economic growth, promoting, at least indirectly, job creation and improving societal resilience and equality (Lackeus, 2015).

Despite adolescence being the period that some of the main characteristics of entrepreneurs start developing (Peterman & Kennedy, 2003), most of the existent studies for this subject are conducted amongst university students (Bird, 2015; Comisión Europea, 2016; Edelman et al., 2010; Krueger et al., 2000b; Nabi et al., 2017), which may explain the current disparity of research results regarding the importance of entrepreneurship's school programs for entrepreneurship development (Garrido-Yserte et al., 2020).

Drawing on the Theory of Planned Behavior and the Entrepreneurial Self-Efficacy principles, and given the complexity of entrepreneurship as a phenomenon, in this research we analyze the impact of

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entrepreneurship education to promote entrepreneurship intentions in secondary school students, especially considering two important topics: i) cultural aspects, namely those related with entrepreneurial archetypes derived from both the entrepreneurial culture of the country and of the school that shape young minds in terms of what it means to be an entrepreneur, and ii) the influence of role models to propel entrepreneurial intentions, considering the different entrepreneurs' personal conditions in terms of age and gender, as well as education and training, and their psychological characteristics, namely those related with the entrepreneurship venture.

The literature review is developed in the following section, aiming to support the proposed research model. Based on existent knowledge, we pursue the presentation of our research model and methodology and sample used to develop this research. We present the results, and we draw the conclusions, ending by presenting the research limitations and proposing future research on the topic.

2. Literature review

2.1. Theory of Planned behavior and entrepreneurial Self-Efficacy (ESE)

Self-efficacy is related with a person's beliefs in his/her capacity and motivation to mobilize resources and take the necessary steps to reach a certain purpose (Bandura, 1997; Wood & Bandura, 1989). Self-efficacy is related with the Theory of Planned Behavior (TPB) (Ajzen, 1991, 2011), since intentions may be considered the immediate antecedent of the related actions and, in this sense, may predict behaviors (Ajzen, 2020). Self-efficacy is one of the actions of perceived behavioral control (Ajzen, 2002), being identified with beliefs in individuals' capability to start up and perform the progress of action needed to yield given achievements (Chen et al., 1998; Wood & Bandura, 1989).

Education reinforces competencies and skills of potential entrepreneurs and improves their capabilities (including their psychological characteristics related with trust, risk aversion, etc.) thus reinforcing entrepreneurs' self-efficacy (Block et al., 2011).

These issues are important because they affect potential entrepreneurs' behavior and increase their entrepreneurial intentions (Belchior & Lyons, 2021), namely because ESE is influenced by psychological factors (like self-satisfaction, desire for autonomy, and entrepreneurs' risk aversion) (Porfírio et al., 2018).

2.2. Entrepreneurship education and personal characteristics

The relation between entrepreneurship and education, and its effect on entrepreneurial intentions has long been studied (Armuna et al., 2020; Kong et al., 2020; Loi et al., 2016a; Krueger et al., 2000a; Mcgee et al., 2009). The way entrepreneurship education courses are built must accompany the complexity of the entrepreneurship process, and their contents become relevant to explain the capacity to generate entrepreneurial intentions, and to really promote entrepreneurship development (Ferreira et al., 2017; Mueller, 2011).

Entrepreneurship skills are important for any person, independently of whether or not they are an entrepreneur. Entrepreneurship education refers to the promotion of individual capacities to transform ideas into actions (European Commission, 2019). Entrepreneurial education is based on certain criteria that include the precise definition of goals, its consideration as a learning process through all education levels and its integration into a curriculum with interdisciplinary approaches (Agencies, 2015; Fayolle et al., 2019; Gibb, 2011). Accordingly, the literature on entrepreneurship education must consider diversified strategies such as learning by doing (Chang et al., 2014), research-action (Warner, 2016), integration of entrepreneurship into the curricula (Daraban, 2016), innovation paradigm (Gibb & Price, 2014) and design thinking (Politańska, 2014). Although the learning methods developed in entrepreneurship education vary considerably, according to some authors learning must be based in real work situations to be effective in

terms of implementation of what managers learned (Henry et al., 2005). Complimentarily, entrepreneurship education courses must ensure capacity to develop entrepreneurs' psychological characteristics and a practical and efficient way to deal with management issues surrounding entrepreneurial ventures (Loi et al., 2016).

Entrepreneurial intention is important to predict entrepreneurial behavior (Ferreira et al., 2012; Krueger Jr et al., 2000) and the role of culture in diverse countries explains entrepreneurial intentions based upon motivational perceptions (Liñán & Chen, 2009). Heuer & Kolvereid (2014) as well as Sánchez (2013) have analyzed the impact of entrepreneurship education in entrepreneurial intentions having found a strong direct relationship between participation in extensive entrepreneurship education programs and entrepreneurial intentions. These relationships, however, are not straightforward (Volery, Müller, & Oser, 2013; Athayde, 2009; Atienza-Sauquillo et al., 2016; Johansen & Schanke, 2014; Pihie & Bagheri, 2010) and up to now it has been difficult to generalize the obtained results for this topic (Fayolle & Liñán, 2014).

According to Garrido-Ysert et al. (2020), in Spanish secondary schools, student characteristics, such as having a positive outlook when being open to learning, or identifying customer needs and facing problems, significantly and positively impact entrepreneurship intentions of 'potential entrepreneurs for opportunity'. In the case of the entrepreneurship intentions of 'potential entrepreneurs out of need', they are positively influenced by openness to learning, consistency in work and initiative (ibidem).

In their analysis of secondary school learners in South Africa, Mothibi & Malebana (2019) concluded that attitude towards entrepreneurship and perceived behavior control was positively related to entrepreneurship intentions; while in their study of secondary students in Indonesia, Purwana et al. (2017) concluded that entrepreneurship intentions are significantly impacted by education. The same idea was supported by Xu et al. (2016) in a study carried out in Chinese secondary schools.

Studying vocational secondary schools in China, Ni & Ye (2018) stated that entrepreneurship education, entrepreneurial competence and entrepreneurial knowledge had a significant and positive influence on entrepreneurship intentions, bearing in mind that entrepreneurial competence and entrepreneurial knowledge had the mediating role.

In a study of technical and vocational education and training institutions in Malaysia, Ibrahim et al. (2015) found that entrepreneurship education had a positive impact on entrepreneurship intentions, especially when associated with networking, communication abilities and identification and evaluation of business opportunities. In a similar study analyzing technical-vocational education and training students in Ethiopia, Buli & Yesuf (2015) concluded that a favorable personal attitude toward entrepreneurship and perceived behavioral control positively influence entrepreneurship intentions. Contrarily, in their analysis of vocational training programs in Portugal, Galvão et al. (2018) found that entrepreneurship education had no influence on entrepreneurship intentions.

Personal characteristics influence entrepreneurial self-efficacy and may thus explain entrepreneurial intentions (Park, 2017), whereas gender and age assume an important role (Liñán et al., 2005; Reynolds, 1997; Shane et al., 1991). Male students score higher than female students on innovation and personal control (Harris & Gibson, 2008) as well as entrepreneurial self-efficacy (Wilson et al., 2007), while female students tend to score higher in achievement motivation (Kundu & Rani, 2008) and academic performance (Johansen & Schanke, 2014). Xu et al. (2016) concluded that male students showed higher scores than female students in terms of entrepreneurship intentions. Purwana et al. (2017) found that scores of female secondary students were greater than those of male students regarding two dimensions of entrepreneurship intentions: 'confidence' and 'doubt'.

Garrido-Ysert et al. (2020) found that the characteristics of being open to learning and identifying customer needs had a positive and

significant impact on entrepreneurship intentions of female ‘potential entrepreneurs for opportunity’, while in the case of female ‘potential entrepreneurs out of need’ the same result is influenced by initiative, openness to learning and consistency in work. In the case of male ‘potential entrepreneurs for opportunity’, having a positive outlook when facing problems had a significant and positive influence on entrepreneurship intentions.

Openness to learning and consistency in work also contributed positively and significantly to entrepreneurship intentions of male ‘potential entrepreneurs out of need’. In their study in Australian secondary schools, [Shahin et al. \(2021\)](#) found that female students’ entrepreneurial attitude was positively associated with their entrepreneurial intentions. The analysis also concluded that female students’ entrepreneurial attitude mediates the relationship between entrepreneurial inspiration and entrepreneurial intentions, and between entrepreneurial learning and entrepreneurial intentions (ibidem).

In the context of entrepreneurial education, older students showed more human-capital assets ([Kolvereid, 1996](#)), which in turn were reflected in increased entrepreneurial intention. ([Volery et al., 2013](#)).

2.3. Importance of context and entrepreneurial archetypes

Culture, related with a set of values that influence people’s life, can be considered a determinant of entrepreneurial activity ([Noseleit, 2010](#)), although this may not be a consensual idea ([Thurik & Dejardin, 2012](#)). Factors like social-education context, life experiences and social contacts are reflected in the promotion of entrepreneurship behaviors affecting self-efficacy or resilience of entrepreneurs ([Luthans & Youssef-Morgan, 2017](#); [Newman et al., 2014](#); [Roche et al., 2014](#)). Entrepreneurship culture is often promoted by offering entrepreneurship education programs, which tend to positively affect entrepreneurship intentions ([Fayolle et al., 2006](#); [Walter & Block, 2016](#)).

To a certain extent, archetypes as proposed by [Jung \(1934 \[1981\]\)](#) are related with role models but go beyond ([Becker and Neuberg, 2019](#)). Archetypes derive from inherent dynamic patterns that result simultaneously from perception, memory, and action, which resonate with ancient motivational and emotional systems, describing how symbolic forms emerge from sub-symbolic and promoting new thinking to better explain how the mind effectively represents the complexities and challenges of social life ([Wikantiyoso et al., 2021](#)). Archetypes may have several benefits in terms of entrepreneurial intentions ([Becker & Neuberg, 2019](#); [Green, Fitzgerald, & Moore, 2019](#)).

In their study of students that attended secondary schools in Latin America, [Silveyra et al. \(2021\)](#) found that entrepreneurial self-efficacy positively impacted entrepreneurship intentions, showing that higher levels of students’ human flourishing were reflected in resilience, optimistic view, mood propensity towards positive events, good personal relationships and higher capability of identifying opportunities. The study of [Falck et al. \(2012\)](#) in OECD secondary schools concluded that peer group influence was significantly weaker in countries where on average more individuals decide about their life goals by themselves. Yet the authors did not find a significant association between institutional differences in terms of a country’s school system and entrepreneurial intentions.

2.4. Role models

Role models, understood as a person’s capacity to influence others’ behavior, are important to explain entrepreneurial intentions ([Abbasi-chavari & Moritz, 2021](#); [Bosma et al., 2012](#); [Gibson & Barron, 2003](#); [Kong et al., 2020](#)). Having a different positioning of mentors, for individuals, role models act as good examples of professional skills and personal attributes needed to achieve desired goals ([Abbasi-chavari & Moritz, 2021](#); [Gibson & Barron, 2003](#)). By setting a benchmark for individuals, the type of role models (businesspeople, media celebrities, politicians, relatives, etc) will influence the capacity of would-be

entrepreneurs, and especially young students, to concretize possible intentions to become entrepreneurs, overcoming possible problems related with a person’s natural fear of failure, and possible adverse contexts ([Kong et al., 2020](#)).

Extant studies on role models assume that early in life individuals tend to look for role models, while later in life individuals are supposed to be role models for others ([Gibson & Barron, 2003](#)). [Xu et al. \(2016\)](#) concluded that students whose close family had entrepreneurial experience showed higher scores in terms of entrepreneurship intentions. The study by [Mothibi & Malebana \(2019\)](#) of secondary schools in South Africa revealed that an entrepreneurial family background is significantly positively correlated to entrepreneurial intention.

The analysis of vocational training programs in Portugal by [Galvão et al. \(2018\)](#) also stated that students’ family entrepreneurship background increased entrepreneurship intentions. Moreover, the study of technical and vocational education and training institutions in Malaysia developed by [Ibrahim et al. \(2015\)](#) showed that entrepreneurship intentions were more developed on students who received positive perceptions from family, friends and teachers/mentors.

[Falck et al. \(2012\)](#) developed an analysis of OECD secondary schools having found that an increase in the share of students having at least one parent who is an entrepreneur was reflected in an increase in the probability of developing entrepreneurial intentions. [Buli & Yesud \(2015\)](#) studied technical-vocational education and training in Ethiopia having concluded that a student’s favorable perception of subjective norms inherent to friends and close family positively influenced entrepreneurship intentions.

3. Methodology

3.1. Sample

This research uses 1,750 Portuguese secondary school students, ranging from the 10th to the 12th grade. 46.1 % of students follow the vocational training system and 53.9 % are in the regular school system.

We use 14 school groups, mostly from the North of Portugal (93.6 %), with a minority of schools from the Centre of Portugal (2.7 %), and from Madeira Island (3.7 %). Just 8 % of the students of our sample were not able to follow the entrepreneurship education program entitled “Originals”, which balances the offering of some psychological tools to face entrepreneurship opportunities, with different management tools aiming to develop entrepreneurial competencies and attitudes among students.

A more detailed characterization of the sample is presented in the following tables. (see [Table 1](#)).

We observe that vocational studies have more men compared to women, while at the same time most of the young people are between 15 and 18 years old (pre-university students). (see [Table 2](#)).

The majority of vocational education students are older (mostly between 16 and 18 years old) than the students from the regular school (mostly between 15 and 17 years old).

The gender type distribution of students, according to the frequency of regular or vocational training, is presented in [Fig. 1](#) below:

3.2. Research method

This research is based on fuzzy-set qualitative comparative analysis

Table 1
Students by gender type.

Gender		Frequency	Valid Percentage	Accumulated
Valid	Female	895	51.1	51.1
	Male	855	48.9	100.0
	Total	1,750	100.0	

Table 2
Students assessing vocational educational programs.

		Frequency	Valid Percentage	Accumulated
Valid	Yes	807	46.1	46.1
	No	943	53.9	100.0
	Total	1,750	100.0	

(fsQCA) (Fiss, 2011; Kraus et al., 2016; Roig-Tierno et al., 2017; Schneider & Wagemann, 2012; Woodside, 2013) in order to identify and assess the configurations of conditions resulting from our research model, i.e., to identify and assess the aggregated characteristics as typologies of students that already feel like an entrepreneur or feel ready to become an entrepreneur.

As Fiss (2011) notes, the typologies identified through the use of fsQCA can be valuable in management-related fields, especially organizational and strategy research, but fsQCA use is also common in marketing, innovation and entrepreneurship research (Kraus et al., 2016). Furthermore, compared to alternative data analysis approaches (Roig-Tierno et al., 2017; Woodside, 2013), fsQCA presents advantages, including the admission that alternative configurations may lead to the same outcome (Kraus et al., 2016).

FsQCA is a set-theoretic method that allows analysis of cases (for instance, an individual or an organization) as configurations of conditions (Fiss, 2011; Roig-Tierno et al., 2017), i.e., its attributes, and identification of how those conditions are associated with the possible outcomes (Fiss, 2011).

To use fsQCA, after removing missing values (especially in the questions regarding entrepreneurship education and entrepreneurship intentions), the data collected in the form of variables needs to be calibrated (Roig-Tierno et al., 2017). Calibration is a process that requires the researcher to identify-three qualitative anchors, i.e., thresholds for fully out, fully in, and maximum ambiguity allowing the variables to be rescaled to conditions ranging from 0 to 1. In this context, 0.5 represents the maximum ambiguity (neither in nor out) (Fiss, 2011; Woodside, 2013). A synthesis of the variables used and the calibration decisions were as per Table 3 below:

Considering the characteristics of the analysis, after the calibration, to avoid dropping cases, we replaced the maximum ambiguity values (0.5) by 0.499. After this, the first step of the analysis consists of the necessity analysis, aiming to identify conditions that are always present when a certain outcome occurs. The second step implies the use of the truth table algorithm that allows the identification of configurations of conditions that occur in the presence (or absence) of the outcome. The truth table algorithm data matrix, through the standard analysis, allows the identification of the complex solution, the intermediate solution and the parsimonious solution but, from these, the intermediate solution may be the most recommended (Kraus et al., 2016) to proceed with the analysis of the resulting configurations. Finally, the consistency and coverage of the solutions should be assessed (Woodside, 2013), although Schneider & Wagemann (2012, p. 139) argue that, in the case of coverage, “there is no coverage”.

Finally, although fsQCA was initially developed for small samples, it has been successfully extended to large samples (fsQCA) (Fiss, 2011; Kraus et al., 2016), as is the case in this research, but this implies that, in the truth table algorithm step, aside from the consistency and PRI (proportional reduction in inconsistency) thresholds (Schneider & Wagemann, 2012), a cases’ threshold is also applied (Kraus et al., 2016).

3.3. Research design

Based on the literature review, and related variables that may explain how entrepreneurship intentions are formed, we propose to use the following research model as the basis of this research:

(EI) Entrepreneurship Intentions = f {(P) Personal Characteristics + (R) Role Model + (C) Cultural Aspects/Entrepreneurship Archetypes}.

EI - Entrepreneurship Intention = f {[(P) Personal Characteristics: ((P_a) Gender + (P_b) Age) + P (c) Education Type] + [(R) Role Model: ((R_a) Gender + (R_b) Type of family-ties + (R_c) Type of Role Model] + [(C) Cultural Aspects/Entrepreneurship Archetype: ((C_a) Country’s Culture) + ((C_b) School’s culture)] }.

Translated into the following research model:

See Fig. 2.

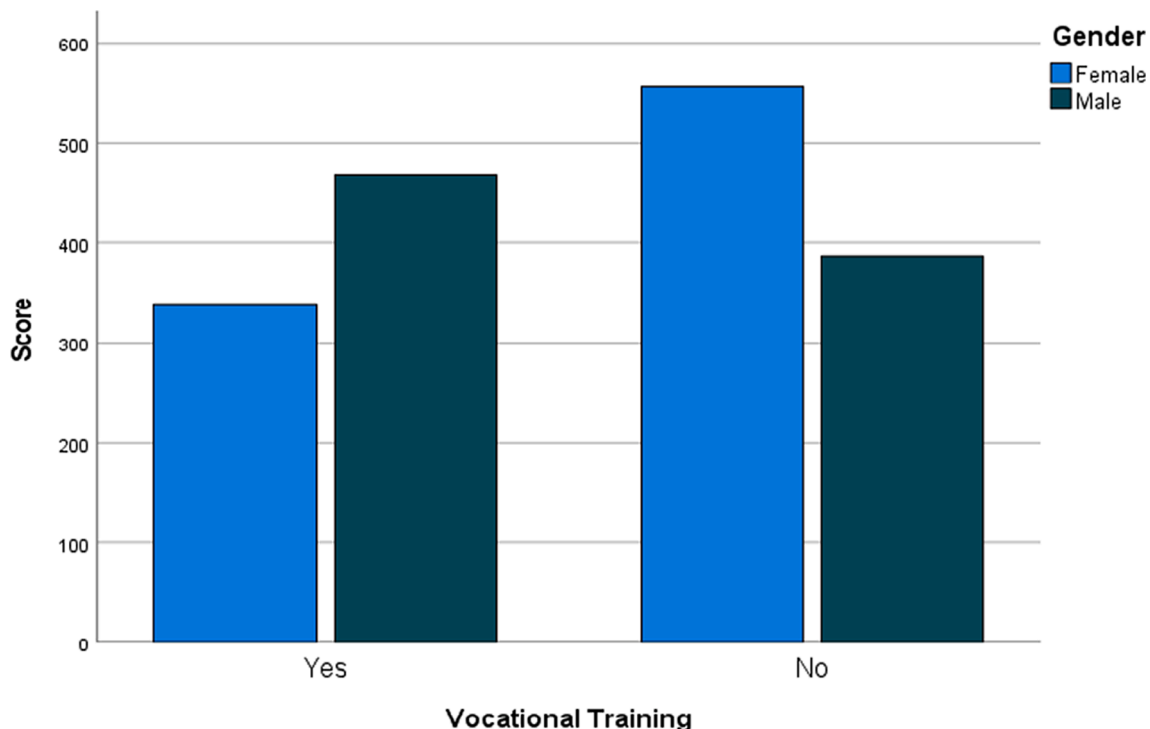


Fig. 1. Access to previous entrepreneurship education program, by gender.

Table 3
Variables and Calibration used.

Independent Variables				
Aggregate	Conditions	Description	Scale/Value	Calibration
Personal Characteristics	fs_Gen	Gender of students	Male/Female	0 = Male 1 = Female
	fs_Age	Age of students	Percentile	Percentile 90 = 18; Percentile 50 = 16; Percentile 10 = 15
	fs_VET	Type of education followed	Regular/Vocational	0 = Regular Education 1 = Vocational Education
Entrepreneurial Archetypes	fs_EntArc	References for entrepreneurship	Type of archetype considered to be an entrepreneur	0 = Self-belief; 0.2 = Be creative; 0.4 = Think out-of-the-box; 0.6 = Have initiative; 0.8 = To pursue ideas; 1 = To create a business; 0.499 Maximum ambiguity
Entrepreneurship Culture	fs_CulSch	Entrepreneurship culture prevailing at school	Perception of how entrepreneurship is valued at school	4 = Full in; 3 = Maximum ambiguity; 2 = Full out
	fs_CulCou	Entrepreneurship culture prevailing in the country	Perception of how entrepreneurship is valued in the country	4 = Full in; 3 = Maximum ambiguity; 2 = Full out
Characteristics of the Role Model Considered	fs_RolSex	Gender of role model	Male/Female	1 = Female; 0 = Male 0.499 = Maximum ambiguity;
	fs_RolFam	Family tie of role model	Proximity of family tie	0 = Nobody; 1 = Grandmother/Father; 0.85 = Mother/Father; 0.70 = Uncle/Aunt; 0.55 = Brother/Sister; 0.40 = Cousins; 0.25 = Other
	fs_RolTyp	Type of role model	Field of activity of the role model: business, sports or media, other	1 = Business; 0 = Sports/Media; 0.499 = Other
Outcomes				
Entrepreneurship Intentions	fs_EntFee	Already feel like an entrepreneur	Level of entrepreneurship intention	4 = Full in; 3 = Maximum Ambiguity; 2 = Full out
	fs_EntRea	Feel ready to become an entrepreneur	Level of entrepreneurship intention	4 = Full in; 3 = Maximum Ambiguity; 2 = Full out

3.4. Propositions

Following on from the literature review, and the identified independent variables that influence our dependent variable (entrepreneurship intention), we have formulated the following propositions:

P1: Personal characteristics of young students influence their entrepreneurship intentions.

P2: Cultural aspects surrounding entrepreneurship are important to promote entrepreneurship intentions.

P3: Role models are important to predict entrepreneurial intentions.

4. Results and discussion

The research intends to explore what are the main factors that affect entrepreneurial intentions of secondary school students, with a particular emphasis on the importance of entrepreneurship education programs.

Two dependent variables are used, obtained through the students'

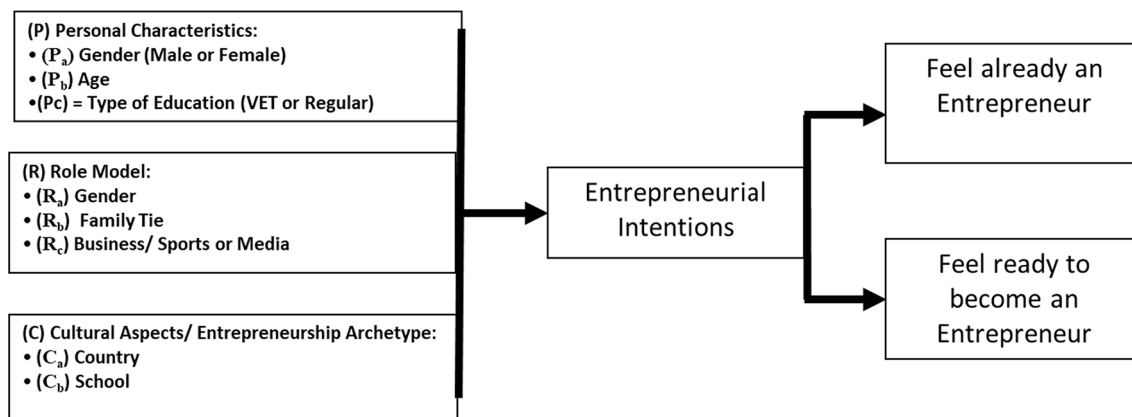


Fig. 2. Research model.

answers to the following two questions:

a) (fs_EntFee) “Do you intend to be an entrepreneur?”. Results were as follows:

Table 4.

51.2 % of students’ valid answers indicated their intentions to become entrepreneurs, while just 8.2 % clearly deny this possibility. We notice that 40.5 % of the students questioned still had doubts about this end.

b) (fs_EntRea) “To what extent do you feel ready to become an entrepreneur?” Results obtained were as follows:

Table 5.

57.6 % feel much or very much ready to become an entrepreneur, while just 8.1 % consider themselves not ready or only a little ready to be an entrepreneur. 34.3 % feel “more or less” ready to be an entrepreneur.

The proposed model intends to support possible explanations of entrepreneurial intentions, deriving from different combinations of the independent variables (calibrated as mentioned above). We have developed an fsQCA test in order to analyze the statistical relations in more detail concerning the entrepreneurial intentions and the underlying variables that influence this indicator.

4.1. fsQCA

The use of fsQCA increases knowledge about the combination of factors that may result in the observation of entrepreneurial intentions. The results of the fsQCA allow us to devise some patterns that result in different perceived levels of entrepreneurial intention that are a consequence of different variable combinations applied to our sample of secondary school students. These configurations may provide a view on the conditions that better serve to propel entrepreneurship intentions. From the literature review we have basically considered the combination of the three dimensions to develop this research: personal, cultural, and type of role models. We use intermediate solutions (Fiss, 2011) to devise two possible models, considering two different possible outcomes related with the two questions most linked to real entrepreneurial intentions: i) “How much do you feel like an entrepreneur?”; and ii) “Do you already feel like an entrepreneur?”.

Model 1: $fs_EntFee = f(fs_VET, fs_RoleSex, fs_Gen, fs_RolTyp, fs_CulSch)$.

Model 2: $fs_EntRea = f(fs_VET, fs_RoleSex, fs_Gen, fs_RolTyp, fs_CulSch)$.

Based on Fiss (2011), the results were as follows:

Table 6.

We notice that there are three possible configurations, pointing to a very dispersed combination of variables, that consider the existence of an entrepreneurial feeling in the population surveyed.

Configuration 1 considers that entrepreneurs’ feeling is developed in male secondary school students, attending regular education programs, having as a reference male role models from sports/media.

In the case of configuration 2, it is also about male secondary school students, in schools with a strong entrepreneurship culture, having male role models from business.

Configuration 3 points to the case of female students in regular education programs, in schools also with a strong entrepreneurship

Table 4 Results concerning students’ intentions to become entrepreneurs.

Entrepreneurial Intentions		Frequency	Percentage	Accumulated
Valid	Yes	890	51.2	51.2
	No	143	8.2	59.5
	Maybe	704	40.5	100.0
	Total	1737	100.0	
Missing	No answer	13		
Total		1750		

Table 5 Results concerning students’ readiness levels to become entrepreneurs.

Entrepreneurial Intentions		Frequency	Percentage	Accumulated
Valid	Nothing	45	2.6	2.6
	A little	97	5.5	8.1
	More or less	600	34.3	42.4
	Much	663	37.9	80.3
	Very much	345	19.7	100.0
TOTAL	1750	100.00		

Table 6 Intermediate solution for Model 1 (already feel like an entrepreneur).

	Configuration 1	Configuration 2	Configuration 3
Gen	○	○	●
VET	○		○
CulSch		●	●
RoleSex	○	○	●
RolTyp	○	●	●
Consistency	0.696	0.821	0.827
Raw Coverage	0.063	0.170	0.045
Unique Coverage	0.056	0.163	0.045
Overall Solution Consistency	0.787		
Overall Solution Coverage	0.270		

● represents the presence of a condition while ○ represents the absence of a condition.

culture, having as role models female business references.

Although the results are interesting, we must notice the low coverage scores, which lead us to consider them with some caution.

Concerning the solutions obtained for Model 2, the results are as follows:

Table 7.

It is possible to observe that the current model provides five solutions much more focused than the previous one, with the advantage of having a better coverage. The solutions that promote entrepreneurial intentions the best (translated into the idea of students already feeling like entrepreneurs) are as follows:

1. Male students that follow male role models
2. Students influenced by male role models, in schools with a strong entrepreneurship culture
3. Male students recognizing the importance of a certain type of role model, despite the feeling that entrepreneurship culture at school is not relevant
4. Female students attending VET courses, despite the feeling that the entrepreneurship culture at school is not relevant
5. Female students attending regular courses, with role models from business, and where entrepreneurial culture at schools is recognized.

There is a conceptual difference between “feeling ready to become an entrepreneur” and “already feel like an entrepreneur”. This difference has implications for the predictive capacity of the two different research models.

Based on the Theory of Planned Behavior and the principles of self-efficacy previously referred to (Ajzen, 1991, 2011; Bandura, 1997; Wood & Bandura, 1989), “feeling ready to become an entrepreneur” is a previous step, if the adequate conditions are met, to the idea of “already feeling like an entrepreneur” (Ajzen, 2020). Therefore, while in the case of “feeling ready to become an entrepreneur” we may consider that there is already a path to follow until actually starting an entrepreneurial project, in the case of “already feeling like an entrepreneur”, this attitude, if reinforced with certain context characteristics (like vocational or entrepreneurship education), and proper culture and values reinforcing personal characteristics, may provide the necessary conditions to

Table 7
Intermediate Solution for Model 2 (feel ready to become an entrepreneur).

	Configuration 1	Configuration 2	Configuration 3	Configuration 4	Configuration 5
Gen	○		○	●	●
VET				●	○
CulSch		●	○	○	●
RoleSex	○	○			
RoITyp			●		●
Consistency	0.791	0.881	0.818	0.847	0.837
Raw Coverage	0.378	0.466	0.154	0.110	0.110
Unique Coverage	0.071	0.095	0.035	0.036	0.036
Overall Solution Consistency	0.808				
Overall Solution Coverage	0.712				

● represents the presence of a condition while ○ represents the absence of a condition.

promote entrepreneurial intentions. In this case, education, and especially entrepreneurship education, may assume an important role (Block et al., 2011; Armuna et al., 2020; Kong et al., 2020; Loi et al., 2016a; Krueger et al., 2000a; Mcgee et al., 2009).

The situation described above may also explain the difficulty, at this life stage of young students, to obtain strong support for the evidence of the configurations that drive to these results, since this feeling will probably be most effective when these students grow older (possibly at the stage of university or even later). However, and despite the fact that configurations from model 1 may already indicate some patterns that deserve to be researched further, results obtained show some configurations that lead us to some conclusions on the real importance of the different variables considered.

The above-mentioned issues may explain the reason why age, against the propositions of our model, is not considered as a relevant condition in any of the solutions proposed by our research. This does not occur, from our results, because age is not important to propel entrepreneurship intentions, but rather due to the close range of ages considered in our sample (basically between 14 and 18 years old). Therefore we cannot derive from this any disagreement with previous results obtained in this domain (e.g. Volery et al., 2013) but can only judge that age is not a differentiating issue at this age range.

The same situation occurs with two other variables considered in our research model: the country’s entrepreneurship culture and the entrepreneurial archetypes. None of these variables seem to originate different levels of entrepreneurship intentions in the researched population, which explains their absence from the proposed configurations.

On the other hand, we may conclude that the fact that 92 % of the students of our sample have attended an entrepreneurship education program, given the strong results regarding both the answers to the questions about “already feeling like an entrepreneur” and also “feeling ready to become an entrepreneur”, turns entrepreneurship education into an important issue to promote entrepreneurship intentions and thus entrepreneurship behavior. In this regard, our results are in line with the conclusions of Ferreira et al. (2012) and Krueger Jr et al. (2000).

Furthermore, our results show that entrepreneurship intentions do not differ substantially between male and female students. Although this may indicate a contradiction with previous studies of this kind, that pointed to important gender differences (e.g. Xu et al., 2016; Purwana et al., 2017), we may consider that results obtained are a result of the consideration of a combined set of factors, that are important to balance any possible natural gender differences that can originate different results to this end, as pointed out by Garrido-Ysert et al. (2020). In this regard, we must stress the richness of analysis, for this end, that results from the use of a qualitative comparative analysis in the current research, instead of a more or less deterministic quantitative path followed by other previous research, as pointed out in our literature review.

Results obtained also support that the characteristics of entrepreneurship role models may influence the capacity of young minds to promote entrepreneurship intentions. Female students tend to follow

female role models, although not deterministically, while male students tend to follow male role models. The most important type of role model (either from the world of sports or media, or from the world of business) seems not to be gender exclusive, which may explain the seamless importance of archetypes for the promotion of entrepreneurship intentions among our sample, and may also explain why the choice of family role models does not influence entrepreneurship intentions in the population observed.

Finally, while attendance at Vocational and Educational Training (VET) or on regular school programs *per se* does not seem to make a difference for the development of entrepreneurship intentions, it is interesting to note that in the case of young female students attending VET course programs in schools without a strong entrepreneurship culture, those students have been able to develop entrepreneurship intentions, thus balancing the lack of entrepreneurship culture in the schools.

4.2. Conclusions

Our results show how entrepreneurship’s culture and role models, linked to entrepreneurship education programmes and the personal characteristics of entrepreneurs, influence the entrepreneurial intentions of young secondary school students in Portugal.

We have also been able to show that there is always a possibility for any country to develop entrepreneurship intentions, and thus development based on entrepreneurship, independently from the departing conditions, provided that the country is able to find an adequate combination of policies to promote the desirable variable according to the characteristics of its population and its institutional characteristics.

From our qualitative research and following an approach where we intend to devise those possible configurations that promote entrepreneurship intentions among the target population, we conclude that culture and role models are important to explain entrepreneurial intentions in students that have had access to entrepreneurship education programs. However, we notice that this influence is affected by different issues, like the type of role models considered in terms of their gender, or origin, and also that this depends on the gender or type of course (regular or VET) followed by these young students.

One of our main conclusions is that difference deriving from the intrinsic characteristics of the population (like gender, age, or school pathways) may be balanced with a combination of other variables (like entrepreneurship culture, or entrepreneurship education), that depend mostly on a country’s policies.

Therefore, when compared to other previous research, our results shed light on some possible patterns that can explain the better performance of some countries regarding their entrepreneurship dynamics.

Results thus support the idea that public policies to promote entrepreneurship development must consider an adequate combination of institutional variables according to the population characteristics that, altogether, may propel economic development based on entrepreneurial capacity, where entrepreneurship education assumes a crucial role.

Our conclusions show that a country's culture and related population characteristics may not be deterministic to develop its entrepreneurship capacities, providing that the country is able to promote effective entrepreneurship programs, and that policies implemented are able to consider the right combination of issues.

Simultaneously, we conclude that there might be some differences regarding the potential development of entrepreneurship intentions depending on the gender of secondary school students, and that these differences may be developed according to the type of role models considered, which, in turn, may depend on the entrepreneurship culture dominant in the country.

CRedit authorship contribution statement

José António Porfírio: Conceptualization, Writing – original draft, Writing – review & Editing, Validation, Formal Analysis, Supervision. **José Augusto Felício:** Conceptualization, Validation, Supervision. **Tiago Carrilho:** Writing – original draft, Writing – review & Editing, Methodology. **Jacinto Jardim:** Writing – original draft, Visualization, Investigation, Resources.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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