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# Interaction of potential and effective entrepreneurial capabilities in adolescents: modeling youth entrepreneurship structure using structural equation modeling

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## Abstract

This article emphasizes entrepreneurial skills in adolescents, in order to determine the relationship between entrepreneurial skills (dependent variable) and the key factors for their development: personal, social, and educational (independent variables). It has an empirical–analytical design which is explanatory in nature. After the design, validation, and application of the evaluation instrument, the estimation was carried out using Structural Equation Modeling (SEM). The results show great impact of potential entrepreneurial capacity on effective entrepreneurial capacity, determined by the direct effect of personal traits and life skills, the family as a moderating element, as well as the mediating role of entrepreneurship training processes. The complex nature of entrepreneurship is highlighted, which is influenced by multiple factors as possible boosters for the success of entrepreneurial initiatives.

**Keywords:** Entrepreneurship, Entrepreneurial skills, Personal attributes, Social skills, Entrepreneurship training

## Introduction

Entrepreneurship is understood as the set of characteristics and traits of individuals that generate a unique behavior, which drives them to creative ideas and changes and to take risks and which allows them to achieve a differentiating or successful performance. Moreover, Clarysse et al. (2011) define this concept as the characteristics and traits that allow an individual to perceive, assimilate, and take advantage of opportunities that favor transformation and innovation actions of a differentiating and unique behavior.

Because entrepreneurial skills are a key element in the path toward sustainable development, their development in adolescent population should be considered beyond training for business generation and should be understood as a complex phenomenon integrating personal development with a transforming attitude and an innovative vision that allows them to actively participate in society until they can enter the labor market with the skills required to become successful. This can be achieved either through a self-employment initiative or as a formal employee, with the ability to recognize

opportunities and put these skills into practice to take advantage of them as a way to generate value to society by turning their ideas into real possibilities.

In this context, the main essence of these potential entrepreneurial capabilities allows an individual to detect, recognize, and absorb opportunities to be able to generate behavior oriented to the materialization of ideas in a real environment of economic development (Clarysse et al., 2011; Díaz-Casero et al., 2012; Shane & Venkataraman, 2000; Tarrats-Pons et al., 2015) boosting their ability to perceive and analyze such initiatives for the exploitation of new ventures, with deep commitment that leads them to use all their resources to respond in a timely manner to the idea discovered and thus makes the entrepreneurial activity a reality, as pointed out by Cabana-Villca et al. (2013).

In addition to the above, there are key elements to strengthen entrepreneurial potential, such as personal traits, social skills, and attitudes toward risk (Álvarez & Busenitz, 2001), which in turn strengthen the identification process to face opportunities within an environment by evaluating risks and situations of uncertainty (Koellinger et al., 2007). This construct has been proposed as a trend articulated by authors and researchers, such as Timmons (1994), who recognizes leadership, motivation to excel, creativity, self-reliance, and opportunity obsession as dominant factors of the entrepreneurial profile.

Meanwhile, Busenitz and Barney (1997) mention the ability to identify and face opportunities as an element of entrepreneurial profiles, a characteristic also mentioned by Lezana and Tonelli (1998) and Palich and Bagby (1995). Moreover, Eckhardt and Shane (2003), Shane and Venkataraman (2000), and Volery and Mazzarol (2015) highlight the ability to identify and choose the right opportunities as a key element of entrepreneurs. Thrane et al. (2016) stress the ability to learn as an important trait of the entrepreneur, whereas for Filion and Gilles (1996) and Zahra and Garvis (2000), an entrepreneur is a proactive person, with a vision of the future, has great passion and motivation, as well as the ability to evaluate risks and situations of uncertainty. Barba-Sánchez and Atienza-Sahuquillo (2011) agree with this and add that the ability to recognize and take advantage of opportunities is important. Other characteristics related to potential entrepreneurial skills are high levels of commitment, as stated by Loli et al. (2010) and Leite (2000), and, finally, Varela and Bedoya (2006) highlight the adaptability and vision of the future in the entrepreneur as the ability to perceive trends and foresee future events.

### **Entrepreneurial skills and factors associated with their development**

The concept of potential and effective entrepreneurial skills has been based on the interaction of internal and external elements that play in the entrepreneur's actions. In this regard, Shapero and Sokol (1982) establish as determinants of entrepreneurial intention the perceived desirability, perceived feasibility, and behavior in risk situations; addressing the relationship of situational and sociocultural conditions that make an entrepreneurial event occur as a result of situational impulse on the person whose perceptions and values are in turn determined by their experiences and sociocultural representations, which is also supported by Soria-Barreto et al. (2016); Tarrats-Pons et al. (2015) and by Elfving et al. (2009).

Based on Shapero's ideas, Ajzen (1991) proposes the theory of planned behavior (TPB), which establishes as determinants of entrepreneurship the attitude toward oneself, a certain degree of social influence, and a degree of self-control over the results obtained.

This is taken up by Soria-Barreto et al. (2016); Tarrats–Pons et al. (2015) and by Elfving et al. (2009).

Along the same lines, Krueger and Brazeal (1994) proposed an entrepreneurial potential model (EPM) where credibility plus entrepreneurial intention determines the potential capacity, which is converted into action by the occurrence of a triggering event, which can be both positive and negative. The ideas of Azjen (1991) and Shapero (1982) were considered to generate this model, and elements from both authors were integrated such as perceived viability and desirability; incorporating the notion of credibility, necessity, and viability of behavior, in this case, entrepreneurial behavior. Similarly, the concept of self-efficacy developed by Bandura (1986) and to which Davidson (1995) included skills, need, opportunity, values, and attitudes related to the entrepreneurial concept as such was also incorporated (Soria-Barreto et al., 2016).

Thus, potential and effective entrepreneurial capabilities will depend on personal subjective and/or social factors resulting from the interaction of cultural, familial, work related, and economic elements, which positively or negatively affect the way in which the person faces the possibility of entrepreneurship. Also, credibility plus entrepreneurial intention will determine the entrepreneurial potential that directly impacts entrepreneurial intention and also develops the ability to recognize a new opportunity (Clarysse et al., 2011; Durán-Aponte & Arias-Gómez, 2016; Krueger & Brazeal, 1994).

In general terms, while one strand of researchers tends to emphasize individual traits such as experience and opportunity recognition skills as critical explanations of entrepreneurial activity, other studies have predominantly focused on social environmental factors to explain entrepreneurial behavior. As Clarysse et al. (2011) argue that while the mainstream entrepreneurship literature attributes a central role to individual differences followed by social context in explaining the trend to become an entrepreneur, the ability to recognize opportunities is the determining variable in the concept of entrepreneurship, unlike Shane and Venkataraman (2000) who consider individual differences to be the most important element in becoming an entrepreneur.

Moreover, the systemic entrepreneurship theory proposed by Tarrats-Pons et al. (2015) integrates constructs related to training; personal variables; competencies and skills that are related to the knowledge acquired and the competencies developed, as opposed to the recognition of opportunities in their context and which can be positively or negatively influenced on entrepreneurial intention and are added to variables such as age, gender, family references, and socioeconomic profile.

Entrepreneurial skills in adolescents are a key factor in the economic growth of a country. Therefore, an education based on entrepreneurship favors the skills and knowledge required to generate entrepreneurial minds at early ages, focused on the business sector. Thus, Gómez (2019) states that the psychosocial profile of an entrepreneur based on the different scientific theories involves the identification of opportunities, the autonomous decision to explore these opportunities, the efforts to obtain the necessary resources, and the development of strategies to launch the entrepreneurship business.

Based on this approach, Sanchez et al. (2017) argue that the entrepreneur's profile is formed by a variety of influential factors that determine the effective capacity of the entrepreneurship. These personality traits are related to the support of society, the economy system, values, and culture. In other words, entrepreneurs are established when

they have the potential capacity to possess personal factors related to self-efficiency, internal locus of control, and proactivity. In addition, they transcend to the sociocultural part when they have the attitude, control, and confidence to carry out the entrepreneurship. Meanwhile, Cabana-Villca et al. (2013), in their study, determined that the potential entrepreneurial capacity of a student depends on the entrepreneur's attributes, interpersonal skills, the ability to cope with risk situations, and an entrepreneurial attitude. The findings had greater relevance for entrepreneurial attitude and attributes, which accounted for 76%. However, 74% of the students had potential entrepreneurial skills, whereas the percentage of students with effective entrepreneurial skills was only 16%. This result highlights the importance of strengthening students' effective entrepreneurial skills through support strategies that allow the ideas of small entrepreneurs to materialize and thus continue contributing to the construction of a better future for new generations.

The conclusions of Mateus and Galeano (2015) are consistent with the foregoing, as they suggest the need to generate a new language related to entrepreneurship, understand the importance of its exhaustive development, and demonstrate how children and adolescents can develop entrepreneurial skills based on the socialization process in their family and school, which strengthen their autonomy, communication, leadership skills, and active participation in work teams.

In this regard, Krueger and Brazeal (1994) posit the importance of prior exposure to significant entrepreneurial role models and how the impact of role models operates through changes in perceptions of self-efficacy; cumulative exposure to different roles is also important; and family and social values influence beliefs about the viability of entrepreneurship as a vehicle for achievement. This is consistent with Boyd and Vozikis (1994), and Matthews and Moser (1996) affirm the importance of the family group in the process of developing a sense of self-efficacy, more evidently when entrepreneurial role models are found within the family nucleus, as it is an example of independence and how labor flexibility would positively impact the development of early entrepreneurial skills in the adolescent.

Furthermore, the Organization for Economic Co-operation and Development (OECD, 2005) suggests the importance of including entrepreneurship education (EE) from the early levels based on clear actions that offer real learning experiences and allow integrating theory with practice through active pedagogy (Gibb, 2005), linking technical knowledge with personal skills (Braidot et al., 2008), and always keeping a systemic and humanistic view of the individual in each of its psychological, cultural, and economic dimensions (Pereira, 2013).

The theoretical contributions described above show that although previous models developed on the subject of entrepreneurial skills have focused mainly on the adult population, we cannot ignore the fact that the creation of entrepreneurial subjects begins with the identification of those potentialities that are waiting to be developed from an early age, in order to generate a change in the medium- and long-term.

This research makes a theoretical contribution by trying to correct an existing gap, generated by prioritizing the study of entrepreneurial skills in the adult population or in university training processes, seeking with this study to answer the research

question: How do potential and effective entrepreneurial skills interact in the adolescent population?

Thus, the aim of this article is to interpret how potential and effective entrepreneurial capabilities in adolescents are related to the key factors for their development: personal, social, and educational; and thus contribute to the literature by analyzing how personal traits are connected and complemented by social skills to form the basis of potential entrepreneurial capabilities, while at the same time delving into the degree of influence that sociocultural and educational factors have as mediating elements on the process of transforming entrepreneurial capabilities from potential into effective.

## **Methods**

### **Design**

An empirical-analytical, explanatory, non-experimental, transactional study based on correlational/causal designs, from the temporal perspective was prepared where the design is contemporary and bivariate; with respect to the amplitude and organization of the data. This research work sought to correlate entrepreneurial capacity (dependent variable) with the key factors for the development of entrepreneurial capabilities (independent variables).

### **Participants**

The population and sample consisted of 1,579 Colombian adolescents attending secondary school in official institutions located in both urban and rural geographic areas; with an average age of 16 years, selected through a stratified random sampling method; 685 were female and 894 were male, with an age range between 13 and 19 years.

The following aspects were taken into account as inclusion criteria: being 13 years old at the time of instrument application and, in case of being of legal age, still studying in basic secondary education; being enrolled in an educational institution; currently studying in secondary education, with no differential approach or positive or negative discrimination related to physical features, age, sex, and sexual, ethnic, or religious preferences.

### **Instruments of measurement**

To study entrepreneurial capabilities, an instrument was designed to assess personal and academic information, academic training, occupation of the family group, previous participation in entrepreneurship, or previous conceptions and entrepreneurship training (See Table 1). The instrument has a Likert scale to evaluate personal factors (See Table 2) and is made up of 39 items grouped into 5 personal factors, with six anchor adjectives, ranging from never to always. The rating of the items ranges from 1 to 6, where 1 is the lowest score and 6 is the highest; with the possibility of a total attitude score of 234 points (See Table 3).

The Likert scale is designed to evaluate the organized entrepreneurial skills categories. Initially, it was given to six expert pairs for validation and then piloted for validation, with the participation of 257 adolescents, that is, 16.27% of the sample.

**Table 1** Theoretical contributions determining the development of entrepreneurial development

Authors	Proposed theory	Factors associated with the development of entrepreneurial skills
Shapero and Sokol (1982)	Determinants of entrepreneurial intention	Desirability Perceived viability Behavior in risk situations Situational and sociocultural conditions Business events Situational drivers Perceptions, values, experiences
Ajzen (1991)	Theory of planned behavior	Attitude toward oneself Social influence Degree of Self-control over results obtained
Krueger and Brazael (1994)	Model for entrepreneurial potential	Credibility Feasibility of behavior Entrepreneurial intention Triggering event
Tarrats-Pons et al. (2015)	Systemic model of entrepreneurship	Training Personal variables Competencies, skills and K Recognition of opportunities in the given context
Clarysse et al. (2011)		The ability to recognize opportunities is the determining variable in the concept of entrepreneurship
Shane and Venkataraman (2000)		Individual differences are the most important element in becoming an entrepreneur

Source: Prepared by the authors

**Table 2** Items distributed by components associated with personal characteristics and individual attributes related to entrepreneurial skills assessed in the instrument

Personal factor	Direct items	Reversed items
Social skills	4-5-8-11-13-37	
Attitude toward opportunities	1-19-23-28-31-32	36
Cognitive skills	3-6-9-22-27-35	12-29-33
positive self-assessment and continuity	14-15-16-18-20-24-25-30	
Coping skills	2-10-17-26-38-39	7-21-34

Source: Prepared by the authors

The six anchor adjectives were designed in even numbers in order to avoid the fact that the evaluated person is oriented to an intermediate value, thus reducing objectivity and precision in the evaluation process. Values 1, 2, and 3 show unfavorability toward the profile in question, while ratings 4, 5 and 6 show favorability.

**Procedure and data processing**

After the collection and validation of information carried out in educational institutions, the methodology was identified for (I) variable operationalization to be used in the model to be proposed, based on the items or responses of the respondents, with

**Table 3** Full extent of questions asked for each of the constructs

Attitude toward opportunities	CE_P_35	35. I like to discover new opportunities to break the routine
	CE_P_47	47. I consider the problems I face as challenges
	CE_P_54	54. I think a lot about my options before taking advantage of an opportunity
	CE_P_43	43. I make decisions with my future in mind
	CE_P_48	48. I plan everything I do so that I can achieve my future goals
	CE_P_2	2. I believe that I must take risks to achieve my goals
	CE_P_29	29. I take responsibility when things do not go as expected
Cognitive skills	CE_P_34	34. I consider myself a creative person
	CE_P_40	40. I like challenges where I can use my creativity and imagination
	CE_P_45	45. I prefer to use the most practical and proven ways to do my tasks
	CE_P_11	11. I like the idea of experimenting with new things, regardless of whether they will be successful or not
	CE_P_53	53. I like to think of new ways to improve existing things
	CE_P_18	18. I prefer traditional alternatives that have already proved to have good results
	CE_P_6	6. When in doubt, I analyze my thoughts and evaluate them internally
	CE_P_14	14. I obtain as much information as possible when it comes to a topic of interest to me
Locus of control	CE_P_49	49. I think it is not necessary to debate if the whole group agrees
	CE_P_23	23. I am full of energy when I am starting a new challenge
	CE_P_28	28. I tend to feel motivated to achieve the goals I set for myself
	CE_P_30	30. I like to do things on my own
	CE_P_38	38. It is important for me to have autonomy to get things done
	CE_P_22	22. I believe I have the right skills to achieve my goals
	CE_P_46	46. I believe I am good at what I do
	CE_P_25	25. Once I make a commitment, I do everything in my power to keep it
	CE_P_37	37. I care about following through on my commitments

**Table 3** (continued)

Coping Skills	CE_P_4	4. I modify my behavior to carry out strategies that make my job easier
	CE_P_58	58. I consider that I am able to accept change easily
	CE_P_12	12. It took me a while before I accepted changes in what had been planned
	CE_P_31	31. I prefer things to remain stable and as they have always been
	CE_P_15	15. I find it easy to decide what is necessary to achieve my goals at the right time
	CE_P_27	27. I am able to solve problems and make the right decisions at the right time
	CE_P_50	50. When I have a problem, I can only think of one way to solve it
	CE_P_39	39. I prefer to take the initiative rather than being told what to do
	CE_P_63	63. I consider myself a person who takes initiatives
Sociocultural Perception	FSC_P_1	In my region, it is possible to achieve individual success through one's own personal efforts
	FSC_P_2	The culture of my region fosters risk-taking for the development of entrepreneurial ideas
	FSC_P_3	The culture of my region fosters creativity and innovative ideas
	FSC_P_4	The culture of my region makes it easy to implement entrepreneurial ideas
	FSC_P_5	Being an entrepreneur is a real way to make money
	FSC_P_6	Successful entrepreneurs have a high level of status and respect in my community
	FSC_P_7	The media reports on successful entrepreneurs' cases
	FSC_P_8	Entrepreneurs are achievers and successful people
	FSC_P_9	If someone sets their mind to it, they can become a successful entrepreneur
Entrepreneurship Education	FF_P_1	Education fosters the development of entrepreneurial skills in young people
	FF_P_2	This school offers adequate preparation for the development of entrepreneurial ideas
	FF_P_3	Entrepreneurship education is part of the contents developed in this school
	FF_P_4	In this school, entrepreneurship education has sufficient teaching aids and resources
	FF_P_5	The people in charge of entrepreneurship education at this school have the necessary training
Family Factors	FF_AF_1/2/3	Schooling of family unit
	FF_FAG_1/2	Occupation of family unit



**Table 3** (continued)

Source: Prepared by the authors

the construction of composite indicators; and (II) modeling the structure of youth entrepreneurship, through a Structural Equation Model.

After completing the steps of developing a conceptual framework and selecting the indicators–items, Cronbach's Alpha was used to identify the suitability of items for grouping in a composite indicator to then perform a process of weighting the information and a principal components analysis (PCA) based on polychoric correlations, considering that the PCA expresses as a natural method of aggregating the sum of rankings, without presenting any obstacle in this research. As all items were in the same scale (Likert) and dimensionality was maintained, normalization was not necessary in order to use conventional PCA based on Pearson correlation coefficient.

Subsequently, in order to measure the effect and relevance of the elements associated with the characteristics of the family environment and potential entrepreneurial capacity on effective entrepreneurial capacity, as well as the mediating effect of sociocultural factors and entrepreneurship training, an econometric approach known as the Structural Equation Model (SEM) was used.

To develop the SEM, the validity and reliability of the measurement model was analyzed. Firstly, it was confirmed that the measurement indicators were correctly measured and secondly, the interactions between different constructs of the theoretical model were analyzed.

In this study, manifest variables will be understood as the following: locus of control, coping skills, attitude toward opportunities, cognitive skills, social skills, the questions asked to the respondents about their family environment, sociocultural factors, and participation in training sessions for entrepreneurs. On the other hand, the latent variables (constructs) will be as follows: Personal Traits, Life Skills, Sociocultural Factors, Entrepreneurship Training, Effective Entrepreneurship, and the second-order construct potential entrepreneurship.

The SmartPLS eoc software was used to perform the SEM.

## Results and discussion

The results of the measurement model show that the constructs used have a high degree of reliability and corroborate the validity of the instrument designed.

Table 4 shows the descriptive statistics of the variables included in the modeling process and the conclusions of the factor analysis of the loadings of measurement variables for the first-order constructs. In this regard, the findings show that the indicators used for the creation of the variables used in the structural model are considered reliable, after the elimination of indicators that did not meet the evaluation criteria. Therefore, Table 5 shows the total scope of the questions asked for each of the constructs.

Based on the structural analysis of the interaction model of potential and effective entrepreneurial capabilities in adolescents, a positive direct effect of life skills of 0.305 and of personal traits of 0.716 on potential entrepreneurial capabilities was observed, with a  $f$  99% significance (See Table 6).

**Table 4** Results of the measurement model

Indicators	Factor loadings indicator reliability	Construct reliability	Convergent validity	Discriminant validity
Family factors				
FF_AF_1	0.797***	0.739	0.397	0.144
FF_AF_2	0.779***			
FF_AF_3	0.591***			
FF_FAG_1	0.392***			
FF_FAG_2	0.387**			
Sociocultural perception				
F_SC_1	0.501***	0.700	0.287	0.332
F_SC_3	0.518***			
F_SC_5	0.509***			
F_SC_8	0.603***			
F_SC_9	0.644***			
Training for entrepreneurship training				
F_E_1	0.760***	0.815	0.525	0.187
F_E_2	0.702***			
F_E_3	0.766***			
F_E_5	0.664***			
Personal traits				
A_C	0.923***	0.937	0.831	0.385
A_F_O	0.919***			
C_E	0.892***			
Life skills				
H_S	0.918***	0.923	0.856	0.367
P_L	0.931***			
Effective entrepreneurial capacity				
CE_E	1.000***			0.059

Significance 99%\*\*\*, 95%\*\* , 90%\*

Source: Authors' calculations

**Table 5** Total scope of the questions asked for each of the constructs

Construct	Factor loadings indicator reliability	Construct reliability	Convergent validity	Discriminant validity
Potential entrepreneurial capacity				
Life skills	0.305***			
Personal traits	0.716***			

Significance 99%\*\*\*, 95%\*\* , 90%\*

Source: Authors' calculations

The potential entrepreneurial capacity directly affects effective entrepreneurial capacity, positively and with a 95% significance, showing a direct effect with a coefficient equivalent to 0.321. In turn, potential entrepreneurship has a positive direct effect of 99% significance on entrepreneurship training equivalent to 0.180 and on sociocultural perception of 0.321. On the other hand, family factors show a direct effect of 0.107 on effective entrepreneurship with a 99% positive significance. Similarly, entrepreneurship training positively influences effective entrepreneurship, showing a direct effect of 0.128 on effective entrepreneurship, with a 99% significance.

**Table 6** Structural model

TraPath		Coefficient	Est. Standard Error
Total effects			
Potential entrepreneurial capacity	→ Effective entrepreneurial capacity	0.071 0.006***	0.026
Direct effects			
Life Skills	→ Potential entrepreneurial Capacity	0.305 0.000***	0.006
Personal traits		0.716 0.000***	0.006
Potential entrepreneurial capacity	→ effective Entrepreneurial capacity	0.054 0.035**	0.026
	Entrepreneurship training	0.180 0.000***	0.026
	Sociocultural perception	0.321 0.000***	0.026
Family factors	→ Effective entrepreneurial capacity	0.107 0.000***	0.023
Entrepreneurship training		0.128 0.000***	0.025
Sociocultural perception		-0.020 0.528	0.034
Indirect effects			
Potential entrepreneurial capacity	→ Entrepreneurship training → Effective entrepreneurial capacity	0.023 0.000***	0.005
	Sociocultural perception → Effective entrepreneurial capacity	-0.006 0.000***	0.004
Moderating effects			
Potential entrepreneurial capacity × Family factors	→ Effective entrepreneurial capacity	0.078 0.002***	0.026
Potential entrepreneurial capacity × Entrepreneurship training		0.001 0.948	0.025
Sociocultural perception × Potential entrepreneurial capacity		0.045 0.122	0.027

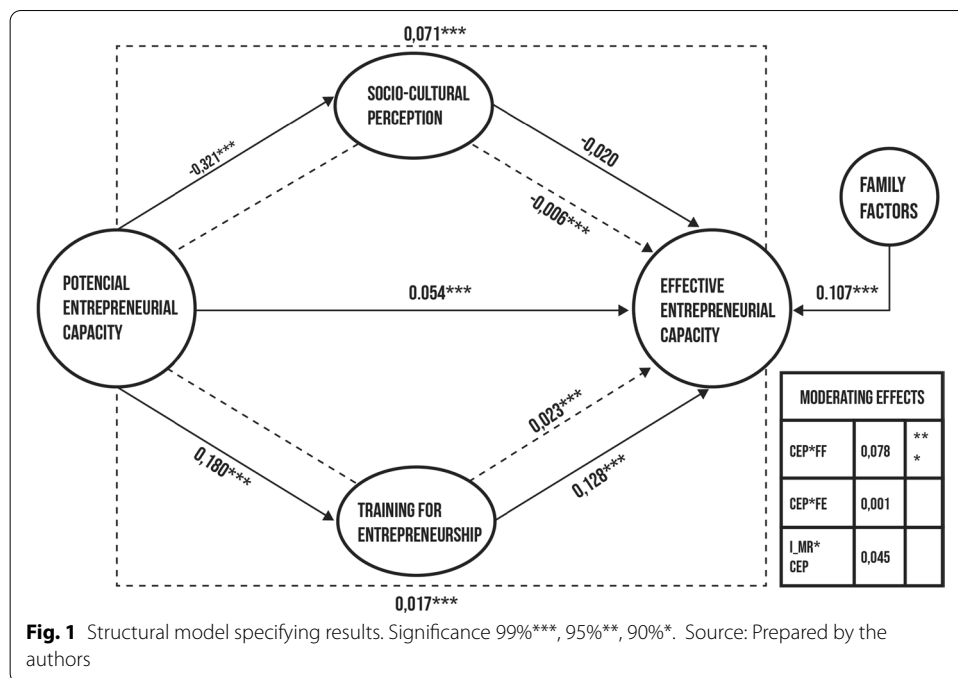
Significance 99%\*\*\*, 95%\*\*\*, 90%\*

Source: Authors' calculations

Thus, the analysis of potential entrepreneurial capacity showed an indirect effect equivalent to 0.023, of a positive nature, and 99% significance on entrepreneurship training and thus, on the effective entrepreneurial capacity (See Table 4).

In the case of the relationship between effective entrepreneurship, entrepreneurship training, and potential entrepreneurship, there is a mediation effect equivalent to 0.23, which is a partial measurement, i.e., it is not the only thing that affects the relationship between potential and effective entrepreneurship, since there is a direct effect between them equivalent to 0.054. This mediating effect shows that the direct effect of potential entrepreneurship on effective entrepreneurship is also positively affected by entrepreneurship training, significantly increasing the total effect between both constructs.

Conversely, there is no mediation by sociocultural perception on the relationship between potential and effective entrepreneurship, since sociocultural perception does not show a significant direct effect of sociocultural perception on effective entrepreneurship. However, there is a negative indirect effect of -0.006 of the way in which sociocultural conditions are perceived on the effect of potential entrepreneurship on effective entrepreneurship, showing that the way in which sociocultural factors are perceived decreases effective entrepreneurship in a non-significant way.



Moreover, the positive direct effect of family factors on effective entrepreneurship is also evident, equivalent to 0.107, with a 99% significance. At the same time, a moderating role of family factors on the interaction between potential and effective entrepreneurship is observed. This can be interpreted in terms of the fact that the more optimal the family conditions are, the stronger the positive difference on effective entrepreneurship will be.

As a model conclusion in terms of the main variables, the direct effect of the potential entrepreneurial capacity on the effective entrepreneurial capacity is 0.054, while the indirect effect of the former on the latter is 0.023, because both effects are positive in nature. The sum of these two direct and indirect effects is equivalent to 0.077, to which the indirect effect of the sociocultural perception on the effective entrepreneurial capacity equivalent to  $-0.006$ , as it is negative, must be subtracted.

Finally, there was a total effect equivalent to 0.071 of potential entrepreneurship on effective entrepreneurship, which is positive with a 99% significance (See Table 4).

Based on the structural analysis of the interaction model of potential and effective entrepreneurial capabilities in adolescents (Fig. 1), a direct and positive effect of personal factors composed of traits and life skills on potential entrepreneurial capabilities was observed, thus motivating them to take risks and recognize opportunities, to believe in themselves, and in the possibility of creating and transforming their ideas into successful projects. Therefore, the positive evaluation of capabilities is an important element in previous models of entrepreneurial capabilities, such as the contributions of Ajzen (1991); the EPM of Krueger and Brazeal (1994), and the systemic entrepreneurship theory raised by Tarrats-Pons et al. (2015).

Similarly, potential entrepreneurship positively affects the sociocultural perception and entrepreneurship training; in such a way that a high potential entrepreneurship capacity makes a more positive perception of the sociocultural factors and entrepreneurship

training received in the educational institutions. In turn, entrepreneurship training showed a positive and direct effect on the effective entrepreneurial capacity, which is consistent with what has been proposed by several authors such as Blanchflower (2004); Bosma et al. (2008); and Naude et al. (2008). According to them, entrepreneurship training processes give rise to greater possibilities of generating entrepreneurial initiatives by increasing the willingness to discover opportunities and the potential for innovation.

A partial mediation effect is also observed between potential entrepreneurial capacity, entrepreneurship training, and entrepreneurial capacity. This mediating effect shows that entrepreneurship training processes favor the promotion of skills and capabilities, thus stimulating innovation potential and increasing the possibility of perceiving and evaluating their own potential capabilities and subsequently turn them into entrepreneurial intentions, which is consistent with the theoretical approaches on the importance of socialization spaces and teaching–learning processes associated with entrepreneurship training.

Moreover, family factors showed a direct effect on effective entrepreneurial capacity, also observing a role of family conditions that can generate a positive difference on effective entrepreneurial capacity. Since personal traits and life skills are complex characteristics developed gradually, and affecting the potential capacity for entrepreneurship, which in turn is enhanced by the training processes to determine how far the adolescent can go, entrepreneurship training ends up being a key element to achieve the implementation of entrepreneurial ideas, desires, or initiatives.

On the other hand, there is no mediation by sociocultural perception on the relationship between potential and effective entrepreneurship. However, the existence of a negative indirect effect shows that the way they perceive their sociocultural reality does not significantly reduce effective entrepreneurship.

Finally, we showed the direct and positive interaction between potential and effective entrepreneurial capacity. The latter is determined both by the basic personal capacity and by theoretical knowledge, but also by procedural and strategic knowledge acquired through training spaces.

## Conclusions

In response to the question posed at the start of this work, we found that potential entrepreneurship has a direct and positive effect on effective entrepreneurship, an interaction which is mediated by the educational processes in which adolescents are immersed, and although there is no mediation by sociocultural perception, they are also determined by the surrounding family conditions. Regarding the question posed at the beginning of this article, it is concluded that there is a direct relationship between personal factors and life skills with respect to the potential entrepreneurial capacity of adolescents, showing a direct and positive effect of personal factors composed of traits and life skills on the potential entrepreneurial capacity. Similarly, the potential entrepreneurial capacity positively affects the sociocultural perception and entrepreneurship education. Thus, a high potential entrepreneurial capacity makes the sociocultural factors and the entrepreneurship education received in the educational institutions be perceived more positively.

Meanwhile, entrepreneurship education showed a partial mediation effect between potential entrepreneurial capacity and training for entrepreneurship, and capacity, also

showing a direct and positive effect on effective entrepreneurial capacity. This mediating effect demonstrates how the training processes for entrepreneurship favor the development of skills and capabilities in adolescents, thus increasing the possibility to perceive and evaluate their own potential skills and turn them into effective capacity. This allows us to confirm the specific Hypothesis 2, which established that the relationship between potential entrepreneurial capacity and effective entrepreneurial capacity is mediated by the training process for entrepreneurship received by the adolescents.

However, the existence of a negative indirect effect shows that the way in which adolescents perceive their sociocultural factors does not significantly reduce their effective entrepreneurial capacity, and therefore the specific Hypothesis 3 is rejected. Finally, family factors showed a moderating effect on effective entrepreneurship. In this regard, the descriptive results of the family factors highlighted the importance of entrepreneurial role models between the nuclear and extended family, with the mother's education level and occupation being key, which shows how a mother interested in progressing academically or actively working becomes a positive role model for adolescents when it comes to seeing themselves as entrepreneurs. Thus, the importance of optimal family conditions on effective entrepreneurship is concluded, thereby confirming the specific Hypothesis 4.

Thus, the way in which adolescents perceive the entrepreneurship training received has a significant influence on effective entrepreneurship, while their perception of culture as a facilitator of the successful development of entrepreneurial initiatives does not significantly affect effective entrepreneurship.

Thus, the modeling of the youth entrepreneurship structure, by means of SEM highlights the complex nature of the interaction of potential and effective entrepreneurial capabilities in adolescents, showing the effect of multiple personal, cognitive, family, educational, and cultural factors.

Since the transition from a potential entrepreneurial capacity to an effective one is considered a long term process, the early development of an entrepreneurial culture that allows the development of potentialities and reduces the fear of failure, while constructively addressing the training processes, the sociocultural factors of the family system, and improving the adolescent's perception of his or her culture as favoring successful entrepreneurship, is key.

Based on the foregoing, the development of entrepreneurship skills in adolescents requires the generation of articulation processes between different actors: family members, educational institutions, the community in general, government entities, and the productive sector. In this regard, the entrepreneurship training processes go beyond the goal of stimulating the generation of business ideas, and should be oriented toward the development of skills for proposal generation and recognition of new opportunities, in order to define the relevant scenarios to develop projects, lead, and adapt work teams, through know-how spaces that stimulate their full potential.

It is precisely because of the complexity of this study subject matter that the research approach does not conclude at this point of analysis, giving rise to a new line of work. In this regard, the pending tasks are to expand the study to other regions of the country in order to study the influence of cultural differences and public policies on the development of entrepreneurial skills in adolescence.

Thus, by way of conclusion, potential entrepreneurial capacity has a direct and positive effect on effective entrepreneurial capacity, an interaction that is mediated by the education processes in which adolescents are immersed, although there is no mediation by perception. More in-depth research is needed to generate more specific conclusions for the case of the population at this stage of the life cycle because it is striking that while adolescents consider the culture favorable for entrepreneurship, the perception that the actions and strategies implemented are aimed at adult entrepreneurs and that it is not something that favors them because of their age would end up demotivating them. Similarly, it is important to study the development of potential entrepreneurial skills in childhood and pre-adolescence as these are key stages for the personal and social development of human beings.

It is interesting to define the profiles of production projects considering the specific features of the economic dynamics in different regions, which would allow analyzing the sociocultural imaginaries on the economic categories required to promote a development model articulated with the productive potential of the territories that make up the sub-regions in the department of Atlántico.

Similarly, it is of interest to complement this first approach with technological tools that facilitate an approach to the adolescent population with a view to developing their potential, which in turn will become sources for future research. The results should also be submitted to the competent authorities in order to establish alliances with the entities responsible for the creation of public policy.

#### Abbreviations

SEM: Structural equation modeling; PCA: Principal component analysis; CEP: Potential entrepreneurial capabilities; FF: Family factors; FE: Entrepreneurship training.

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#### Authors' contributions

LC has developed the model and wrote the original draft. While PA supported the construction of the original draft and EO helped during technical problems with the manuscript. All authors read and approved the final manuscript.

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#### Availability of data and materials

The data used in the framework of this research, which were analyzed, are available upon reasonable request.

#### Declarations

##### Competing interests

The authors have no conflicts of interest.

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