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THE IMPACT OF ENTREPRENEURIAL EDUCATION ON THE INTENTION TO UNDERTAKE: ANALYSIS OF PERSONALITY TRAITS

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ABSTRACT

Objective: The aim of this study was to identify the relationship between the Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism) and entrepreneurial education, and especially to compare the entrepreneurial intention of middle and high school students who received that education with those who did not.

Method: We used the instrument IGPF-5 for data collection and Structural Equation Modeling (SEM) for data analysis.

Originality/Relevance: The research identifies that entrepreneurial education influences personality traits and positively affects the entrepreneurial intention of young middle and high school students, especially in the stages of development and entrepreneurial formation.

Results: In the researched sample, the courses offered by Junior Achievement influenced the entrepreneurial perception of the students, thus confirming our hypotheses.

Theoretical/methodological contributions: These results open the way for further studies on entrepreneurship education and how to address it in different disciplines. We identified key aspects through the acquired knowledge, besides contributing with an analysis model for future studies. The instrument used enables the replication of this research in other contexts, which will bring new information about the teaching of entrepreneurial behavior.

Keywords: Entrepreneurial Education. Entrepreneur. Personality Traits. Development.

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O IMPACTO DA EDUCAÇÃO EMPREENDEDORA NA INTENÇÃO DE EMPREENDER: ANÁLISE DOS TRAÇOS DE PERSONALIDADE

RESUMO

Objetivo: O objetivo deste estudo foi identificar a relação existente entre os traços de personalidade do *Big Five* (abertura, conscienciosidade, extroversão, amabilidade e neuroticismo) e a educação empreendedora, especialmente comparar a intenção de empreender de alunos dos ensinos fundamental e médio que receberam a educação empreendedora com àqueles que não a receberam.

Método: Utilizou-se do instrumento IGPF-5 para a coleta de dados e as análises de dados foram realizadas por meio de Modelagem de Equações Estruturais (SEM).

Originalidade/Relevância: A pesquisa identifica que a educação empreendedora atua sobre os traços de personalidade e impacta positivamente a intenção de empreender de jovens alunos dos ensinos fundamental e médio, especialmente nas fases de desenvolvimento e formação empreendedora.

Resultados: Pode-se afirmar que na amostra pesquisada há influência dos cursos ofertados pela *Junior Achievement* sobre a percepção empreendedora dos alunos, por meio da confirmação das hipóteses.

Contribuições teóricas/metodológicas: Os resultados desta pesquisa abrem caminho para outros estudos em relação ao ensino do empreendedorismo e como ele deve ser abordado nas disciplinas. Identificou-se aspectos-chave proporcionados pelo conhecimento adquirido, além de contribuir com um modelo de análise para estudos futuros. O instrumento utilizado proporciona a replicação desta pesquisa em outras realidades, o que trará novas informações sobre o ensino do comportamento empreendedor.

Palavras-chave: Educação Empreendedora; Empreendedor; Traços de Personalidade; Desenvolvimento.

EL IMPACTO DE LA EDUCACIÓN EMPRENDEDORA EN LA INTENCIÓN DE EMPRENDER: ANÁLISIS DE LOS TRAZOS DE PERSONALIDAD

RESUMEN

Objetivo: El objetivo de este estudio fue identificar la relación existente entre los trazos de personalidad del *Big Five* (apertura, responsabilidad, extroversión, amabilidad y neuroticismo) y la educación emprendedora, especialmente comparar la intención de emprender de alumnos de las escuelas primaria y secundaria que recibirán la educación emprendedora a los que no la recibieron.

Método: Se utilizó del instrumento IGPF-5 para recolla de datos, y los análisis de datos fueran hechos por medio de Modelado de ecuaciones estructurales (SEM).

Originalidad/Relevancia: La investigación identifica que la educación emprendedora actúa sobre los trazos de personalidad e impacta positivamente en la intención de emprender de los jóvenes alumnos de las escuelas primaria y secundaria, especialmente en fase de desarrollo y formación emprendedora.

Resultados: Se puede afirmar en la muestra investigada que hay influencia de los cursos ofertados por *Junior Achievement* sobre la percepción emprendedora de los alumnos, por medio de la confirmación de las hipótesis.

Contribuciones teóricas/metodológicas: Estos resultados abren camino para otros estudios en relación a la enseñanza del emprendimiento y como él debe ser abordado en las asignaturas. Se identificó aspectos-llave proporcionados por el conocimiento adquirido, además de contribuir con un modelo de análisis para estudios futuros. El instrumento utilizado proporciona la replicación de esta investigación en otras realidades, lo que traerá nuevas informaciones sobre la enseñanza del comportamiento emprendedor.

Palabras clave: Educación Emprendedora; Emprendedor; Trazos de Personalidad; Desarrollo.

1 INTRODUCTION

Shane and Venkataraman (2000) consider entrepreneurship a major element of the economic development process. In addition, Bhidé (2000) says that the role of the entrepreneur in society goes beyond job creation, welfare and economy change, as it encompasses the improvement of environmental quality and social development (Delgado, Cruz, Pedroso & Silva, 2008). By the same logic, market failures are also seen as sources of opportunities for new businesses (Cohen & Winn, 2007), as they suggest to the entrepreneur the search for solutions to social, environmental and economic crisis.

Therefore, entrepreneur's profile becomes even more important for entrepreneurship, as his/her action aims at achieving a long-term sustainable change, rather than alleviating short-term social problems, since this does not create autonomy or productive insertion (Bessant & Tidd, 2009). Thus, entrepreneurial education promotes creativity and learning, enables entrepreneurs to use existing knowledge to address problems and, consequently, find different solutions.

This is the context where Junior Achievement, created in the United States in 1919, plays a role. Its purpose is to generate learning for entrepreneurship and develop entrepreneurial education, in order to awake the entrepreneurial spirit in young people at school. To do this, it offers programs of economic and practical education and experiences of free enterprise, through partnerships between schools and voluntary entrepreneurs, who devote part of their time to teaching and sharing their experience with the students.

Junior Achievement's indicators highlight that more than 100 countries use its programs, which benefit around 7 million teenagers per year; it is present in all Brazilian states, where more than 700,000 young people took part in the programs. Specifically in the city of Porto Velho, capital of the state of Rondônia, the organization started its activities in 2006, in schools of peripheral regions, where students' social condition is more precarious; currently, it offers 27 courses (Junior Achievement, 2019).

The creation of entrepreneurial structures is an alternative for stimulating social organization and eliminating the exploitation of the less competitive. The theory of entrepreneurship states that the capacity to learn and the development of entrepreneurial skills (Rae & Carswell, 2000) occur through successful learning and the development of abilities and knowledge necessary to the entrepreneur, which are acquired at different stages of business development, and later applied in his/her life.

Therefore, learning is fundamental for the entrepreneur's development process (Deakins, O'Neill, & Mileham, 2000). Bygrave and Zacharakis (2010) observe that entrepreneurship is essentially a learning process, thus it is necessary to understand how entrepreneurs learn. When we assume that some individuals who undertake are different from others because they have distinct personality traits, we adopt a psychological and individual approach. Thus, we realize that some people show interest, motivation and intention to start a business, while others do not. Hence, we should consider which personality traits prevail in individuals who show entrepreneurial intention (Besutti & Angonese, 2017).

Hence, we must understand entrepreneurial learning and the needs of the entrepreneurial profile in order to design programs for education and qualification in entrepreneurship, by focusing on personal and business development (Rae & Carswell, 2000). To consider learning as a mental task of acquiring and structuring knowledge includes different attempts to demystify the learning process, by focusing on the different factors - cognitive, attitudinal, motion, and personality - that affect it (Man, 2006).

Other authors consider these factors as attitudinal, emotional, motivational, and personality factors, such as self-effectiveness, confidence, motivation to achieve, and determination (Cope & Watts, 2000; Rae & Carswell, 2000). For Zhao and Seibert (2006), the model of the Big Five Factors of personality - the Big Five -, allows the organization of a large diversity of personality variables into a small but significant set of constructs, in order to look for consistent relationships between them. Big Five is a tool for analyzing human personality in five dimensions: neuroticism or emotional instability (neuroticism); extraversion; agreeableness;

conscientiousness; and openness to experience (Figueiredo, Avrichir, & Barbosa, 2017).

According to the model, human personality is a hierarchical network of traits, theoretically understood as behavioral predispositions of responses to life situations (Trentini *et al*., 2009). Attributes such as coverage and generality, universality, applicability and replicability in different cultures, samples and correlations are the greatest strengths of the Big Five model (Besutti & Angonese, 2017). Moreover, the five traits are present in different cultures, ethnicities and socioeconomic systems, within the set of indications that reveal more opportunities for research addressing analyses of the Big Five model (Digman, 1996; Nunes, Hutz & Giacomoni, 2009; Silva & Nakano, 2011).

Therefore, we used the Big Five to support the hypotheses, due to its attributes of human personality analysis, and to answer the central question of the study: *Are there differences in entrepreneurial personality traits among students who undertook entrepreneurial qualification?* Hence, the objective of this paper was to measure the effects of entrepreneurial education on students' behavior, thus contributing to identify factors that influence the creation and success of new ventures, and to generate knowledge for the elaboration of public policies capable of stimulating and facilitating entrepreneurship (Hisrich, Langan-Fox, & Grant, 2007).

To do this, we used quantitative methods for data analysis and measurement, using Structural Equation Modeling (SEM) to examine the structure of inter-relationships expressed in entrepreneurial education, in the intention to undertake and in personality traits (Hair, Black, Babin, Anderson, & Tatham, 2009). We collected data through the Big Five IGPF-5 tool, validated by Figueiredo *et al.* (2017), and the instrument to measure the degree of Entrepreneurial Intention, created by Santos (2008). We applied both instruments to middle school and high school students, who did or did not attend Junior Achievement courses.

This evaluation is necessary to measure the effects of entrepreneurial education on the personality and intention to undertake of young people. In addition,

it can check if students can learn and absorb the concept of entrepreneurship, in order to make changes in school curricula, contributing to the solution of socioeconomic problems of specific regions. Hence, it identifies the ability to explain personality traits that affect orientation, motivation and wish to undertake of students who attended Junior Achievement courses.

2 THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

Entrepreneurial behavior has motivated our empirical research, which is part of studies that address the role of personality in entrepreneurship (Zhao & Seibert, 2006). There was a gap on this subject between the 1980s and 1990s, when theoretical evidence indicated lack of statistical significance in the relationship between personality and entrepreneurship. However, current theory suggests that statistical insignificance was due to the lack of hypotheses derived from theory (Zhao & Seibert, 2006).

This has caused a gap in entrepreneurship theory that must be filled, especially by focusing on the personality of younger entrepreneurs (Araújo & Davel, 2019). The current generation of teenagers is the most entrepreneurial since the industrial revolution, and there is a new entrepreneurial profile for future ventures (Kuratko, 2005). Hisrich *et al*. (2007) observe that future research on entrepreneurial behavior should highlight the “personality attributes of entrepreneurs, their psychopathologies, cognition and education”.

Thus, we assume in this research that an entrepreneur is any actor that contributes to innovation and business growth, be it corporate or social entrepreneurship; and this happens specifically through the recognition and exploration of opportunities, innovation and value creation in a given market. There are individual differences, and they result partly from individuals’ personality (Leutner, Ahmetoglu, Akhtar, & Chamorro-Premuzic, 2014).

There are at least two movements regarding the behavior and personality of the entrepreneur: personality as a driver of entrepreneurial action, and entrepreneurial action as a transforming agent of behavior and personality. Thus,

either personality can interfere with entrepreneurial outcomes, or knowledge and experience in entrepreneurship can change the bases of entrepreneurial personality. Therefore, this study makes a theoretical cutting in this area, addressing the topics “entrepreneurial personality” and “entrepreneurial education”, and associates them in analyses on the role of entrepreneurial education in the results, and changes of personality traits for entrepreneurship.

In this empirical context, there is a pedagogy for entrepreneurship (Dolabela & Filion, 2013), and it can develop the behaviors and personality of individuals. Personality traits (Big Five) have been extensively studied, and there are valid indicators for measuring work performance, context dependency, proficiency in training, contradiction for business success, meaningful association for entrepreneurial intention, and occupational status, among others (Leutner *et al.,* 2014). However, we could not identify, in entrepreneurship theory, studies that explain how and how much entrepreneurial education changes the behavior and personality of individuals.

Another relevant aspect is the demographic cutting of this research, where teenagers are the subjects of analysis, a condition that increases its relevance, as it contributes to understanding the personality and behavior of future entrepreneurs, and identifies such attributes in the new generations (Araújo & Davel, 2019). In previous research with young participants from junior companies, Ferreira and Freitas (2013) detected that entrepreneurial behavior was increasing, and there was a propensity for long-term entrepreneurship, when comparing these young people to non-participants. They suggested that this happened through the development of entrepreneurial attitudes and behaviors.

It is in this context that we adopted the model of the Big Five Personality Factors - the Big Five - for building and testing hypotheses. The Big Five model was pioneered by McDougall (Nunes *et al*., 2009; Silva & Nakano, 2011), who proposed the model of analysis with five independent factors (McDougall, 1930; 1932). Other researchers, such as Fiske (1949), Borgatta (1964), and Tupes and Christal (1961), continued to develop the model, and since then it is a recognized tool to analyze

human personality in five dimensions (Tupes & Christal, 1961; Nunes *et al*., 2009; Silva & Nakano, 2011; Zhao & Seibert, 2006; Brandstätter, 2010; Antoncic *et al.,* 2015; Figueiredo *et al*., 2017). As mentioned in the Introduction, the Big Five dimensions are neuroticism or emotional instability; extraversion; agreeableness; conscientiousness; and openness to experience.

Previous research results showed a strong relationship between entrepreneurial intention and personality traits (Lee & Tsang, 2001), where the need for achievement, control, innovativeness, and risk-taking are common attributes that influence entrepreneurial intention. Therefore, several studies have used the Big Five.

The following sections present the role and performance of Junior Achievement in Porto Velho, and the hypotheses on the relevance of entrepreneurial education for the development of entrepreneurial personality, relating them to the Big Five in order to predict the degree of significance of the features ‘personality’ and ‘entrepreneurial intention’.

2.1 Actions of Junior Achievement in Porto Velho

According to representatives of Junior Achievement (2019), which operates in Porto Velho since 2006, there are numerous benefits of using its programs at schools. For the collaborating companies, there is an improvement in their institutional image; identification and preparation of future employees and consumers, as well as their current employees; development of managerial capacity and training for team building. Young people achieve personal development and clear goal formulation; realistic business experience; strengthening of ethical and sound principles; and development of individual responsibility. On the other hand, schools benefit from students’ global formation; access to excellent resources and materials for economic education; assistance in identifying career options; and empathy between teachers and companies’ volunteers, with advantages for both. This context contributes to greater wealth creation in society and more jobs, in addition to better-informed people, with a higher entrepreneurial spirit.

Another program that emphasizes entrepreneurial capacity is the Mini-company, as it provides students with practical experience in economics and business, in the organization and operation of a firm. Young people learn concepts of free enterprise, marketing, sales, and production. Four voluntary professionals from the areas of marketing, finance, human resources and production provide guidance. This program explains the fundamentals of market economy and business activity through the Learn-Doing method, where each participant becomes a mini-entrepreneur.

Finally, the “Shadow-businessman for a day”, which gives young people the opportunity to know a real entrepreneur’s daily life. The goal is to provide students with a realistic view of the business world, and make them understand how knowledge acquired in the classroom can be applied to their careers. Therefore, this is the empirical context of analysis and hypotheses testing presented below.

2.2 Development of Hypotheses and the “Big Five Model”

Personality traits are valid attributes for measuring intention, creation and success in entrepreneurship (Leutner *et al.,* 2014). Among the studies, some address the effects of personality traits on entrepreneurship decision, action and outcomes, either as mediators, moderators, or direct influencing (Brandstätter, 2010). The goal is to group the different effects of personality traits and systematize a broader knowledge around the researched object (Zhao & Seibert, 2006). Hence, it is a theoretical context that seeks to analyze and integrate endogenous and exogenous results to the agent and his/her venturing action, which stem from evidence on the influence of personality, and how it is affected by entrepreneurial action; or around entrepreneurship, such as the effects of entrepreneurial education on personality traits.

Thus, the hypotheses tested in this study address the participation of entrepreneurial education in the development of entrepreneurial personality traits. Entrepreneurial personality can change with experience, and provides insights on commonalities among entrepreneurs, which helps explain the similarity of behaviors

and perspectives (Kuratko, 2005). This analysis contributes to generating information on the effect of entrepreneurial education, by explaining the change of behavior and detecting the influence of that education on the intention to undertake (Hisrich *et al*., 2007).

The development of hypotheses began with the theoretical analysis of the personality trait 'openness to new experiences', which makes up the Big Five model. Individuals who have this personality trait are at the top of this dimension, and are not afraid of new challenges, are versatile, imaginative, and often exhibit a high degree of creativity (Yong, 2007). It is a personality trait that shows strength in the relationship between intellect and imagination (Leutner *et al.,* 2014), and has an effect on the intention to start a business (Brandstätter, 2010). Nordvik & Brovold (1998) identified that entrepreneurial individuals have greater 'openness' compared to administrative staff, given the need to be creative.

There is another aspect about the personality trait 'openness to new experiences' that may be related to new learning, and consequently make it an effective means of developing entrepreneurial propensity, although there is no empirical confirmation of this proposition (Brandstätter, 2010). Therefore, if new learning can be an effective means to develop 'openness to new experiences', or a result of this personality trait, entrepreneurial education can affect entrepreneurial predisposition (Von Graevenitz, Harhoff, & Weber, 2010).

'Openness to new experiences' is acknowledged as the personality dimension most indicative of entrepreneurial intentions, more strongly than other dimensions (Brice, 2002). Therefore, it is possible that entrepreneurial education develops this personality trait, leading to better results. Thus, we expected that students who attended the Junior Achievement course would have this trait more developed than students who did not attend. From this assumption, we built two hypotheses:

H1 - Students who attended the Junior Achievement course show higher average on Openness to New Experiences than students who did not attend;

H2 - Openness to New Experiences has a significant causal relationship with Entrepreneurial Intention.

Confirmation of these hypotheses would explain the propensity to start a venture, as it requires the entrepreneur to explore new ideas and use his/her creativity to solve problems, by proposing innovation in products, business methods or strategies (Zhao & Seibert, 2006; Andrade, 2008; Daft, 2010; Brandstätter, 2010; Antoncic *et al.,* 2015; Figueiredo *et al.,* 2017). These elements are attributes of this personality trait.

In turn, the 'extraversion' personality trait acts in the field of the individual's relationships with the social and material world (Brandstätter, 2010). This includes features such as sociability, activities with the outside world, assertiveness in relationships, and positive emotions. 'Extraversion' contributes to the proactive personality needed for instinct, and boosts the entrepreneur's charismatic vision (Crant, 1996).

Leutner *et al.* (2014) observed that extrovert individuals are more likely to participate in entrepreneurial activities, such as starting businesses and finding ways to help society. The interactive process between individual and external environment is expressed in a kind of thinking and action that arise from the culture that manifests itself on the right side of the brain (imaginative and intuitive thinking), and which can be achieved through learning that permeates the entire business process, from dream to implementation (Dolabela & Filion, 2013).

Therefore, extraversion is related to the creation and development of new businesses (Leutner *et al*., 2014), and, by analogy, is associated with the entrepreneur's leadership role (Ferreira & Freitas, 2013). The 'extraversion' personality trait creates a notion of control perceived as positive, since entrepreneurs follow their risk-taking propensity and need for accomplishment (McCarthy, 2003). These are types of actions caused by the individual's behavior, who identifies opportunities through social competencies centered on his/her personality (Leutner *et al*., 2014); on the other hand, he/she learns while performing these activities and building a network of relationships (Araújo & Davel, 2019).

Although there are distinct conclusions about the effect of extraversion on entrepreneurship, Brandstätter (2010) notes that it has a positive effect on

entrepreneurship propensity and Leutner *et al.* (2014) observed that this profile is less prone to creation and development. These authors only diverge as to the moment or phase of entrepreneurial action, but agree that this personality trait has an effect on entrepreneurship.

Entrepreneurs have a higher degree of extraversion compared to administrative officers (Nordvik & Brovold, 1998), and this social assertiveness positively affects entrepreneurial success (Caliendo & Kritikos, 2008). It seems that the profile has a positive and direct relationship with entrepreneurial intentions, since it correlates strongly with the interest in entrepreneurial occupations (Brice, 2002).

In addition, Kuratko (2005) states that entrepreneurial education is a social action, with at least one relational triad - institution, student and teacher – and this seems to promote the expansion of extraversion in apprentices and students. Therefore, we expected that students who attended the Junior Achievement course would have a higher extraversion score than students who did not attend the course. Thus, we suggested two hypotheses to assess the relationship between entrepreneurial education and extraversion:

H3: Students who attended the Junior Achievement course have a higher average in Extraversion than students who did not attend;

H4: Extraversion has a significant causal relationship with Entrepreneurial Intention.

Entrepreneurs must interact with investors, partners, employees and customers. The lack of human resources at the beginning of a venture causes entrepreneurs to spend considerable time in interpersonal relationships with their partners and employees, and this requires greater direct contact with the external and internal environments, as part of the management act (Zhao & Seibert, 2006; Andrade, 2008; Brandstätter, 2010; Figueiredo *et al*., 2017).

The third personality trait under consideration is ‘agreeableness’. It refers to the ability to promote social consensus, which keeps mutual understanding and trust

(Llewellyn & Wilson, 2003; Yong, 2007). In interpersonal relationships, it is the ability to be a good listener, to be patient, to have empathy and foster harmony in social interactions (Caliendo & Kritikos, 2008). The actions of this personality trait permeate the social and community orientation of the individual, and include altruism, tenderness, trust, and modesty; therefore, it includes society's values and expectations, and entrepreneurial education can develop it (Dolabela & Filion, 2013; Ferreira & Freitas, 2013).

However, previous studies highlight that entrepreneurs have less evident levels of this personality trait, and there is no significant correlation with entrepreneurial intention (Zhao & Seibert, 2006); but these are emotional skills that can be learned or developed in entrepreneurial education courses (Ferreira & Freitas, 2013; Araújo & Davel, 2019). Entrepreneurial education focuses more on the business, on the risk, and (at least in part) on the solitary action of entrepreneurship.

Nevertheless, Leutner *et al.* (2014) highlight negative effects of agreeableness on entrepreneurial propensity, but positive on the autonomy and creation of companies. That is, entrepreneurs need to act independently, and the demonstration of agreeableness is not a necessary value or expectation of their social action. Environments of trust and cooperation ensure a good relationship in alliances, which facilitates technology exchange and raising capital for growth (Ciavarella, Buchholtz, Riordan, Gatewood, & Stokes, 2004); on the other hand, overly pleasant individual attributes may lead to a commitment for being accepted by others, and a lower propensity to take risks in unpopular ventures. Thus, we believed that students who attended the Junior Achievement course would get a lower score on agreeableness than students who did not attend. Hence, we built two hypotheses on this trait:

H5: Students who attended the Junior Achievement course show a lower average in Agreeableness than students who did not attend;

H6: Agreeableness has no significant causal relationship with Entrepreneurial Intention.

Entrepreneurs are expected to show a more individualistic behavior, as they often operate with less legal protection and with a small financial margin, due to

limited resources. They are also more susceptible to suffering the serious consequences of their decisions, even in small negotiations (Zhao & Seibert, 2006; Andrade, 2008; Brandstätter, 2010; Antoncic *et al.,* 2015; Figueiredo *et al*., 2017).

The fourth personality trait is conscientiousness, and refers to an individual's thoroughness, compliance with rules and procedures, and a continuing obsession towards high standards of performance (Llewellyn & Wilson, 2003; Yong, 2007). Individuals with this personality trait are driven by a strong sense of responsibility, diligence, and need for accomplishment that foster their confidence in the work. It is a personality trait positively linked to long-term survival of a business venture (Ciavarella *et al.,* 2004).

This personality trait refers to the control of socially prescribed actions, whose behavior is driven towards tasks and goals, highly procedural (Leutner *et al.,* 2014). The literature on entrepreneurial education mentions that this is the focus of part of this action's content (Kuratko, 2005), and is a strongly entrepreneurial personality trait (Zhao & Seibert, 2006). Its main support features are motivation and confidence of achievement, which differentiates entrepreneurs from managers (Leutner *et al*., 2014).

Therefore, conscientiousness has a positive correlation with the intention to become an entrepreneur (Zhao & Seibert, 2006); hence, if entrepreneurial education develops this personality trait, students who attended the Junior Achievement course should have a higher conscientiousness score than students who did not, as proposed in the following hypotheses:

H7: Students who attended the Junior Achievement course show a higher average in Conscientiousness than students who did not attend;

H8: Conscientiousness has a significant causal relationship with Entrepreneurial Intention.

Employees who work in a stable organization are likely to have their responsibilities, goals, and work monitored by existing organizational systems; on the other hand, entrepreneurs operate in a less controlled environment or work by

themselves, with a greater focus on the objective (Zhao & Seibert, 2006; Andrade, 2008; Brandstätter, 2010; Figueiredo *et al.,* 2017).

Finally, we address neuroticism, the fifth personality trait that makes up the Big Five model. Neuroticism is the individual's degree of emotional instability (Llewellyn & Wilson, 2003; Yong, 2007). Neurotic individuals often show mood swings, impulsivity, self-awareness, low self-esteem, and depression (Costa & McCrae, 1992). Leutner *et al*. (2014) state that this personality trait contrasts with emotional stability and neutral temperament, as individuals who possess it exhibit negative emotions such as anxiety, anger, sadness and tension.

According to Zhao and Seibert (2006), entrepreneurs have a lower degree of neuroticism, and present its negative effects when explaining the intention to undertake. This may be associated with the fact that the entrepreneur has to absorb, "in an idiosyncratic way, the environmental changes that require continuous efforts of adaptation and re-adaptation to restore balance" (Dolabela & Filion, 2013).

Leutner *et al.* (2014) refer to Rauch and Frese (2007) to explain that the effects of emotional stability (opposite of neuroticism) suggest some affinity with entrepreneurship, that is, self-effectiveness, stress tolerance, and a control environment (Hartman & Betz, 2007). Therefore, we expected that students who attended the Junior Achievement course would have a lower score on Neuroticism than students who did not, as in the following hypotheses:

H9: Students who attended the Junior Achievement course have a lower average in Neuroticism than students who did not attend;

H10: Neuroticism does not have a significant causal relationship with Entrepreneurial Intention.

Entrepreneurs work within a relatively unstructured environment, where responsibility prevails over several aspects of a venture, and they need a greater emotional control. They work more hours, and often do not separate the job from their personal life, as opposed to corporate-employed persons (Dolabela & Filion,

2013; Andrade, 2008; Zhao & Seibert, 2006; Brandstätter, 2010; Figueiredo *et al*., 2017).

In order to measure directly the entrepreneurial potential of middle and high school students, and make it possible to compare the profiles of those who took the entrepreneurship course with those who did not, we used part of the scale created by Santos (2008) to identify that potential. The method consists of a questionnaire divided in two parts: intention to undertake and scale of entrepreneurial potential. The first part addresses those who, at some point, aim to start or acquire a business; and the second part includes those who do not want to have their own business, even though they have entrepreneurial attributes, which can be useful in their current activity.

From Santos' (2008) questionnaire, we chose statements that refer directly to the intention to undertake in the future, such as: "Surely, one day I will have my own business"; "Even if I work for others, I will not abandon the idea of having my own business"; My greatest accomplishment will be to have my own business"; "Being an entrepreneur has always been my ambition"; "I intend to work forever as an employee". From then on, we prepared a research hypothesis directly related to the intention to undertake:

H11: Students who attended the Junior Achievement course show a higher average on Entrepreneurial Intention than students who did not attend.

After defining the hypotheses and adapting the research instrument, we applied the questionnaire to test the theoretical model.

3 METHODOLOGY

The research population comprised students from the public school system of Porto Velho. The sample was estimated according to Ringle, Silva and Bido (2014), and we used the G*Power 3.1 software to calculate it (Faul, Erdfelder, Buchner, & Lang, 2009). We assessed and used the latent construct that received the highest number of predictors (Intention to Undertake) - in this case, 5 – to calculate within the parameters recommended by Cohen (1988) and Hair *et al.*

(2009), with power effect of 0.80 and median f^2=0.15. The minimum calculated sample was 43 cases, as proposed by Ringle *et al*. (2014), and we collected a sample 3 times greater than indicated by the software G*Power3.1, composed of 253 respondents. Of these 253, 119 were students who attended Junior Achievement teaching modules and 134 who did not.

We used the IGPF-5 as data collection instrument for measuring the Big Five model, translated and validated by Andrade (2008), and later used by Figueiredo *et al*. (2017), who adjusted the model and questionnaire items. In order to capture entrepreneurial intention, we added some questions from Santos' (2008) instrument.

From the model created by Santos (2008), we selected some questions and made vocabulary changes to fit the target audience, structural changes to meet the personality traits (Big Five) presented by Andrade (2008). We also made methodological adjustments, which took into consideration the measurement methods used, since our research employs multivariate data analysis through Structural Equation Modeling (SEM).

We collected data using the IGPF-5 short self-report questionnaire, in a survey type research, with a 5-point Likert scale. We applied it to students from February 14 to March 15, 2019. They answered the closed statements on an electronic database or physical questionnaire, and all were tabulated at the SurveyMonkey website database. Finally, we did statistical analyses, such as Student's t-test, to check if there were statistical differences between the groups, and Structural Equation Modeling with the Partial Least Squares method (PLS), through SmartPLS 3 software, for the model's validation and adjustment (Hair *et al*., 2009; Costa & McCrae, 1992).

4 ANALYSIS AND DISCUSSION OF RESULTS

We calculated the fequencies of responses on age, gender, education, and participation in the Junior Achievement program, in order to describe the sample's attributes. It comprised 56.92% of female respondents and 43.08% of male respondents; 45.45% were 12 to 15 years old, and 54.55% were 16 to 19 years old;

52.57% were at the 9th grade of middle school, 38.34% were at the 2nd grade of high school (similar to junior in USA), and 9.09% at the 3rd grade of high school (similar to senior in USA). Finally, 47.04% of respondents participated in the Junior Achievement program, while 52.96% did not take parte in the program.

From data collection, we estimated a measurement model (Figure 1), where the Big Five latent variables were predictors of Entrepreneurial Intention, according to the hypotheses suggested. The analysis of validity and reliability of the structural model created the items' factor loadings - Cronbach's Alpha coefficients, Average Variances Extracted, Composite Reliability, and R^2, as shown in Table 1.

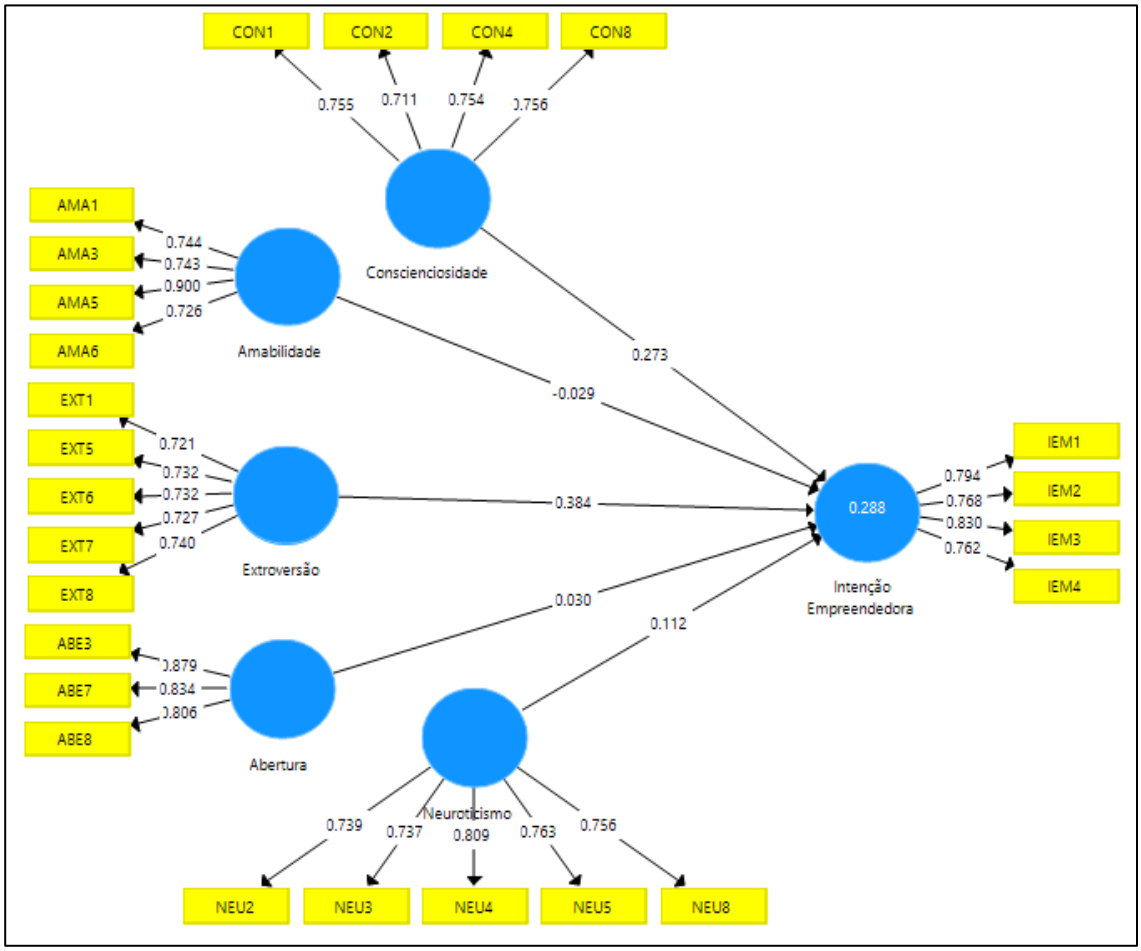

Figure 1— Structural Equation Model
Source: The authors

In the model, we chose to use only items with loadings above 0.700 (Hair *et al.,* 2009), shown in Table 1. Therefore, we removed items AMA2, AMA4, AMA7, AMA8, AMA9, EXT2, EXT3, EXT4, CON3, CON5, CON6, CON7, CON9, NEU1,

NEU6, NEU7, ABE1, ABE2, ABE4, ABE5, ABE6, ABE9, ABE10, and IEM5. In the structural model evaluation, Pearson's coefficient of determination (R^2), calculated for the latent variable Entrepreneurial Intention was 0.28, considered a large effect (Cohen, 1988). The Average Extracted Variance (AVE) values were higher than 0.500, confirming convergent validity (Fornell & Larcker, 1981; Henseler, Ringle & Sarstedt, 2015). For the reliability analysis, we calculated Cronbach's alpha coefficients, whose values were above 0.700, and the Composite Reliability (CR), with values higher than 0.500; both show the model's optimal reliability (Hair *et al*., 2009), as presented in Table 1.

Table 1
Fit quality values of SEM model

	Items	Loadings	α Cronbach	AVE	CR	R^2
Entrepreneurial	IEM1	0.794	0.800	0.622	0.868	0,288
Intention	IEM2	0.768				
	IEM3	0.830				
	IEM4	0.762				
Openness	ABE3	0.879	0.797	0.706	0.878	***
	ABE7	0.834				
	ABE8	0.806				
Agreeableness	AMA1	0.744	0.787	0.611	0.862	***
	AMA3	0.743				
	AMA5	0.900				
	AMA6	0.726				
Conscientiousness	CON1	0.755	0.732	0.554	0.832	***
	CON2	0.711				
	CON4	0.754				
	CON8	0.756				
Extraversion	EXT1	0.721	0.782	0.533	0.851	***
	EXT5	0.732				
	EXT6	0.732				
	EXT7	0.727				

	EXT8	0.740				
Neuroticism	NEU2	0.739	0.819	0.579	0.873	***
	NEU3	0.737				
	NEU4	0.809				
	NEU5	0.763				
	NEU8	0.756				

Source: the authors

To check the model's discriminant validity, we analyzed Cross Loading Values, Fornell and Larcker Criterion (1981), and the latest Heterotrait-monotrait ratio of correlations (HTMT). For the analysis of Cross Loading Values, loadings must be higher in the original latent variables than in others (Ringle *et al*., 2014). In this research, all calculated loadings were higher in their respective latent variables, when compared to others (Table 2), which indicates the model's discriminant validity (Chin, 1998).

Table 2
Cross-Loading values

	Openness	Agreeableness	Conscientiousness	Extraversion	Neuroticism	Entrepreneurial Intention
ABE3	**0.879**	0.281	0.399	0.374	-0.318	0.224
ABE7	**0.834**	-0.257	0.372	0.329	-0.312	0.191
ABE8	**0.806**	0.284	0.447	0.342	-0.404	0.286
AMA1	-0.318	**0.744**	-0.410	-0.422	0.381	-0.250
AMA3	-0.268	**0.743**	-0.223	-0.428	0.202	-0.239
AMA5	-0.313	**0.900**	-0.504	-0.569	0.490	-0.354
AMA6	-0.083	**0.726**	-0.294	-0.372	0.316	-0.189
CON1	0.334	0.374	**0.755**	0.367	-0.482	0.320
CON2	0.427	0.290	**0.711**	0.327	-0.346	0.327
CON4	0.337	-0.319	**0.754**	0.333	-0.494	0.259
CON8	0.357	-0.428	**0.756**	0.364	-0.496	0.314
EXT1	0.338	-0.503	0.515	**0.721**	-0.493	0.374

EXT5	0.197	-0.439	0.274	**0.732**	-0.339	0.297
EXT6	0.241	-0.548	0.326	**0.732**	-0.352	0.364
EXT7	0.391	-0.263	0.287	**0.727**	-0.341	0.344
EXT8	0.336	-0.378	0.291	**0.740**	-0.292	0.383
NEU2	-0.328	0.294	-0.351	-0.349	**0.739**	-0.230
NEU3	-0.249	0.353	-0.495	-0.405	**0.737**	-0.177
NEU4	-0.366	0.394	-0.586	-0.406	**0.809**	-0.218
NEU5	-0.332	0.392	-0.523	-0.358	**0.763**	-0.182
NEU8	-0.311	0.328	-0.380	-0.385	**0.756**	-0.216
IEM1	0.211	-0.184	0.248	0.308	-0.125	**0.794**
IEM2	0.189	-0.252	0.326	0.378	-0.236	**0.768**
IEM3	0.205	-0.297	0.281	0.357	-0.152	**0.830**
IEM4	0.282	-0.320	0.412	0.456	-0.303	**0.762**

Source: the authors

For the analysis of discriminant validity by Fornell and Larcker (1981) criterion, we compared the square roots of the Average Variance Extracted (AVE) values of each construct with Pearson correlations among the latent variables. Average Variance Extracted (AVE) square roots showed higher values than the correlations (Table 3); in this case, discriminant validity was confirmed (Fornell & Larcker, 1981).

Table 3
Discriminant Validity (Fornell & Larcker criterion)

	Openness	**Agreeableness**	**Conscietiousness.**	**Extraversion**	**Entrep. Intention**	**Neuroticism**
Openness	**0.840**					
Agreeableness	-0.330	**0.781**				
Conscientiousness	0.492	-0.476	**0.744**			
Extraversion	0.417	-0.585	0.468	**0.730**		
Entrepr. Intention	0.287	-0.342	0.414	0.486	**0.789**	
Neuroticism	-0.420	0.460	-0.608	-0.499	-0.272	**0.761**

Source: the authors
Note. *The diagonal (bold values) are the square roots of average variance extracted (AVE).

The last test to analyze the model's discriminant validity was the Heterotrait-monotrait ratio of correlations (HTMT), described by Henseler *et al*. (2015). HTMT is the average of indicator correlations through latent variables that measure different phenomena, in relation to the average of indicator correlations within the same construct. The achieved HTMT values were below 0.900 (Table 4), indicating that discriminant validity was established in the model.

Table 4
Discriminant Validity (HTMT)

	Openness	Agreeableness	Conscientiousness	Extraversion	Entrepr. Intention	Neuroticism
Openness						
Agreeableness	0.393					
Conscientiouness	0.626	0.601				
Extraversion	0.517	0.728	0.610			
Entrepr. Intention	0.338	0.405	0.518	0.594		
Neuroticism	0.502	0.557	0.795	0.622	0.316	

Source: the authors

To analyze the direct effects of the Big Five latent variables on Entrepreneurial Intention, we used the Blindfolding technique, which allowed calculating the Stone-Geisser's (Stone, 1974; Geisser, 1974), Q^2 value regarding the evaluation criterion for the model's predictive relevance. Q^2 calculated for the latent variable Entrepreneurial Intention was above zero, indicating that PLS path model has predictive relevance for this construct (Hair *et al*., 2009). To assess how representative each construct is for the model, we calculated the Effect Size (f^2) or Cohen's Indicator, attaining the values 0.02, 0.15 and 0.35, considered small, medium and large (Cohen, 1988; Hair *et al.*, 2009). Table 5 shows Q^2 and f^2 values.

Table 5
Predictive Validation (Q2) or Stone-Geisser's indicator and Effect size (f^2) or Cohen's indicator.

VL	CV RED (Q^2)	CV COM (f^2)
Entrepreneurial Intention	0.157	0.364
Openness		0.384
Agreeableness		0.361
Conscientiousness		0.269
Extraversion		0.307

Neuroticism	0.368

Source: the authors

To test hypotheses 2, 4, 6, 8, and 10, it was necessary to assess the causal relationships of the Big Five latent variables on Entrepreneurial Intention (Table 6). Path coefficients indicate how much one construct relates to another, and values may range from -1.0 to +1.0. The closer to +1.0, the stronger the positive relationship between two constructs (Hair *et al*., 2009). Hypothesis 2 was rejected, because the latent variable Openness to New Experiences did not show a significant causal relationship (p>0.05). Hypotheses 6 and 10 were accepted, since they did not show significant paths (p>0.05), thus confirming their respective theoretical assumptions. Finally, hypotheses 4 and 8 were accepted because their path coefficients were positive, T-values ≥1.96, and significant (Hair *et al*., 2009), as shown in Table 6.

Table 6
Values of path coefficients (T) of the adjusted model

Hypotheses	Relationship	Path Coefficients	T-Value	P-Value	Decision
H2	Openness -> Entrepreneurial Intention	0.030	0.374	0.708	Rejected
H4	Extraversion-> Entrepreneurial Intention	0.384	4.315	**0.000**	Accepted
H6	Agreeableness -> Entrepreneurial Intention	-0.029	0.393	**0.694**	Accepted
H8	Conscientiousness -> Entrepreneurial Intention	0.273	3.283	**0.001**	Accepted
H10	Neuroticism -> Entrepreneurial Intention	0.112	1.409	**0.159**	Accepted

Source: the authors

Parametric tests allow inferences and statements on related population averages. Often, we use *t* tests when the sample is small; however, for large samples (120 or more), the *t* distribution and the normal distribution hardly differ from each other. Hence, the larger the sample, the lower the value of critical *t*, and the higher the reliability (Malhotra, 2006).

First, we grouped the items resulting from structural equations modeling into their respective constructs by reducing dimension to one factor, through factor analysis; then we applied the Student's *t* test for independent samples, where one

group of students had contact with the entrepreneurship courses offered by Junior Achievement, while another group did not. Therefore, samples are independent, given that the experiences of the first group did not affect those of the second group.

Therefore, when considering the values of Levene test, *t* test, averages, and hypotheses that checked the intention to undertake, we can say, regarding the Openness to New Experiences, that the group that participated in the Junior Achievement program got a higher average with statistical significance ($p<0.05$), and *t* value was 7.262, above 1.96 (Malhotra, 2006). Thus, the hypothesis that students who attended the Junior Achievement course have a higher degree of openness than those who did not (H1) was accepted. However, we cannot say that having a higher Openness to New Experiences results in higher entrepreneurial intention, since the focus is the interaction between intellect and imagination, as elements that emphasize personality traits such as learning, versatility, guidance to overcome challenges, imagination and creativity. Hence, Openness to New Experiences does not have a significant causal relationship with entrepreneurial intention (H2).

On the hypothesis that students who attended the Junior Achievement course have a higher degree of extraversion than those who did not (H3), it has statistical significance ($p<0.05$), and *t* value was 8.705, higher than 1.96 (Malhotra, 2006); therefore, it was accepted. Similarly, we can say that there is statistical significance in the relationship between extraversion and the intention to undertake (H4). However, there is a challenge for future studies, as some authors claim that extraversion affects entrepreneurship positively (Brandstatter, 2010), but negatively the creation of new businesses (Leutner *et al*., 2014). Therefore, in our study, we can only state that extraversion positively relates to entrepreneurial intention.

The hypothesis that students who attended the Junior Achievement course have a lower degree of Agreeableness than those who did not (H5) was also accepted. Regarding this trait, the group that participated in the Junior Achievement program got the lowest average with statistical significance ($p<0.05$), and *t* value was -10.713, less than -1.96 (Malhotra, 2006). This is consistent with the theory that points to the lower entrepreneurial propensity of this personality trait, but diverges

when we analyze the hypothesis of statistical significance for business creation (Leutner *et al.,* 2014). Thus, there is an understanding that Agreeableness has no significant causal relationship with the intention to undertake (H6), at least for our sample, but there are other hypotheses about personality traits, to be confirmed by theory.

Conscientiousness showed the highest average with statistical significance ($p<0.05$), and *t* value was 8.982, above 1.96 (Malhotra, 2006), in the group that attended the Junior Achievement program; therefore, the hypothesis that students who took part in the Junior Achievement course have a higher degree of conscientiousness than those who did not (H7) was accepted. This finding confirms theory, according to which it is a personality trait that positively affects the intention to undertake.

Finally, regarding Neuroticism, the group that participated in the Junior Achievement program got the lowest average with statistical significance ($p<0.05$), and *t* value was -9.778, much less than -1.96 (Malhotra, 2006); Therefore, we accept the hypothesis that students who attended the Junior Achievement course have a lower degree of neuroticism than those who did not (H9). This is in line with the theory presented earlier, which states that it is a personality trait that has a negative impact on the intention to undertake, and validated by our study, as “it has no significant causal relationship with entrepreneurial intention” (H8).

In addition, regarding Entrepreneurial Intention, the group that attended the Junior Achievement program showed the highest average with statistical significance ($p<0.05$), and *t* value was 5.068, higher than 1.96 (Malhotra, 2006); therefore, the hypothesis was accepted, and students who participated in the Junior Achievement course show a higher degree of entrepreneurial intention than those who did not (H11). Student's *t* test values, averages and significance are presented in Table 7.

Table 7
Group Statistics

Hypotheses	Constructs	Attended?	Average	t	Sig.	Decision
H1	Openness	Yes	0,44	7,262	0,000	Accepted
		No	-0,39			
H3	Extraversion	Yes	0,51	8,705	0,000	Accepted
		No	-0,45			
H5	Agreeableness	Yes	-0,59	-10,713	0,000	Accepted
		No	0,53			
H7	Conscientiousness	Yes	0,52	8,982	0,000	Accepted
		No	-0,46			
H9	Neuroticism	Yes	-0,56	-9,778	0,000	Accepted
		No	0,49			
H11	Intention to Undertake	Yes	0,32	5,068	0,000	Accepted
		No	-0,29			

Source: the authors

Therefore, this analysis of personality traits of students from the east side schools of Porto Velho shows that there is a pedagogy for entrepreneurship (Dolabela & Filion, 2013). By relating the topics “entrepreneurial personality” and “entrepreneurial education”, we can say that these teenagers live in the same social context, but the courses offered by Junior Achievement affected their entrepreneurial perception, which the hypotheses confirmed. The study by Nordvik and Brovold (1998) shows that entrepreneurs have greater extraversion than administrative officers, and we noticed a strong interest in entrepreneurial occupations in our sample (Brice, 2002).

Another highlight of our study is the high score achieved by conscientiousness, which contrasts with neuroticism, with a low score among students that attended the courses offered by Junior Achievement. This finding strengthens the proposition about the influence of Junior Achievement courses on students' entrepreneurial perception, since the personality trait ‘conscientiousness’ refers to the individual’s motivation and trust to achieve a goal (Leutner *et al*., 2014), with a higher potential of entrepreneurial ability. In contrast, neuroticism reflects an individual's degree of emotional instability, such as mood swings, impulsiveness, self-awareness, low self-esteem, and depression (Costa & McCrae, 1992; Llewellyn & Wilson, 2003; Yong, 2007), averse to the entrepreneurial profile.

In this context, it is necessary to adopt educational guidelines that challenge and encourage students to behave as entrepreneurs, either as a means of enhancing

and solving problems, or even fostering a simulated or real business context. Therefore, educational guidelines can focus on conceptual thinking, followed by practical implementation to develop the entrepreneurial profile, in order to enable the student to lead the creative process of developing new plans for life, work, study, and business, thus contributing to local and personal development. Therefore, Junior Achievement methodology used in the courses positively affects the entrepreneurial personality.

These results open the way for further studies regarding entrepreneurship teaching, on how to address it in disciplines, and how to make the association between theory and practice, among others. It is noteworthy that the instrument used provides the replication of this research in other contexts, which will bring new information on the teaching of entrepreneurial behavior.

5 FINAL CONSIDERATIONS

Entrepreneurship is a desirable feature in society, due to its power of socioeconomic transformation, which happens through actions that promote different improvements, such as jobs and income creation. In addition, the individual role of entrepreneurs is an essential and relevant part of the business (Araújo, Morais & Pandolfi, 2019); therefore, it stems from the entrepreneurial personality, which can predict success (Leutner *et al.,* 2014), by choosing entrepreneurial action, starting a company and spreading this behavior in his/her sociocultural environment. Hence, to study the transformative capacity of entrepreneurship course on teenagers' education is a fundamental topic of socioeconomic development, especially in the long term.

Therefore, by resuming our objective of analysis, we identified that there are differences in entrepreneurial personality traits in students who undertake entrepreneurial education. We noticed some traits that significantly affect entrepreneurial intention. Our research used part of Santos' (2008) research, who developed an instrument to measure the degree of entrepreneurial intention, which contributed to the result, along with the findings provided by the Big Five model. As contribution, we offer a reliable tool for measuring entrepreneurial potential.

In addition, we emphasize that the role of qualification in entrepreneurship is an educational action capable of affecting the personality traits of young students from middle and high school, and this confirms the difference of behavior between individuals of the same social group and socioeconomic condition. Therefore, public policies should conceive and foster entrepreneurial learning among teenagers, in order to consider the personality traits that should be highlighted or suppressed, in a particular group of students. In addition, the focus of entrepreneurial education must align with the personality traits of the group and individuals that receive the training, as it will certainly change according to the personalities in each group of individuals.

Results were satisfactory, although, in our sample, features such as openness and agreeableness did not show significant causal relationship with the intention to undertake. However, this may be different when applying this tool to other situations. This is the space to foster new academic discussions on entrepreneurial attributes, methodologies for teaching entrepreneurship, and regional and sociocultural influences on the ability to undertake.

Another gap that future studies can explore is the development of a longitudinal study with Junior Achievement alumni who have effectively become entrepreneurs, and the impact of their actions on their communities. Finally, as a regional study, we suggest that future research include the concepts of proximity economics or regional economics, to measure the effects of regional characteristics on entrepreneurial behaviors and on the intention to undertake of young students from middle and high school, who participate or not in entrepreneurial education actions.

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