MIET

MESTRADO EM INOVAÇÃO E

EMPREENDEDORISMO TECNOLÓGICO

Entrepreneurial attitudes and motivations of children: An exploratory study

Carolina Pereira

Dissertação

Orientadora: Aurora Teixeira



Universidade do Porto

Faculdade de Engenharia

FEUP

Faculdade de Engenharia da Universidade do Porto

Porto, Setembro 2014

À minha família

Agradecimentos

Ao Telmo, aos meus Pais, ao Fernando e à Tia Jú a quem sou e serei sempre eternamente grata. Ao Tio Henrique e à Tia Mimi pelo carinho e conselhos sábios. Ao meu avó Gaspar que me ensinou o que é ser empreendedor e à minha avó Elvira que me ensinou o que são atitudes empreendedoras. A toda a minha maravilhosa família, um obrigada gigante de coração cheio.

Aos meus amigos, que me acompanham há anos em todas as aventuras.

À Professora Aurora pela orientação, trabalho, persistência e dedicação que colocou neste trabalho.

Ao CLIP e à Dra. Andrea Vasconcelos, por me terem aberto a porta para uma realidade que eu acreditava que existia, mas desconhecia e ao Professor João José que intermediou ativamente esse contato.

"Education is the most powerful weapon which you can use to change the world"

Nelson Mandela

"The mind that opens to a new idea never returns to its original size"

Albert Einstein

"It is easier to build strong children than to repair broken man"

Frederick Douglass

"Every child is an artist. The problem is staying an artist when you grow up"

Pablo Picasso

Abstract

Entrepreneurship is associated to economic growth and to the development of the societies. Conventional wisdom convey that the acquisition of entrepreneurial attitudes and motivations early in life tend to have a positive influence in future entrepreneurial behavior. Despite such widespread argument very few scientific evidence exist that permit to corroborate such statement.

The purpose of this study is to understand which are, at the present, the main attitudes and motivations of children, to assess how these attitudes and motivations relate with other relevant variables, namely gender, age, grade, children's vocations and aspirations and parent's occupations, and to assess what is the influence of the education in children's attitudes and motivations.

In order to pursue this goal, we gathered primary data from children using an adaptation of the Entrepreneurial Attitude Survey. Four classes from the 3rd and 4th grade from a private school of Porto with a pro-entrepreneurial context were studied centered in the children.

Exploratory and econometric analyses evidence that distinct determinants impact differently on children's entrepreneurial attitudes – achievement, innovation, self-control and self-esteem. Specifically, gender significantly influences innovation, with boys evidencing higher levels of innovation compared to their female counterparts. Older children and those enrolled in the 4th grade reveal lower achievement and personal control compared to 3rd grade and younger children. In general, children enrolled in the 3rd grade show higher levels of entrepreneurial attitudes than those enrolled in the 4th grade, with exception of innovation. This result seems to convey the idea that as individuals progress in their educational path, they lose part of their entrepreneurial attitudes. Although such a result should be taken with cautious given the limited number of children involved and the specific context of study, it highlights a potential risky side effect that education might have on the formation of entrepreneurs and the need to gather more evidence to properly analyze such issue.

Resumo

O empreendedorismo está associado ao crescimento económico e ao desenvolvimento das sociedades. Convencionalmente sabemos que a aquisição de atitudes e motivações empreendedoras no início da vida tendem a ter uma influência positiva no comportamento empreendedor futuro. Apesar desse argumento generalizado, existe muito pouca evidência científica que permita corroborar tal afirmação.

O objetivo deste estudo é compreender quais são, atualmente, as principais atitudes e motivações das crianças, avaliar como é que essas atitudes e motivações se relacionam com outras variáveis relevantes, nomeadamemente género, idade, ano de escolaridade, vocações e ambições das crianças e ocupações dos pais, e para avaliar qual é a influência da educação nas atitudes e motivações das crianças.

Para a prossecução deste objectivo, reunimos dados primários de crianças usando uma adaptação do inquérito *Entrepreneurial Attitude Survey*. Foram estudadas quatro turmas da 3ª e 4ª classe de um colégio privado no Porto com um contexto pró-empreendedor, centrado nas crianças.

As análises exploratórias e econométricas evidenciam que determinantes distintos têm impacto diferente sobre as atitudes empreendedoras das crianças - realização, inovação, auto-controle e auto-estima. Em concreto, o género influencia significativamente a inovação, os rapazes evidenciam níveis mais elevados de inovação em comparação com as raparigas. As crianças mais velhas e inscritas na 4ª classe revelam menor realização e controle pessoal, em comparação com as crianças mais jovens e da 3ª classe. Em geral, as crianças matriculadas na 3ª classe mostram níveis mais elevados de atitudes empreendedoras do que os matriculados na 4ª classe, excepto no que concerne à inovação. Este resultado parece transmitir a ideia de que, com a progressão dos indivíduos no percurso escolar, eles perdem parte de suas atitudes empreendedoras. Embora tal resultado deva ser analisado com precaução, dado o número limitado de crianças envolvidas e do contexto específico de estudo, destaca-se um efeito colateral potencialmente perigoso que a educação possa ter sobre a formação de empreendedores e também, a necessidade de reunir mais provas para analisar adequadamente estas questões.

Index of Contents

Agradecimentos iii
Abstract v
Resumo vi
Index of Tables viii
1. Introduction 1
2. Literature Review 3
2.1. On the concept of entrepreneurship 3
2.2. Entrepreneurial attitudes and motivations 4
2.3. Children and entrepreneurial attitudes and motivations 7
2.4. Relationship between entrepreneurial attitudes, motivations and other relevant factors 9
3. Methodology 12
3.1. Objectives 12
3.2. Quantitative analysis 13
4. Empirical results 16
4.1. Descriptive analysis 16
4.2. Determinants of children's entrepreneurial attitudes: an exploratory analysis 20
4.3. Determinants of children's entrepreneurial attitudes: a causality analysis 21
5. Conclusions 24
References 26
Appendix 31
Appendix I – Survey 31
Appendix II – Children's activity - Games 32

Index of Tables

Table 1: Statements selected from EAO by categories 14
Table 2: Distribution of the students by gender and grade 16
Table 3: Distribution of the students by gender and age 16
Table 4: Results of the question "What do you want to be when you grow up?" 17
Table 5: Number of responses by parents' occupations 18
Table 6: Distribution of the responses according to parents' entrepreneurial status 19
Table 7: Distribution of children by their most favorite areas 19
Table 8: Attitudes and motivations of children: average scores 20
Table 9: Children's entrepreneurial attitudes and their characteristics: non parametric test of Kruskal Wallis of differences in means 21
Table 10: Determinants of children's entrepreneurial attitudes (dependent variable: dummy that assumes value 1 when the score for each attitude is above the average and 0 otherwise) - logistic estimates 23

1. Introduction

Entrepreneurship is often associated to economic growth (Holcombe, 1998; Wennekers and Thurik, 1999), which is positively linked to the development of the societies (Nooteboom, 1993; Wennekers and Thurik, 1999; Acs, 2006; Acs and Almorós, 2008; GEM, 2013). Indeed, several researchers argue that entrepreneurship is "*at the heart of national advantage*" (Porter, 1990: 125), presenting a key role in enhancing economic growth. Wong et al. (2005: 337) state that *"[e]ntrepreneurs serve as agents of change, bring new ideas to markets and stimulate growth through a process of competitive firm selection*". Thus, growth cannot be attained if there are no agents to enforce it and entrepreneurs are seen as the agents that may produce value for the economy (Schumpeter, 1934; Wennekers and Thurik, 1999).

In this context, the 'production' of such entrepreneurs has been at the center both in policy related domains (EC, 2006) and in scientific arena, most notably in the literature concerning entrepreneurship education (Kourilsky, 1980; Fiet, 2000; Rasheed and Rasheed, 2003; Löbler, 2006; Oosterbeek et al., 2010; Johansen and Clausen, 2011).

Sense of initiative and entrepreneurship are one of the eight competences identified in the European Framework of Key Competences (EC, 2012). It is suggested that entrepreneurial attitudes and motivations can be enhanced, and that this active learning starts happening in a very early stage of children lives (Löbler, 2006). Evidence gathered by Lindström (2013) points that children are capable of active learning since preschool ages, and that entrepreneurial behaviour can be developed since young ages. In particular, this author refers that children develop skills namely as curiosity, imagination, consciousness about their talents, ability to see possibilities, motivation to learn, take initiative, creativity, leadership, have and take responsibility.

Although many authors (e.g., Hegarty and Jones, 2008; Oosterbeek et al., 2010) have studied entrepreneurship education in universities, fewer (e.g., Aşici and Aslan, 2010; Johansen and Clausen, 2011) studied secondary schools, and even fewer studied primary schools (Aslan, 2010; Do Paço and Palinhas, 2011) or preschools (Lindström, 2013). Referring to young children, the focus of Do Paço and Palinhas (2011) was on the entrepreneurial program whereas Aslan (2010) sought to analyze the perspective of children and teachers regarding entrepreneurship.

To the best of our knowledge, no published study has focused on young children's entrepreneurial attitudes and motivations and the extent to which schools might enhance their entrepreneurial potential.

Given the importance that early acquired competencies have on later entrepreneurial behavior, it would be illuminating to analyze this issue, overcoming this gap in the literature. Thus, our main research question is: "Which are the main entrepreneurial attitudes and motivations of young children enrolled in primary school in their own perceptions?".

In order to achieve this goal, we selected students from two classes of the 3rd and 4th grades of a private school located in Porto (Portugal). This school is well renowned for having a different way of teaching enabling their students to become critical thinkers, confident leaders, skilled communicators, constructive team players and efficient problem solvers. In order to assess attitudes and motivations, a questionnaire adapted from the Entrepreneurial Attitude Orientation Questionnaire (EAO), was implemented. Then, using econometric (logistic) tools we assess the determinants of each group of entrepreneurial attitudes (achievement, innovation, self-control and self-esteem).

The present study starts (Chapter 2) with a contextualization of the literature state of the art. Then, in Chapter 3, the explanation of the objectives and how the study was implemented are described. Chapter 4 presents the results of the empirical analysis. Finally, Conclusions summarised the main contributions of the present study, highlighting its limitations and path for future research.

2. Literature Review

2.1. On the concept of entrepreneurship

Entrepreneurship is often associated to economic growth (Holcombe, 1998; Wennekers and Thurik, 1999), development (Nooteboom, 1993), innovation (Wennekers and Thurik, 1999; Wong et al., 2005) and job creation (GEM, 2013). Taking advantage of entrepreneurial opportunities is a key element leading to economic growth (Holcombe, 1998). In order to enhance individuals' success, competencies and/or performance a solid entrepreneurial culture must be promoted (Cotoi et al., 2011).

Entrepreneurship takes place when an individual has a special mindset that enables her/him to explore the market/business opportunities (Krueger et al., 2000; Geldhof et al., 2014). According to Krueger et al. (2000: 411), *"[e]ntrepreneurship is a way of thinking that emphasizes opportunities over threats*".

Entrepreneurship is a behavioral characteristic (Wennekers and Thurik, 1999) that goes beyond job creation (self-employment or employing other individuals). Indeed it has a much larger spectrum in which entrepreneurs have the will to give back to the community (Kourilsky and Walstad, 1998), in a way that "*[e]ntrepreneurship represents a form of adaptive developmental regulation through which both entrepreneurs and their ecologies benefit*" (Geldhof et al., 2014: 1).

Entrepreneurship results from the interaction of several factors such as (Schoon and Duckworth, 2012): role modeling; socioeconomic status; academic attainment; generalized self-efficacy; social skills; and also occupational status (most notably being unemployed).

Silva (2007) suggests that it is likely to be a connection between having a 'Jack-of-All-Trades' attitude and entrepreneurship. 'Jack-of-All-Trades' correspond to individuals who acquired a broad range of skills, which translate into entrepreneurial skills (Lazear, 2005). However, Silva (2007) believes this attitude to be innate. This author further suggests that an individual will not increase his/her chances to become an entrepreneur by gathering a balanced skill-mix. Extant literature (e.g. Lazear, 2005; Do Paço and Palinhas, 2011), however, argues that entrepreneurship is stimulated by the accumulation of a balanced skill-mix across different fields of expertise, that entrepreneurs are multifaceted individuals and 'Jack-of-All-Trades'.

An entrepreneur is an individual that should therefore combine several talents being those innate or acquired by education, acculturation or other means, and also being a conductor of others talents namely gathering and maintaining teams of individuals that work synergistically (Lazear, 2005).

There are several characteristics to be found in an entrepreneur, most notably: achievement (Robinson et al., 1991); the need to take and assume risks (Do Paço and Palinhas, 2011); innovation (Robinson et al., 1991; Rasheed and Rasheed, 2003); creativity (Do Paço and Palinhas, 2011; Johansen and Clausen, 2011; Lindström, 2013); personal control (Robinson et al., 1991; Rasheed and Rasheed, 2003; Do Paço and Palinhas, 2011); not losing faith in being successful (Aşici and Aslan, 2010); self-esteem (Robinson et al., 1991; Rasheed and Rasheed, 2003; Do Paço and Palinhas, 2011); enjoying working (Aşici and Aslan 2010); being willing to learn something continuously (Aşici and Aslan, 2010); and loving problem solving, and dedicating oneself to his/her job (Aslan, 2010).

Some of these characteristics might be enhanced (or hindered) by factors such as gender (Johansen and Clausen, 2011; Schoon and Duckworth, 2012; Geldhof et al., 2014), ethnicity (Torimiro and Dionco-Adetayo, 2005; Arcand, 2012), age (Schwarz et al., 2009; Staniewski and Szopinski, 2013; Sepúlveda and Bonilla, 2014), role models (Van Auken et al., 2006; Johansen and Clausen, 2011; Chlosta et al. 2012; Bosma et al., 2012; Lafuente and Vaillant, 2013), education attainment (Kourilsky, 1980; Johansen and Clausen, 2011; Greene et al., 2013), and access to entrepreneurial education (Kourilsky and Walstad, 1998; Fiet, 2000; Rasheed and Rasheed, 2003; Johansen and Clausen, 2011).

2.2. Entrepreneurial attitudes and motivations

Entrepreneurship may be studied through personality, demographics or attitude approaches. It is argued that the approach related with attitudes is the best approach as attitudes may be modified and therefore influenced by educators (Robinson et al., 1991). Torimiro and Dionco-Adetayo (2005: 683) state that *"[a]ttitude is a feeling or evaluative reaction to an object, idea or situation*", an attitude is a reaction/position, positive or negative, favorable or unfavorable. In what concerns to entrepreneurial attitudes the factors with higher influence are geographic, economic, cultural and social (GEM, 2013).

Entrepreneurial education may be divided in four main pillars: knowledge (Fiet, 2000); personal traits (Wennekers and Thurik, 1999; Oosterback et al., 2010); skills and attitudes (Rasheed and Rasheed, 2003); motivations and intentions (Krueger et al., 2000). All of them are highly important for the process of teaching and learning entrepreneurship and when properly combined will result in the enhancement of entrepreneurial behaviors. Attitudes and motivations are crucial as it is by observing them that individuals' behavior can be better anticipated (Krueger et al., 2000).

Knowledge is an essential tool, as it is the best way to be prepared for the future (Fiet, 2000). Knowledge also enables individuals to get them aligned with entrepreneurial attitudes. Enhancement of entrepreneurial attitudes has effects not only in entrepreneurial aspects, but also in the society as a whole as it enables the construction of healthier citizens (Kourilsky, 1980). In addition, entrepreneurs present higher levels of well-being (GEM, 2013).

Extant literature (e.g., Krueger et al., 2000; Schoon and Duckworth, 2012) suggests that entrepreneurial intentions are one of the best predictors of entrepreneurial planned behavior. Schoon and Duckworth (2012) further suggest that entrepreneurial intentions start early in life, as becoming a business owner is often planned even before having a business idea, which translates the intentionality of planed behavior (Krueger et al., 2000, Schoon and Duckworth, 2012). This means that one becomes entrepreneur mainly because of an inner will, which is likely to have been developed early in life, enhanced by several factors, most notably education or role models.

Only when attitudes and beliefs are altered can you register a true entrepreneurial intention modification (Krueger et al., 2000; Van Auken et al., 2006). For that to happen an individual must accept a behavior as compulsory and only after, can he/she engage on certain entrepreneurial behavior (Sun and Lo, 2012).

Future entrepreneurship may then be predicted by attitudes that generate behaviors' (Schoon and Duckworth, 2012). There is, however, a need for an alignment of the individual and the opportunity that happens when the main pillars, namely knowledge, personal traits, skills and attitudes, motivations and intentions are combined (Hegarty and Jones, 2008).

According to Hegarty and Jones (2008), entrepreneurial attitudes enable students to be more prepared to the real and competitive world. Following the Entrepreneurial

Attitudes Orientation Scale (Robinson et al., 1991), entrepreneurial attitudes generally include four main items: achievement, innovation, personal control and self-esteem.

Achievement (Robinson et al., 1991) parallels striving for excellency and it is almost a synonym for entrepreneurship or entrepreneur. It is directly linked to results (Robinson et al., 1991), doing something faster and better than others or than yourself in the past (Hansemark, 1998). Achieving and the need for achievement are often connected with attitudes such as: dedicating oneself to his/her job (Aslan, 2010); being competitive or assertive (Aşici and Aslan 2010); the need to take and assume risks (Do Paço and Palinhas, 2011); motivation (Rasheed and Rasheed, 2003; Lindström, 2013) and the motivation to learn (Löbler, 2006; Lindström, 2013).

Innovation (Robinson et al., 1991; Rasheed and Rasheed, 2003) is defined as creating new things and or in a unique way (Robinson et al., 1991). Entrepreneurs are indicated as having higher levels of innovation than their comparable cohorts (Rasheed and Rasheed, 2003). Innovation is tightly connected to creativity (Do Paço and Palinhas, 2011; Johansen and Clausen, 2011; Lindström, 2013), and both are linked to planning something in mind continuously (Aslan, 2010); solving problems through new and different ways (Aslan, 2010); loving problem solving (Aslan, 2010); being curious (Aslan, 2010); having a lot of imagination (Aslan, 2010); having a questioning personality (Aşici and Aslan 2010); being willing to learn something continuously (Aşici and Aslan 2010); having spirit of initiative (Johansen and Clausen, 2011), and interest in a variety of different topics (Löbler, 2006).

Personal control (Robinson et al., 1991; Rasheed and Rasheed, 2003; Do Paço and Palinhas, 2011) is connected with the way people deal with emotions while performing tasks (Rasheed and Rasheed, 2003). Entrepreneurs have a higher personal control as they believe that the actions are influenced by their own efforts (Robinson et al., 1991; Rasheed and Rasheed, 2003). Attitudes such as: not losing faith in being successful (Aşici and Aslan, 2010); not losing faith in success and reward even when being unsuccessful (Aşici and Aslan, 2010) or withstand failure (Do Paço and Palinhas, 2011); improving oneself after completing tasks (Aşici and Aslan, 2010); not giving in quickly (Aşici and Aslan, 2010); cooperation abilities (Johansen and Clausen, 2011); development of self-confidence and self-responsibility (Lindström, 2013) are directly linked to personal control.

Finally, **self-esteem** (Robinson et al., 1991; Rasheed and Rasheed, 2003; Do Paço and Palinhas, 2011) regards to how individuals feel about their own skills and abilities (Robinson et al., 1991). Entrepreneurs have higher self-esteem than other individuals (Rasheed and Rasheed, 2003). This aspect is related to self-confidence (Aslan, 2010), enjoying working (Aşici and Aslan 2010), and confidence (Do Paço and Palinhas, 2011).

2.3. Children and entrepreneurial attitudes and motivations

Children are very interesting human beings, as they are, in general, very willing to learn, very curious, willing to take risks, creative and committed. Picasso once said that "every child is an artist, the problem is staying an artist when you grow up". Thus, it is very interesting to observe that the skills and the attitudes found in children seem to be very similar with the ones that define entrepreneurs. We could then induce that everyone could potentially be a future entrepreneur, as all were children in the past. However, reality is quite distinct. We could infer from this, as underlined by Löbler (2006) and by Picasso's quote, that there is a diminishing of these skills, attitudes and motivations as times passes by.

If children are such interesting human beings, how come does the system fail? And why do these attitudes diminish in time?

Albert Einstein stated that "the true sign of intelligence is not knowledge but imagination". Sir Ken Robinson most probably agrees with Einstein, as in one of the most famous Ted Talks about education,[1] stated that children have tremendous talents; however, they are educated out of creativity. Creativity, according to Robinson, should have a part as important as literacy in schools. He also stated that to be creative, one cannot be afraid of being wrong, or else giving a different type of answer will never be an option. By the time children grow up and become adults, most of them become frightened of being wrong and lose this capacity of being creative. "[O]ur education system has mined our minds in the way that we strip-mine the earth: for a particular commodity. And for the future, it won't serve us. We have to rethink the fundamental principles on which we're educating our children" (Sir Ken Robinson, in TED Talk, 2006).

[1] Sir Ken Robinson (2006), "How schools kill creativity", Ted Talks, in http://www.ted.com/talks/ken_robinson_says_schools_kill_creativity, accessed on July 22, 2014

There are several ways to touch children's attitudes and motivations. However, as said by Nelson Mandela, "education is the most powerful weapon which you can use to change the world". In sequence, entrepreneurial education assumes a major role to change attitudes and motivations (Sun and Lo, 2012) as it develops tools in order for individuals to reach to solutions by their own, instead of giving guidelines for problem solving, which comes in the same line of reasoning as Robinson or Einstein.

Entrepreneurial education shall focus on an experiential approach, as it is referred to be more effective than the conventional classroom approach while developing future entrepreneurial behavior (Do Paço and Palinhas, 2011; Baden and Parkes, 2013). Indeed, it is not compulsory that entrepreneurial education is transferred only in a classroom environment and "learning by doing" assumes an important role. Entrepreneurial skills and attitudes especially in younger ages may also be transferred informally by play (Löbler, 2006), as the students increase their skills and work on their attitudes actively however in a non-reflected way, in order to achieve the goals of the games/competitions.

It is then essential that entrepreneurial courses be adapted and customized (Hegarty and Jones, 2008; Aşici and Aslan, 2010), depending on several variables, namely the target population, which means that there must be different curricula for different ages/targets. But also the transmission of knowledge should be a customized experience, constructed in a learning oriented way as an alternative for the typical teaching oriented way (Löbler 2006), since it is a reality where "guidelines" or "roadmaps" do not work, characterized by diversity and ongoing change (Löbler 2006), requiring therefore customization, or in other words, to be learner-centered (Hegarty and Jones 2008). A learner-centered approach will have a better response on children's present and future attitudes and motivations.

A learner-centered approach requires that teachers have the capabilities to understand the students' needs and help them through the process guiding them, but not giving them the answers. The teachers should put the students on the driver's seat, enabling them to reach their goals, by being an assistant or a coach during the learning process; the entrepreneurial process shall be a guiding process where the teacher is seen as an advisor that helps the student to achieve their goal, by mentoring them.

The student becomes an active producer of knowledge within the learning process (Löbler, 2006). Students demonstrate capacity of thinking and reasoning and confidence to use their instincts and express judgments (Hegarty and Jones, 2008). A question that will remain unanswered is if the teachers are enabled with tools to be able to mentor and efficiently guide students in their entrepreneurial journey.

A widespread view point is that the efforts regarding enhancing entrepreneurial skills, attitudes and motivations if done only later in life may produce poor results or no results at all. Indeed, some authors (e.g., Rasheed and Rasheed, 2003) content that the educational system should be encouraged to invest in entrepreneurial training in order to develop and nurture entrepreneurship at an early age.

According to Löbler (2006), the sooner you begin to get in touch with entrepreneurship, the higher are the odds for entrepreneurship to be enhanced. However, the literature is not very explicit when this should happen in children's lives. Schoon and Duckworth (2012), state that social skills and entrepreneurial intentions are expressed by the age of 16. Further, the literature suggests that attitudes connected to entrepreneurship diminish over time, being superior in kindergarten and decreasing with age, lowering almost 90% until university (Löbler, 2006).

Nevertheless, the same entrepreneurial experience will have different impacts on each child, which means that the success of the experiment is directly connected to how the child views and perceives it and in which grade she/he is involved (Torimiro and Dionco-Adetayo, 2005).

2.4. Relationship between entrepreneurial attitudes, motivations and other relevant factors

There may be several relationship between entrepreneurial attitudes and motivations and factors such as grades (Löbler, 2006), gender (Kourilsky, 1980; Johansen and Clausen, 2011; Schoon and Duckworth, 2012; Geldhof et al., 2014), age (Schwarz et al., 2009; Staniewski and Szopinski, 2013; Sepúlveda and Bonilla, 2014), favorite areas (Etaugh and Liss 1992), children's occupational aspirations (O'Keefe and Hyde, 1983; Etaugh and Liss 1992; Weisgram et al., 2010), parents occupations (Van Auken et al., 2006; Johansen and Clausen, 2011; Arcand, 2012; Bosma et al.; 2012; Chlosta et al., 2012; Sun and Lo, 2012; Lafuente and Vaillant, 2013; Geldhof et al., 2014), education attainment (Kourilsky, 1980; Johansen and Clausen, 2011; Greene et al., 2013), and

access to entrepreneurial education (Kourilsky and Walstad, 1998; Fiet, 2000; Rasheed and Rasheed, 2003; Johansen and Clausen, 2011).

Several studies have been made in reference to different grades and phases of education. Many authors (e.g., Hegarty and Jones 2008; Oosterbeek et al., 2010) have studied entrepreneurship education in universities. Some (e.g., Aşici and Aslan, 2010; Johansen and Clausen, 2011) have studied the universe of secondary schools, whereas Aslan (2010) and Do Paço and Palinhas (2011) studied primary schools, and Lindström (2013) preschools. However, there is a rising need to research entrepreneurial attitudes and motivations and the extent to which schools might enhance children's entrepreneurial potential.

Regarding the gender discussions, several authors (e.g., Johansen and Clausen, 2011) find that there are no significant differences at this regard in entrepreneurship propensity/intents. In contrast, Schoon and Duckworth (2012) and Geldhof et al. (2014), state that males present higher entrepreneurial intents than females. Kourilsky (1980) argues that there are gender differences and the tendency is for girls to present more entrepreneurial intent than boys.

Extant literature portrays a relationship between age and entrepreneurial intentions (Schwarz et al., 2009; Staniewski and Szopinzki, 2013; Spúlveda and Bonilla, 2014). This relationship may be u-shaped as stated by Schwarz et al. (2009), having on a first stage a positive relationship with age and then inflecting to a negative relationship (Schwarz et al., 2009; Staniewski and Szopinzki, 2013; Spúlveda and Bonilla 2014). Entrepreneurial intent grows most probably, because in younger ages there is no solid career planning, also it probably declines due to a higher consciousness about the inherent risks of entrepreneurship (Schwarz et al., 2009).

Families' occupations influence children's vocations, however this influence is scarce as stated by Barak et al. (1991). Children's vocations reveal their personality, as the disciplines/courses tend to be related to values and performance (Stein, 1971).

Parents' and their occupation have a positive influence on children and on children's present and future choices, as children identify themselves with their parents' occupation and this influence is stronger in younger ages (Whiston and Keller, 2004). In addition, there is reasonable evidence that entrepreneurial intention is positively correlated with having entrepreneurial parents (Chlosta et al., 2012; Sun and Lo, 2012;

Geldhof et al., 2014), being the impact on entrepreneurial intention of parental, paternal and maternal role models similar (Johansen and Clausen, 2011; Arcand, 2012; Chlosta et al., 2012).

The main purpose of entrepreneurial education is, besides creating entrepreneurs in order to be future business owners, to touch students as to change their *modus operandi*. This means that attitudes and motivations might be altered by education/schooling so that students become entrepreneurial-minded in the different aspects of life, business or non-business (Hegarty and Jones, 2008).

In the present study, our aim is to understand which are the main entrepreneurial attitudes and motivations of young children enrolled in primary school in their own perceptions. We do this, by trying to understand which are the main attitudes and motivations of children, to assess how these attitudes and motivations relate with other relevant variables, namely gender, age, grade, children's vocations and aspirations, and parent's occupations, and to assess what is the influence of the education in children's attitudes and motivations.

3. Methodology

3.1. Objectives

In order to study entrepreneurial attitudes and motivations of children, we posed two research questions: “Which are the main entrepreneurial attitudes and motivations in children through children's eyes?” and “How does education/schooling reflect on attitudes and motivations of children?”. The corresponding goals are then:

1. To understand which are, at the present, the main attitudes and motivations of children;
2. To assess how these attitudes and motivations relate with other relevant variables, namely gender, age, grade, children’s vocations and aspirations and parent’s occupations;
3. To assess what is the influence of education/schooling on children’s attitudes and motivations.

The present study is composed by a quantitative analysis (direct survey to the students), involving 4 classes in total, of the 3rd and 4th grades of a private school in Porto, with a particular pro-entrepreneurial context, where children are from young ages encouraged and taught to be leaders, problem solvers, entrepreneurs (CLIP, 2014).

The survey implementation occurred in June 2014 and the data was collected personally by the author of the present study.

The quantitative analysis was made based on a survey (following the Entrepreneurial Attitude Orientation survey). All the children were authorized to participate in the activity by the school and the parents. Not all the children participated because a few were not in that day in the school or in the class. The school was very helpful and made no restrictions to the study. The study was handled anonymously. The teachers were present during the application of the survey. The interference of the teachers was none or minimal which was considered positive, regarding the activity.

As referred above, the school selected for the study is a private school at Porto with particular pro-entrepreneurial context. This school has approximately 650 students, aged 3 to 18, from 25 different countries and makes a bet in critical thinking, confident leadership, skilled communication, constructive team playing and efficient problem solving. From the three learning stages - Lower school (Pre-K - Form 4); Middle school

(Form 5 - Form 8); Upper school (Form 9 - Form 12)- given the aim of our study,, we opted to focus on the Lower school, more specifically in the 3rd and 4th grades, or Form 3 and 4 (CLIP, 2014).

3.2. Quantitative analysis

The quantitative analysis encompasses an adaptation of the Entrepreneurial Attitude Orientation Survey (EAO). The EAO is a tool to predict entrepreneurial attitudes and motivations and is composed by 75 questions, each belonging to one of the four of the EAO subscales: achievement, personal control, innovation or self-esteem.

Each statement in EAO is to be responded in a scale from "1" to "10", where "1" indicates strongly disagreement with the statement and "10" indicates strongly agreement with the statement.

Besides the need to translate the original EAO to Portuguese, the selected questions had to be adapted to the target population - children.

Out of the 75 EAO questions, we select 15 to make the questionnaire easy and feasible to answer by children (see Appendix I).

Although the EAO's scale is from "1" to "10", again for the sake of simplification given our target population, we opted for a Likert scale of "1" to "5" with "smiles" where "☹" indicates that the student strongly disagrees with the statement and "☺" indicates she/he strongly agrees with the statement.

The 15 questions respect the EAO subscales, namely achievement, personal control, innovation and self-esteem (Robinson et al., 1991). - see summary in Table 1.

The survey was reviewed by two senior professors and researchers, well experienced with survey implementation: one from the Economics' Faculty of the University of Porto and the other from the children educational field from the University of Minho, Institute of Education.

After revising the questionnaire, we pre-tested it in children belonging to the same age of the target population. We then changed the questionnaire in accordance with this pilot test.

The survey was applied in the classroom. The children were given 15 minutes approximately to fill in the questionnaire. The activity was firstly explained in

Portuguese[2] and no main complications regarding the language were perceived. All the questions were read one by one.

Table 1: Statements selected from EAO by categories

Achievement	Innovation	Personal Control	Self-Esteem
1) I get very excited when I have the best results of the class.	4) I feel sad when I arrive late to school.	7) I feel upset whenever some colleague tries to boss me.	10) I feel sad when I am mocked.
2) I never put important shores off until a more convenient time (e.g. homework).	5) When I'm doing a new shore I usually follow the instructions.	8) I always work hard to get better.	11) I think it is important what my colleagues think of me.
3) I believe that results are important to know how school is going.	6) In order to have good results I have to do my homework, behave and study.	9) I believe that if I work/study hard I will be recognized and rewarded by the teachers and parents.	12) I'm normally very good in sports at school.
			13) I'm normally very good in studies related activities at school.
			14) I'm normally very good in arts and drawing activities at school.
			15) I believe that my colleagues respect me for being good in the activities in which I get involved in (e.g. sports or being a good student).

Achievement corresponds to striving for excellency and the questions selected regard to obtaining results [(1) and (3)] and not procrastinating [(2)]. **Innovation** is defined by creating new things, in a unique way and is a parallel with being creative, the questions [(4) and (5)] are stated in a reversed way and concern following the rules and [(6)] regards the process needed to attain results/innovation. **Personal Control** regards dealing with emotions while performing tasks and question [(7)] expresses on how to deal with the feeling of frustration, while [(8) and (9)] emphasize the effort placed into a task in order to have an emotional reward. **Self-esteem** concerns on how individuals feel about their own skills and abilities, with questions [(10), (11) and (15)] referring to the influence that a third party's opinion has on children's lives [being question (10) a reverse quoted question], while [(12), (13) and (14)] respect children's opinion about their own live.

[2]The schools' official language is English, however most of the students are Portuguese and all of the students that participated in the study understood Portuguese or had a translator.

As expected, the children from the 4th grade were faster to complete the activity in comparison to those from the 3rd grade. At the end of the activity all the children were given a "thank you" activity composed by several games as find the differences and Sudoku that can be found in Appendix II.

Children presented in general difficulties to respond to their parents' occupation. The teachers and the author of the study tried to help them in this process. Also questions 4, 7 and 10 were re-explained as the students considered the answer not intuitive and tended to answer regarding the smile faces and not regarding the agreement scale.

Regarding the variable "*what do you want to be when you grow up*" an open answer was posed and the students were able to reply to how many occupations they wanted. The occupations were categorized into creative, non creative with a degree, sports and others. Regarding the question "father occupation" and "mother occupation", we considered among the two elements of the couple involving the highest level of academic studies. Parents' occupations were also categorized accordingly to the national classification of occupations[3] and for the matters of the study divided into entrepreneurs or non entrepreneurs. The categorization according to the national occupation categories includes: 1) Civil service directors; company directors and management team; 2) Intellectual and scientific specialists; 3) Middle level professionals; 4) Administrative; 5) Salesman and Service people; 6) Farmers and fishers; 7) Workers and craft workers; 8) Factory workers; 9) Non qualified workers.

As entrepreneurs we considered business owners, chiefs and directors, and other occupations normally performed as independent occupations or freelancers (e.g. lawyers, economists, doctors, designers).

In what concerns the subjects that the students are more found of, they were asked to pick from various options, which were their top3 favorite areas. They were able to pick one, two or three answers. The possibilities were: Artistic expression; English; Mathematics; Physical Education; Portuguese; Study of the Environment; and 'Others'. If they picked "others" they had an open field to specify the answer.

[3] http://cdp.portodigital.pt/profissoes/classificacao-nacional-das-profissoes-cnp, accessed on September 17, 2014

4. Empirical results

4.1. Descriptive analysis

In total, 78 students from the 3rd and 4th grades participated in the study. The students were equally balanced in terms of gender and schooling year (cf. Table 2): 39 female and 39 male students; 39 from the 3rd grade and 39 from the 4th grade.

Table 2: Distribution of the students by gender and grade

			Grade		Total
			3rd	4th	
Gender	F	n	18	21	39
		%	46	54	
	M	n	21	18	39
		%	54	46	
Total		**n**	**39**	**39**	**78**
		%	**50**	**50**	

The students' ages ranged 8 and 10 years old. In the total, 24% (19) of the students are 8 years old, 59% (46) are 9 and 17% (13) are 10 years old (cf. Table 3).

Table 3: Distribution of the students by gender and age

			Age			Total
			8	9	10	
Gender	F	n	10	25	4	39
		%	26%	64%	10%	
	M	n	9	21	9	39
		%	23%	54%	23%	
Total		n	19	46	13	78
		%	24%	59%	17%	

For the open question "*what do you want to be when you grow up*", the results evidence (cf. Table 4) that 33 (43%) children (22 as the first option) aspire to have a creative related occupation, most notably actor/actress. Sports related occupations attract 22 children (16 as a first career option). Science based occupations, especially those related with medicine, are envisaged by 22 children, as first career option.

Table 4: Results of the question "What do you want to be when you grow up?"

	1st Answer		2nd Answer		3rd Answer		4th Answer	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Actress/Actor	6	7.7	2	2.6	1	1.3		
Adventurer	1	1.3						
Architect	3	3.8						
Artist	1	1.3						
Hairdresser	1	1.3	1	1.3				
Rapper	1	1.3						
Youtuber	3	3.8	1	1.3				
Dancer	1	1.3	1	1.3				
Model	1	1.3	2	2.6				
Painter			1	1.3	1	1.3		
Singer	3	3.8			1	1.3		
Stylist	1	1.3						
Creative related occupations	**22**		**8**		**3**			
Basketball player	2	2.6						
Chess Player					1	1.3		
Dolphin trainer	1	1.3						
Footballer	6	7.7			1	1.3		
Goal Keeper	1	1.3	1	1.3				
Gymnast	2	2.6						
Pilot	2	2.6	1	1.3				
Skater	1	1.3						
Surfer			1	1.3				
Tennis player	1	1.3	1	1.3				
Sports related occupations	**16**		**4**		**2**			
Cardiologist	1	1.3						
Dentist	1	1.3						
Physician	7	9.0	3	3.8				
Pediatrician	2	2.6						
Vet			3	3.8				
Economist	1	1.3						
Engineer	1	1.3	1	1.3				
Lawyer	1	1.3						
Scientist	4	5.1	1	1.3				
Teacher	3	3.8	1	1.3				
Work with computers	1	1.3						

Non Creative/Degree related occupations	**22**		**9**					
Detective	1	1.3						
Spy					1	1.3		
Police	2	2.6						
SWAT - Special Weapons And Tactics	1	1.3						
Sweaters' seller					1	1.3		
Gravedigger	1	1.3						
Fireman							1	1.3
Warehouse worker	1	1.3						
Other occupations	**6**				**2**		**1**	
Don't Know	**10**	**12.8**	**1**	**1.3**				

Most of the parents' occupations regard the 1st and 2nd level of the national occupation categories, with a total of 61 answers in a total of 72, corresponding to 85%. The first level corresponds to directors and managers (26 parents), and the sample reflects that many parents are business owners and business directors or managers. Regarding the second level, which relates to intellectual and scientific specialists, many physicians, engineers and lawyers can be found. The third category, middle level professionals correspond to 12.5% (9 parents) and the fifth, salesman and service people to 2.8% (2 parents).

Table 5: Number of responses by parents' occupations

	n	%	Valid %
1) Civil service directors; Company directors and management team	26	33.3	36.1
2) Intellectual and scientific specialists	35	44.9	48.6
3) Middle level professionals	9	11.5	12.5
5) Salesman and Service people	2	2.6	2.8
Sub Total	72	92.3	100.0
Missing System	6	7.7	
Total	78	100.0	

As explained in the methodology part (Chapter 3), the parents were divided into entrepreneurial and non-entrepreneurial individuals. Entrepreneurs included chiefs, directors and independent professionals. Entrepreneurs have a larger expression, representing 62% of the total and corresponding to 48 parents.

Table 6: Distribution of the responses according to parents' entrepreneurial status

	n	%	Valid %
Non-Entrepreneurs	30	38.5	38.5
Entrepreneurs	48	61.5	61.5
Total	**78**	**100.0**	**100.0**

On what concerned the subjects that the students are more found of, children were asked to pick, from various options, which were their favorite top3 areas. All the students indicated at least 1 favorite area, 68 students indicated 2 and 53 indicated 3.

Considering all the answers (see Table 7), students prefer most Mathematics (43 students), Physical education (34) and Portuguese (33).

Table 7: Distribution of children by their most favorite areas

	Option 1		Option 2		Option 3	
	n	%	n	%	n	%
Mathematics	43	55.1				
Portuguese	18	23.1	15	19.2		
Study of the Environment	6	7.7	19	24.4	5	6.4
Physical education	5	6.4	15	19.2	14	17.9
English	3	3.8	12	15.4	3	3.8
Artistic expression	1	1.3	4	5.1	25	32.1
Others	2	2.6	3	3.9	6	7.7
Total	**78**	**100.0**	**78**	**100.0**	**78**	**100.0**

As explained in the methodology (cf. Chapter 3), we aggregate the statements about entrepreneurial attitudes and motivations according to the Entrepreneurial Attitude Orientation Survey (EAO) into 4 main categories: achievement, innovation, personal control, and self-esteem. The highest average score (4.17) was obtained for personal control, followed by achievement (4.14), self-esteem (3.46), with the lowest score respecting innovation (3.04). Given the scale adopted (1…5), we might consider that, on the overall, children inquired present a high level of entrepreneurial attitudes.

Table 8: Attitudes and motivations of children: average scores

	Mean	SD
Q1) I get very excited when I have the best results of the class.	4.62	.629
Q2) I never put important shores off until a more convenient time (e.g. homework).	3.53	1.252
Q3) I believe that results are important to know how school is going.	4.27	0.976
Achievement	**4.14**	**0.58**
*Q4) I feel sad when I arrive late to school.	3.30	1.328
*Q5) When I'm doing a new shore I usually follow the instructions.	4.22	.805
Q6) In order to have good results I have to do my homework, behave and study.	4.66	.681
Innovation	**3.04**	**0.53**
Q7) I feel upset whenever some colleague tries to boss me.	3.95	1.326
Q8) I always work hard to get better.	4.20	0.924
Q9) I believe that if I work/study hard I will be recognized and rewarded by the teachers and parents.	4.28	0.966
Personal Control	**4.17**	**.75**
*Q10) I feel sad when I am mocked.	4.24	1.295
Q11) I think it is important what my colleagues think of me.	3.57	1.342
Q12) I'm normally very good in sports at school.	4.21	1.068
Q13) I'm normally very good in studies related activities at school.	3.65	1.020
Q14) I'm normally very good in arts and drawing activities at school.	3.96	1.057
Q15) I believe that my colleagues respect me for being good in the activities in which I get involved in (e.g. sports or being a good student).	3.64	1.317
Self-Esteem	**3.46**	**.55**

Note: * reverse scored questions.

4.2. Determinants of children's entrepreneurial attitudes: an exploratory analysis

Using the Kruskal Wallis non parametric test of differences in means (see Table 9), we conclude that no significant differences exists between boys and girls regarding entrepreneurial attitudes. In contrast, age and schooling discriminate particularly regarding achievement and personal control with younger children and those enrolled in earlier schooling levels denoting higher levels of achievement and personal control. In terms of innovation children enrolled in the 4th grade demonstrated higher levels of innovation compared with their 3rd year schooling counterparts.

Children that aspire to have a non-creative occupation revealed higher levels of achievement and personal control. This might seem unexpected, however, the relation between choosing an occupation as Physician for example and having higher levels of achievement and personal control seems quite likely.

Table 9: Children's entrepreneurial attitudes and their characteristics: non parametric test of Kruskal Wallis of differences in means

		Achievement	Innovation	Personal Control	Self Esteem
Demografics	Female	4.228	2.947	4.162	3.396
	Male	4.060	3.126	4.180	3.523
	p-value	*0.209*	*0.121*	*0.620*	*0.191*
	8 years old	4.404	2.870	4.407	3.454
	9 years old	4.148	3.059	4.167	3.430
	10 years old	3.744	3.194	3.833	3.569
	p-value	***0.009*****	*0.320*	***0.097****	*0.591*
Schooling	3rd Grade	4.298	2.868	4.405	3.527
	4th Grade	3.992	3.207	3.937	3.389
	p-value	**0.032****	**0.005*****	**0.003*****	.216
Children's vocations	Mathematics	4.140	3.064	4.268	3.454
	Other	4.147	3.000	4.051	3.465
	p-value	.884	.620	.278	.776
	Physical education	4.101	3.031	4.061	3.522
	Other	4.174	3.039	4.260	3.413
	p-value	.762	.939	.179	.466
	Portuguese	4.188	2.968	4.056	3.460
	Other	4.111	3.083	4.250	3.458
	p-value	*.660*	*.329*	*.417*	*.819*
	Artistic Expression	4.167	3.012	4.143	3.389
	Other	4.128	3.051	4.188	3.500
	p-value	*0.633*	*0.698*	*0.696*	*0.244*
Children's aspirations	Creative	3.986	3.030	3.968	3.442
	Other	4.210	3.038	4.252	3.465
	p-value	**0.090***	0.906	**0.069***	0.808
	Non Creative	4.4921	2.8788	4.4921	3.4365
	Other	4.0119	3.1006	4.0440	3.4679
	p-value	**0.001*****	0.140	**0.022****	0.686
	Sports	4.133	3.128	4.111	3.589
	Other	4.145	3.016	4.186	3.425
	p-value	*0.932*	*0.643*	*0.870*	*0.297*
Context – parents' occupations	Entrepreneurs	4.177	2.964	4.222	3.482
	Non Entrepreneurs	4.089	3.149	4.092	3.423
	p-value	*0.508*	*0.152*	*0.669*	*0.758*

Note: *** (**) [*] Significance at 1% (5%) [10%]

4.3. Determinants of children's entrepreneurial attitudes: a causality analysis

In order to assess the determinant of each entrepreneurial attitude - Achievement, Innovation, Personal Control, Self-Esteem – and the overall entrepreneurial attitude (index computed as a simple average of the 4 entrepreneurial attitudes considered), we estimate five logistic models where the dependent variable is a dummy assuming value 1 when the score of each attitude is above the average and 0 otherwise. All the five models estimated (cf. Table 10) present a reasonable quality of adjustment – the null

hypothesis of the Hosmer and Lemeshow test (the model represents the reality well) is accepted and the percentage of observations of the dependent variable correctly estimated is above 60%.

Based on the results, we conclude that the key determinants of entrepreneurial are gender and schooling.

Specifically, boys reveal, all other things remaining constant, higher levels of innovation and self-esteem attitudes; however, for the sample analyzed, boys and girls do not differ regarding achievement, personal control and overall entrepreneurial attitude.

The literature is divided regarding the gender discussion, as there are authors who state that there are no significant differences regarding the gender (e.g. Johansen and Clausen, 2011) and others that sustain that significant differences exists (Schoon and Duckworth, 2012; Geldhof et al., 2014). Geldhof et al. (2014), studied college students and argue that males present higher levels of entrepreneurial intents than females. However these studies correspond to different targets comparing to ours and we do not think it is possible to make straight comparisons.

Schooling levels impact distinctly on entrepreneurial attitudes. Indeed, global entrepreneurial attitudes and self-control attitudes are lower in children enrolled in the 4^{th} grade as to compare with those enrolled in the 3^{rd} grade. In contrast, children enrolled in more advanced schooling grades (4^{th}) are, on average, significantly more innovative that their less advanced counterparts.

Our results supports Löbler's (2006) and Robinson's (2006) content that there would be a decrease in the levels of entrepreneurial attitudes as children enter school and follow the normal educational path. However, we cannot support the argument of Sir Ken Robinson (2006) that "children are educated out of creativity". In fact, innovation attitudes are positively related with schooling grades, and thus, given the relation between innovation and creativity (Chell and Athayde, 2009; Gundry et al., 2014), education seems to enhance innovation and creativity.

Finally, children's vocation, namely Physical Education, has impact on children's innovation. Children for whom Physical Education is one of their favorite subjects present lower levels of innovation.

Table 10: Determinants of children's entrepreneurial attitudes (dependent variable: dummy that assumes value 1 when the score for each attitude is above the average and 0 otherwise) - logistic estimates

		Global Entrepreneurial index[(1)]	Achievement	Innovation	Personal Control	Self Esteem
Gender (default: male)	Female	0.193	0.728	**-1.455****	0.219	**-.945***
Schooling (default: 3rd grade)	4th Grade	**-1.476****	-.394	**1.755*****	**-1.181****	-.382
Vocations (default: Others)	Mathematics	.151	.203	.127	.579	-.419
	Physical education	-.202	.541	**-1.189***	-.787	.045
	Portuguese	-.499	-.154	.016	-.836	.083
	Artistic Expression	-.741	-.260	-.043	-.233	-.536
Aspirations (default: Others)	Creative	.061	.351	-1.018	-.555	.168
	Non Creative	.866	1.869	-1.118	.674	.088
	Sports	-.180	.400	.095	.094	.241
Context (parents' occupation – default: non-entrepreneurs)	Entrepreneurs	.032	.045	-.632	.160	.661
Constant		0.906	-1.007	.608	1.072	.599
N		65	77	75	74	73
Entrepreneurs		33	39	28	33	38
Non-Entrepreneurs		32	38	47	41	35
Goodness of fit	Hosmer and Lameshow Test (p-value)	9.187 (0.239)	7.440 (0.490)	5.135 (0.643)	9.736 (0.284)	8.036 (0.430)
	% correct	67.7	64.9	72.0	66.2	60.3

Note: *** (**) [*] Statistical significance at 1% (5%) [10%].

5. **Conclusions**

The main research question of this study is: "Which are the main entrepreneurial attitudes and motivations of young children enrolled in primary school in their own perceptions?", being the purpose of this study to understand which are, at the present, the main attitudes and motivations of children, to assess how these attitudes and motivations relate with other relevant variables, namely gender, age, grade, children's vocation and aspiration and parent's occupations, and to assess what is the influence of the education in children's attitudes and motivations.

The literature has studied entrepreneurial education broadly, namely regarding college students (e.g., Hegarty and Jones, 2008; Oosterbeek et al., 2010) and secondary students (e.g., Aşici and Aslan, 2010; Johansen and Clausen, 2011). Fewer has been done regarding primary schools (Aslan, 2010; Do Paço and Palinhas, 2011) or preschools (Lindström, 2013). However the studies regarding primary schools do not focus entrepreneurial attitudes and motivations in children's own perception, which is a gap of the literature and the main purpose of our study.

We implemented a survey on 78 children from a private school in Porto, Portugal. Which enabled us to the following conclusions regarding children's entrepreneurial attitudes and motivations:

- boys have higher levels of innovation than girls;
- from the 3rd to the 4th grade there is a decrease in entrepreneurial attitudes in general, and those related to Achievement and Personal Control in particular, however innovation attitudes are higher in the 4th grade students;
- children that aspire to have a non-creative occupation revealed higher levels of achievement and personal control;
- children who like Physical Education present lower levels of innovation.

Different kinds of limitations were felt during the study. Namely, it was difficult to have access to the schools and we had to adjust the study as just one private school was willing to cooperate with us. Also, the scholar calendar delayed the activities and limited the research.

For future research we understand it would be important to study other schools with different type of entrepreneurial environments.

The survey should be re-reviewed, as it was adapted to a different target than the original survey. After the revision, the survey should be tested and revalidated with children. In the implementation of the survey all the questions should be read out loud (what was made), and the children should be given time to answer as the questions are being read.

References

Acs, Z.J. (2006) "How is entrepreneurship good for economic growth?" *Innovations*, 1(1): 97-107.

Acs, Z.J.; Amorós, J.E. (2008), "Entrepreneurship and competitiveness dynamics in Latin America." *Small Business Economics*, 31(3): 305–322.

Arcand, S. (2012), "Transmission of entrepreneurial spirit from first to second generation ethnic minorities in Montreal: Opening paths for further researches", *Journal of Enterprising Communities*, 6 (1): 39-56.

Aşici, H.; Aslan, S. (2010), "The views of primary school 6th, 7th and 8th year students and teachers regarding entrepreneurship", *Procedia - Social and Behavioral Sciences*, 9: 1731-1735.

Aslan, S. (2010), "The views of primary school 4th and 5th year students and teachers regarding entrepreneurship", *Procedia - Social and Behavioral Sciences*, 9: 1736-1740.

Baden, D.; Parkes, C. (2013), "Experiential learning: Inspiring the business leaders of tomorrow", *Journal of Management Development*, 32 (3): 295-308.

Barak, A.; Feldman, S.; Noy A. (1991), "Traditionality of Children's Interests as Related to Their Parents' Gender Stereotypes and Traditionality of Occupations'", *Sex Roles*, 24 (7/8): 511-524.

Bosma, N.; Hessels, J.; Schutjens, V.; Praag, M.V.; Verheul, I. (2012), "Entrepreneurship and role models", *Journal of Economic Psychology*, 33 (2): 410-424.

Chell, E.; Athayde, R. (2009), "The identification and measurement of innovative characteristics of young people. Development of the Youth Innovation Skills Measurement", *NESTA Making Innovation Flourish.*

Chlosta, S.; Patzelt, H.; Klein, S.B.; Dormann, C. (2012), "Parental role models and the decision to become self-employed: The moderating effect of personality", *Small Business Economics*, 38 (1): 121-138.

CLIP (2014), *We are one*, Porto: CLIP.

Cotoi, E.; Bodoasca, T.; Catana, L.; Cotoi, I., (2011), "Entrepreneurship European development strategy in the field of education", *Procedia Social and Behavioral Sciences*, 15: 3490–3494.

Do Paço, A.; Palinhas, M. J. (2011), "Teaching entrepreneurship to children: A case study" *Journal of Vocational Education and Training*, 63 (4): 593-608.

Etaugh, C.; Liss, M.B. (1992), "Home, school, and playroom: training grounds for adult gender roles", *Sex Roles*, 26 (3/4): 129-147.

European Commission (2012), "Developing Key Competences at school in Europe: challenges and opportunities for policy", Eurydice Report, http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/145EN.pdf, accessed on September 17, 2014.

European Union Education (2006), "Promoting entrepreneurship in schools and universities", http://europa.eu/legislation_summaries/education_training_youth/general_framework/n26111_en.htm, accessed on September 17, 2014.

Fiet, J.O. (2000), "The theoretical side of teaching entrepreneurship", *Journal of Business Venturing*, 16: 1–24.

Geldhof, G.J.; Weiner, M.; Agans, J.P.; Mueller, M.K.; Lerner, R.M. (2014), "Understanding entrepreneurial intent in late adolescence: the role of intentional self-regulation and innovation", *Journal of Youth and Adolescence,* 43: 81-91.

GEM (2013), *Global Entrepreneurship Monitor 2013 Global Report*, London: UK.

Greene, F.J.; Han, L.; Marlow, S. (2013), "Like mother, like daughter? Analyzing maternal influences upon women's entrepreneurial propensity", *Entrepreneurship: Theory and Practice*, 37 (4): 687-711.

Gundry, L.K.; Ofstein, L.F.; Kickul, J.R. (2014), "Seeing around corners: How creativity skills in entrepreneurship education influence innovation in business", *The International Journal of Management Education*, online first, forthcoming.

Hansemark, O.C. (1998), "The effects of an entrepreneurship programme on Need for Achievement and Locus of Control of reinforcement", *InteJnl of Entrepreneurial Behaviour & Research*, 4 (1): 28-50.

Hegarty, C.; Jones, C. (2008), "Graduate entrepreneurship: More than child's play", *Education and Training*, 50 (7): 626-637.

Holcombe, R.G. (1998), "Entrepreneurship and economic growth", *The Quarterly Journal of Austrian Economics,* 1 (2): 45-62.

Johansen, V.; Clausen, T.H. (2011) "Promoting the entrepreneurs of tomorrow: Entrepreneurship education and start-up intentions among schoolchildren", *International Journal of Entrepreneurship and Small Business*, 13 (2): 208-219.

Kourilsky, M. (1980), "Predictors of entrepreneurship in a simulated economy", *The Journal of Creative Behavior,* 14 (3): 175-198.

Kourilsky, M; Walstad, W.B. (1998), "Entrepreneurship and female youth: knowledge, attitudes, gender differences, and educational practices", *Journal of Business Venturing*, 13: 77–88.

Krueger, Jr. N.F.; Reilly, M.D.; Carsrud, A.L. (2000), "Competing models of entrepreneurial intentions", *Journal of Business Venturing*, 15 (5): 411-432.

Lafuente, E.M.; Vaillant, Y. (2013). "Age driven influence of role-models on entrepreneurship in a transition economy", *Journal of Small Business and Enterprise Development*, 20 (1): 181-203.

Lazear, E. (2005), "Balanced skills and entrepreneurship", *The American Economic Review*, 94 (2): 208-211.

Lindström, L. (2013), "What do children learn at Swedish preschools?", *International Education Studies*, 6 (4): 236-250.

Löbler, H. (2006), "Learning entrepreneurship from a constructivist perspective", *Technology Analysis and Strategic Management*, 18 (1): 19-38.

Nooteboom, B. (1993), *Schumpeterian and Austrian Entrepreneurship: A Unified Process of Innovation and Diffusion*, Faculteit Bedrijfskunde, Rijksuniversiteit Groningen.

O'Keefe, E.S.C.; Hyde, J.S. (1983), "The development of occupational sex-role stereotypes: The effects of gender stability and age", *Sex Roles*, 9 (4): 481-492.

Oosterbeek, H.; Praag, M.V.; Ijsselstein, A. (2010), "The impact of entrepreneurship education on entrepreneurship skills and motivation", *European Economic Review,* 54: 442–454.

Porter, M. (1990), *The Competitive Advantage of the Nations*, New York: Free Press.

Rasheed, H.S.; Rasheed, B.Y. (2003), "Developing entrepreneurial characteristics in minority youth: the effects of education and enterprise experience", *Ethnic Entrepreneurship: Structure and Process (International Research in the Business Disciplines*, 4: 261 – 277.

Robinson, P.B.; Stimpson, D.V.; Huefner, J. C.; Hunt, H.K. (1991), "An attitude approach to the prediction of entrepreneurship", *Entrepreneurship Theory and Practice*, 15 (4): 13-31.

Schoon, I.; Duckworth, K. (2012), "Who becomes an entrepreneur? Early life experiences as predictors of entrepreneurship", *Developmental Psychology*, 48 (6): 1719-1726.

Schumpeter, J.A. (1934), *The Theory of Economic Development,* Cambridge.MA: Harvard University Press.

Schwarz, E.J.; Wdowiak, M.A.; Almer-Jarz, D.A.; Breitenecker, R.J. (2009), "The effects of attitudes and perceived environment conditions on students' entrepreneurial intent: An Austrian perspective", *Education and Training*, 51 (4): 272-291.

Sepúlveda, J. P.; Bonilla, C. A., (2014), "The factors affecting the risk attitude in entrepreneurship: Evidence from Latin America", *Applied Economics Letters*, 21 (8): 573-581.

Silva, O. (2007), "The Jack-of-All-Trades entrepreneur: Innate talent or acquired skill?", *Economics Letters*, 97 (2): 118-123.

Staniewski, M.W.; Szopinski, T. (2013), "Influence of socioeconomic factors on the entrepreneurship of polish students", *Transformations in Business and Economics*, 12 (3): 152-167.

Stein, A.H. (1971), "The effects of sex-role standards for achievement and sex-role preference on three determinants of achievement motivation", *Developmental Psychology*, 4 (2): 219-231.

Sun, H.; Lo, C.C.T. (2012), "Impact of role models on the entrepreneurial intentions of engineering students", *Proceedings of IEEE International Conference on Teaching, Assessment, and Learning for Engineering,* T1B1-T1B5.

Torimiro, D.O.; Dionco-Adetayo, E.A. (2005) "Children involvement in entrepreneurship in rural communities: An attitudinal analysis", *Technovation*, 25 (6): 683-689.

Van Auken, H.; Stephens, P.; Fry, F.L.; Silva, J. (2006), "Role model influences on entrepreneurial intentions: A comparison between USA and Mexico", *International Entrepreneurship and Management Journal*, 2 (3): 325-336.

Weisgram, E. S.; Bigler, R.S.; Liben, L.S. (2010), "Gender, values, and occupational interests among children, adolescents, and adults", *Child Development*, 81 (3): 778-796.

Wennekers, S; Thurik, R. (1999), "Linking entrepreneurship and economic growth", *Small Business Economics*, 13: 27–55.

Whiston, S.C.; Keller, B.K. (2004), "The Influences of the Family of Origin on Career Development: A Review and Analysis", *The Counseling Psychologist*, 32: 493-568.

Wong, P.K.; Ho, Y.P.; Autio, E., (2005), "Entrepreneurship, innovation and economic growth: evidence from GEM data", *Small Business Economics*, 24: 335–350.

Appendix

Appendix I – Survey

Inquérito sobre atitudes empreendedoras em crianças no âmbito de dissertação de Mestrado da FEUP

Universidade do Porto
FEUP Faculdade de Engenharia

Este inquérito não é um teste, pelo que não tem respostas certas nem erradas.

Idade ____ Menino ☐ Menina ☐ O que queres ser quando fores grande?_____

Áreas que mais gostas. Escolhe (com um X) as que se apliquem (só podes escolher no máximo 3 áreas):

Matemática	☐	Português	☐	Inglês	☐
Estudo do Meio – História, Geografia e Ciências	☐	Educação Física	☐	Expressões artísticas	☐

Outra_____

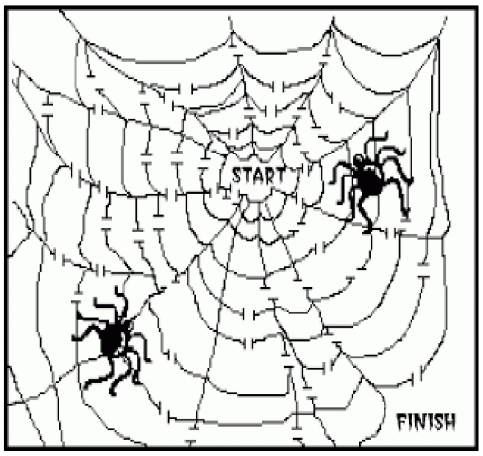
Profissão do teu pai: _____ Profissão da tua mãe: _____

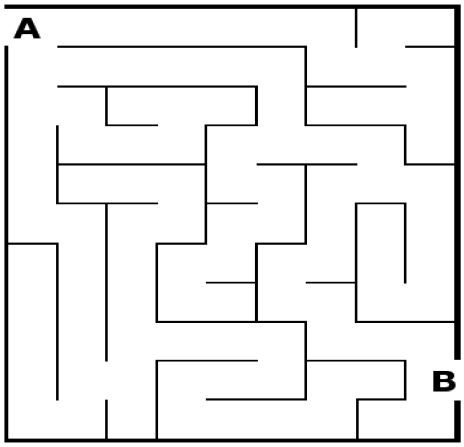
Escolhe (com um X) a opção que se aplique:
Legenda: ☹ Discordo completamente; ☹ Discordo; 😐 Nem sim, nem não; 🙂 Concordo; 😀 Concordo completamente

	☹	☹	😐	🙂	😀
1) Fico muito contente quando tenho os melhores resultados da turma	○	○	○	○	○
2) Nunca deixo para fazer mais tarde tarefas importantes (por exemplo, trabalhos de casa)	○	○	○	○	○
3) Acho que os resultados são importantes para saber como está a correr a escola	○	○	○	○	○
4) Fico triste quando não chego a tempo às aulas	○	○	○	○	○
5)Quando estou a realizar uma tarefa nova costumo seguir as instruções dadas	○	○	○	○	○
6) Para ter bons resultados tenho que fazer os trabalhos de casa, portar-me bem e estudar	○	○	○	○	○
7) Fico chateado quando algum colega tenta mandar em mim	○	○	○	○	○
8) Esforço-me sempre muito para ser melhor	○	○	○	○	○
9) Acredito que setrabalhar/estudar muito vou ser reconhecido e recompensado pelos professores e pais	○	○	○	○	○
10) Fico triste quando gozam comigo	○	○	○	○	○
11) Acho importante o que os meus colegas pensam de mim	○	○	○	○	○
12) Na escola costumo ser muito bom nas atividades desportivas	○	○	○	○	○
13) Na escola costumo ser muito bom nas atividades relacionadas com os estudos	○	○	○	○	○
14) Na escola costumo ser muito bom nas atividades relacionadas com desenho e outras atividades artísticas	○	○	○	○	○
15) Acho que os meus colegas me respeitam por ser bom nas atividades em que me envolvo (por exemplo, no desporto ou por ser bom aluno)	○	○	○	○	○

Muito obrigada pela tua ajuda!☺

Appendix II – Children's activity - Games





		3		1	
5	6		3	2	
	5	4	2		3
2		6	4	5	
	1	2		4	5
	4		1		

6	4		2		
	5	1			
3	6	4			2
5			4	3	6
			6	4	
		6		2	5



