Equidad y Desarrollo

Volume 1 | Number 31 Article 4

January 2018

El papel de la educación en emprendimiento en el fomento de las intenciones y actuaciones emprendedoras: reseña de 30 años de investigación

Francesco Ceresia
University of Palermo, francesco.ceresia@unipa.it

Citación recomendada
Ceresia, F. (2018). El papel de la educación en emprendimiento en el fomento de las intenciones y actuaciones emprendedoras: reseña de 30 años de investigación. Equidad y Desarrollo, (31), 47-66. https://doi.org/10.19052/ed.4380

doi: http://dx.doi.org/10.19052/ed.4380

The Role of Entrepreneurship Education in Fostering Entrepreneurial Intentions and Performances: A Review of 30 Years of Research

Francesco Ceresia*

Abstract

Many scholars have stressed on the strong relationships between entrepreneurship, self-employment and the labor market growth in contemporary society. Several training and academic programs have been designed and developed all around the world to increase entrepreneurial propensity. This article aims to show the empirical evidences about the effects of entrepreneurship education programs on perceived attractiveness and perceived feasibility of new venture initiation, entrepreneurship-related human capital assets and entrepreneurship outcomes. Moderators affecting the relationship between entrepreneurship education and entrepreneurial intentions and outcomes—such as the attributes of education itself, the individual's background, and the contextual factors—have been analyzed. Explorations of the main theoretical frameworks that argue the positive relationships between entrepreneurship education and entrepreneurial intentions and performance have been conducted. Different pedagogical models adopted for entrepreneurship education programs have been compared. The study was conducted through the systematic literature review method, allowing the suggestion of evidence-based policies at an organizational and a national level of analysis. The role of entrepreneurship education in adjusting and refining the participants' assessment of their own entrepreneurial aptitude

Keywords

Entrepreneurship education, entrepreneurship intentions, self-employment, entrepreneurial ecosystem

JEL code

L26, L39, M59

How to cite this article: Ceresia, F. (2018). The role of entrepreneurship education in fostering entrepreneurial intentions and performances: A review of 30 years of research. *Equidad y Desarrollo*, (31, suplemento), 47-66. doi: http://dx.doi.org/10.19052/ed.4380

Received: July 2, 2017 • Approved: January 18, 2018

* Assistant Professor in Work and Organization Psychology, Department of Political Science and International Relations (DEMS). University of Palermo, Italy. E-mail: francesco.ceresia@unipa.it, ORCID: 0000-0002-2236-5268.

can explain the small positive relationship between entrepreneurship education and entrepreneurial intentions revealed by several meta-analyses.

El papel de la educación en emprendimiento en el fomento de las intenciones y actuaciones emprendedoras: reseña de 30 años de investigación

Resumen

Muchos académicos han enfatizado en las fuertes relaciones entre el emprendimiento, el trabajo independiente y el crecimiento del mercado laboral en la sociedad contemporánea. En todo el mundo se han diseñado varios programas académicos y de entrenamiento a fin de aumentar la propensión al emprendimiento. Este artículo busca mostrar las evidencias empíricas acerca de los efectos de los programas educativos de emprendimiento sobre el atractivo percibido y la viabilidad percibida de la iniciación de una nueva empresa, los activos de capital humano relacionados al emprendimiento y los resultados del emprendimiento. Se han analizado los moderadores que afectan la relación entre la educación en emprendimiento y las intenciones y resultados del emprendimiento, tales como los atributos de la educación en sí, los antecedentes del individuo y los factores contextuales. Se han llevado a cabo exploraciones de los marcos teóricos principales que discuten las relaciones positivas entre la educación en emprendimiento y las intenciones y la educación en materia de emprendimiento. Se han comparado diferentes modelos pedagógicos adoptados para los programas educativos de emprendimiento. El estudio se realizó a través del método de revisión sistemática de la literatura, permitiendo sugerir las políticas con base en la evidencia a nivel de análisis organizacional y nacional. El papel que la educación en emprendimiento desempeña en el ajuste y la mejora de la evaluación que los participantes realizan acerca de su propia aptitud en materia de emprendimiento puede explicar la pequeña relación positiva entre la educación y las intenciones en materia de emprendimiento reveladas por varios metaanálisis.

Palabras clave

Educación en emprendimiento, intenciones en materia de emprendimiento, trabajo independiente, ecosistema de emprendimiento

O papel da educação em empreendedorismo na promoção de intenções e ações empreendedoras: revisão de 30 anos de pesquisa

Resumo

Muitos acadêmicos fazem ênfase nas fortes relações entre o empreendedorismo, o trabalho independente e o crescimento do mercado de trabalho na sociedade contemporânea. No mundo todo foram desenhados vários programas acadêmicos e de treinamento a fim de aumentar a propensão ao empreendimento. Esta artigo procura mostrar as evidências empíricas sobre os efeitos dos programas educativos de empreendimento sobre a atratividade percebida e a viabilidade percebida da iniciação de uma nova empresa, os ativos de capital humano relacionados ao empreendimento e os resultados do empreendimento. Foram analisados os moderadores que afetam a relação entre a educação em empreendedorismo e as intenções e resultados do empreendedorismo, tais como os atributos da educação em si, os antecedentes do indivíduo e os fatores contextuais. Realizaram-se explorações dos marcos teóricos principais que discutem as relações positivas entre a educação em empreendedorismo e as intenções e a educação em matéria de empreendedorismo. Foram comparados diferentes modelos pedagógicos adotados para os programas educativos de empreendedorismo. O estudo foi realizado através do método de revisão sistemática da literatura, permitindo sugerir as políticas com base na evidência a nível de análise organizacional e nacional. O papel da educação em empreendedorismo no ajuste e na melhoria da avaliação que os participantes realizam sobre sua própria aptidão em matéria de empreendedorismo pode explicar a pequena relação positiva entre a educação e as intenções em matéria de empreendedorismo reveladas por várias meta-análises.

Palavras chave

Educação em empreendedorismo, intenções em matéria de empreendedorismo, trabalho independente, ecossistema de empreendedorismo

Entrepreneurship and Socioeconomic Development

Many scholars agree that entrepreneurs represent one of the main drivers of social, economic and technological development in a country. Already in 1934, Schumpeter argued that entrepreneurs were "creative destruction agents" because of their significant capacity to generate important changes in the socio-economic sectors of a territory, being engaged in a permanent competition with established entrepreneurs in such a specific industrial sector. These entrepreneurs also proved that they were able to perform these changes in many different areas such as, for example, the creation of new jobs (Birch, 1979; Birch & Medoff, 1994; Blanchflower, 2000; Sheshinski et al., 2007; Parker, 2009, Haltiwanger et al., 2010, Henrekson & Johansson, 2010; Cieślik, 2017), the implementation of process and product innovation programs (Acs & Audretsch, 1988; Sternberg & Wennekers, 2005; Baumol, 2010; Astebro, Bazzaziana, & Braguinsky, 2012; Acs, 2013; Little et al., 2017), the strengthening of technology transfer processes and knowledge from the context of research to that of industry (Acs et al., 2009; Grimaldi et al., 2011; Plummer & Acs, 2012; Terjesen & Wang, 2013).

The awareness of the crucial role played by entrepreneurs for the socio-economic development of a territory is also widespread among policy makers at this time, and this is also due to some studies that have highlighted the need to address the issue of entrepreneurial development from a systemic perspective.

Acs, Autiob, and Szerbd (2014), who consider entrepreneurship as a systemic phenomenon, consider the definition of a "National Systems of Entrepreneurship" as strictly necessary, pushing for an integrated planning of infrastructures, policies and institutions at a national level of analysis, with the specific objective of influencing the main factors that determine the ability of a country to fully produce and exploit the potential of entrepreneurship for sustainable economic development.

Starting from the premise that entrepreneurship always stems from individual behaviors, a "National Systems of Entrepreneurship is," according to these scholars, "the dynamic, institutionally embedded interaction between entrepreneurial attitudes, abilities and aspirations, by individuals, which drives the allocation of resources through the creation and operation of new ventures" (Acs et al., 2014, p. 479).

Entrepreneurial Ecosystem and Entrepreneurship Education

Consistently with the perspective of systemic approach to entrepreneurship, some scholars have investigated the conditions that could ensure an improvement in the business ecosystem and the promotion of innovation. This is to influence the business ecosystem itself, to increase the chances of business success for companies and their widest dissemination within the production environment of a country.

A first major topic refers to the measurement of the state of health of that ecosystem. Following the reflections of Acs, Autiob, and Szerbd (2014), it is possible to measure the level of entrepreneurship of a country by using three main indicators: output, attitude, and framework.

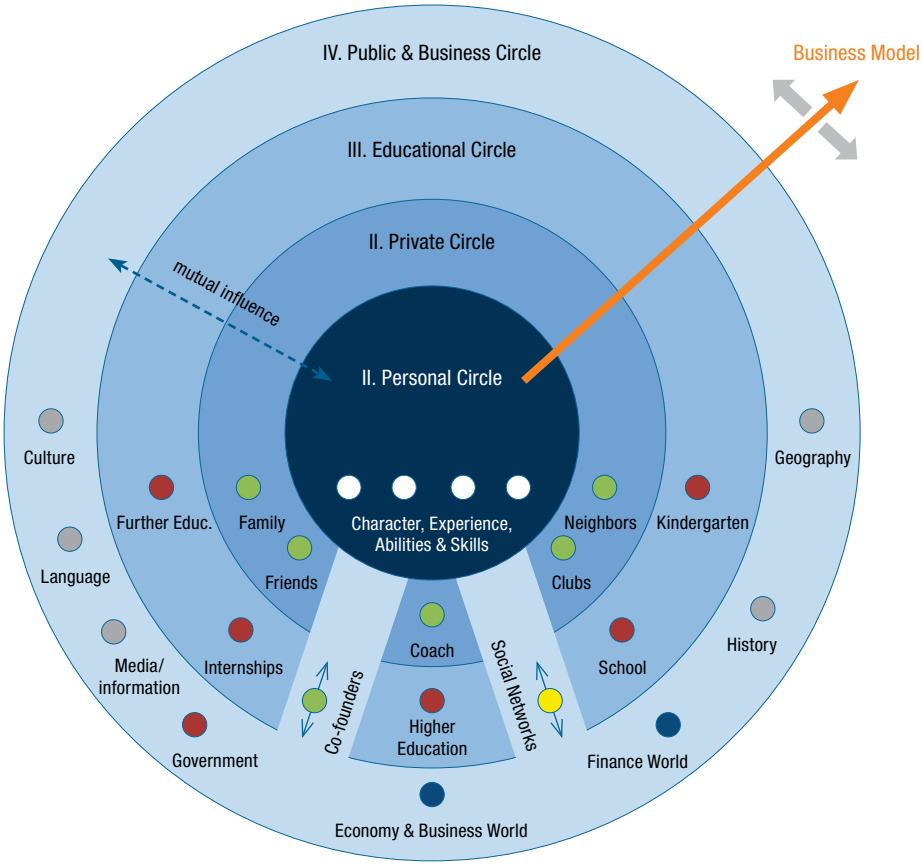
Output indicators refer to the dynamics of new self-employed or new firms within a given territorial context.

Attitude indicators refer, instead, to the opinions and attitudes that a particular country's population shows towards entrepreneurial activity. These indicators are estimated through surveys that include the analysis of: the population's preference to being self-employed; the reasons for preferring self-employment; the attitudes towards entrepreneurs; and the self-efficacy perceptions in managing an entrepreneurial activity. These measures provide important testimonies on the feasibility, desirability and legitimacy assessments associated with the decision to carry out an entrepreneurial activity (Blanchflower et al., 2001; European Commission, 2009).

Finally, framework indicators refer to institutional and regulatory conditions that characterize a country's economy. The most adopted framework measures are focused on a survey research method to explore the opinion of national experts about the entrepreneurial framework conditions of their countries. The Global Entrepreneurship Monitor's National Expert Survey is an example of these framework measures (Reynolds et al., 2005).

A second major issue concerns the definition of an entrepreneurial ecosystem model. Schwarzkopf (2016) has proposed a four-dimension entrepreneurial ecosystem model, graphically represented by four concentric circles, each of which represents an area of influence for the entrepreneur (Figure 1).

Figure 1: The Entrepreneurial Ecosystem



Source: Schwarzkopf (2016, p. 151).

The first area, graphically represented as the innermost circle, is called "personal circle," and it represents the set of skills, abilities, experiences and personal characteristics of the entrepreneur.

The second area, graphically represented by a contiguous circle but more exterior to the first one, is called "private circle." This area consists of family members, friends, neighbors, coaches, co-founders, and social networks. Studies have shown

that individuals coming from an entrepreneurial background are more likely to become entrepreneurs (Janssen, 2006).

The third area, graphically represented by a contiguous circle but more exterior than the second one, is called "educational circle." This area consists of all the training and learning opportunities ensured by the educational institutions the entrepreneur has meet during his lifespan. Some studies point out that some successful entrepreneurs, even when they dropped out of College, have certainly gained experience, input and inspiration during their time spent at the education institutions. It is widely shared the idea that entrepreneurs with higher education and well aware of the real complexity of entrepreneurial activity are more likely and able to start and manage successful start-up (Davidsson & Honig, 2003; Levie & Autio, 2008).

The fourth area, graphically represented by a contiguous circle but more exterior to the third one, is called "public & business circle," and it consists of all the dimensions in which the social macro-system in which the entrepreneur operates, from culture to government and from media to business, is articulated.

These studies clearly show that one of the main crucial issues for the development of entrepreneurship is represented by the role exercised by a specific function aimed at:

a) developing and/or consolidating the skills of future entrepreneurs; and
b) dismantling prejudices and clues about what entrepreneurship is and what are the main barriers to enter this particular profession.

This specific function can be called "entrepreneurship education".

The Uniqueness and Legitimacy of Entrepreneurship Education

A widely discussed issue concerns the specificity of entrepreneurship education with respect to business education, which would give the former an appreciable legitimacy within the scientific and professional community.

Solomon, Duffy, and Tarabishy (2002) have highlighted how entrepreneurship education differs from the typical business education, mainly because of the specific goal for which entrepreneurship education training activities are designed

"A widely discussed issue concerns the specificity of entrepreneurship education with respect to business education, which would give the former an appreciable legitimacy within the scientific and professional community".

and delivered. These authors point out, in fact, that being activated in order to build a start-up is quite different from being involved in managing a business company. This implies the structuring of a training course that differentiates entrepreneurship education from business education, both about contents and teaching methodologies adopted (McMullan, 1987; Donckels, 1991; Gartner et al., 1992, Hood & Young, 1993; Gartner et al., 1994; Solomon et al., 2002). Several authors have pointed out how entrepreneurship education courses: a) are focused on specific content that is not at all sure to be found in a typical business education course, such as: skill-building courses in negotiation, leadership, new product development, creative thinking and exposure to technological innovation; b) use very widespread teaching methodologies such as, for example, student start-ups, consultations with practicing entrepreneurs, computer simulations and behavioral simulations, and interviews with entrepreneurs (Vesper & McMullen, 1988; Gorman et al., 1997, Kuratko, 2005).

In a recent meta-analysis, Bae, Qian, Miao, and Fiet (2014) investigated the relationship between business versus entrepreneurship education training and entrepreneurship intentions. Starting from the premise that entrepreneurship education encourages participants to look at entrepreneurship as a realistic career path, unlike business education, which instead focuses more on the acquisition of tools and techniques to be applied to an established organizations, these authors show that the relationship between entrepreneurship education and entrepreneurial intentions ($\rho\hat{} = .143$, where ρ is the sample-size-weighted mean correlation) is greater than the relationship between business education and entrepreneurial intentions ($\rho\hat{} = .051$).

Theoretical Frameworks on Entrepreneurship

Entrepreneurship education models are based on a specific theory of entrepreneurship. Two main theoretical frameworks emerge from the literature: the

Intentionally Planned Behavior model (Ajzen, 1991) and the Human Capital Theory model (Becker, 1964). Both of them identify in the entrepreneurship education an important dimension for the development of an Entrepreneurial Ecosystem.

Entrepreneurship as intentionally planned behavior

Many scholars consider entrepreneurship as a typical example of planned intentional behavior (Ajzen, 1991). Intentionality is conceived as a state of mind that directs the attention and effort of a person towards a specific goal to attain.

According to the theory of intentionally planned behavior, planned behavior is better predicted by intentions that an individual manifests towards such behavior rather than his attitudes, opinions, personality traits and demographic characteristics. Intentions are thus the best predictor of planned behavior, especially when the goal to be reached is complex, difficult to observe and far in time (Bird, 1988; Katz & Gartner, 1988; Bagozzi, Baumgartner, & Yi, 1989; Ajzen, 1991; Krueger, 1993; Krueger & Brazeal, 1994).

In turn, the intention to carry out entrepreneurial behaviors can be influenced by various factors, such as needs, values, desires, habits and beliefs (Lee & Wong, 2004). In particular, the cognitive variables that influence intention are called "motivational antecedent" (Ajzen, 1991). The more of such motivational antecedents there are, the greater the individual's intention to build a start-up (Liñán, 2004).

Ajzen (1991) proposes a theoretical framework where the entrepreneurial intention represents the effort that the person will do to activate the corresponding entrepreneurial behavior. More specifically, Ajzen (1991) identifies the following three factors or motivational antecedents able to influence entrepreneurial behavior: attitude toward the behavior; subjective norm; perceived behavioral control (PBC).

Following this theoretical framework, Liñan & Chen (2009) capture the following three motivational factors or antecedents influencing entrepreneurship behavior:

- Attitude towards start-up: This refers to the extent to which an individual feels that he or she is in possession of the personal characteristics suitable for performing the profession of entrepreneur. It includes not only affective considerations ("I like it, it is attractive"), but also evaluation about returns ("It has some advantages").

- Subjective norm: This refers to the social pressure perceived by the subject relative to being or not engaged in entrepreneurial behavior. In particular, it refers to the perception of the individual about the fact that some "reference" people—parents, mentors, and friends—would approve or not his decision to become entrepreneurs.
- Perceived behavioral control: This is defined as the perception of the ease or difficulty of becoming entrepreneur. It is therefore a very similar concept to self-efficacy (SE) (Bandura, 1997) and perception of feasibility (Shapero & Sokol, 1982). All three concepts refer to the sense of ability regarding the fulfillment of business creation behaviors. However, recent work has highlighted the difference between PBC and SE (Ajzen, 2002). In this regard, the PBC would include not only the feeling of being able to carry out an entrepreneurial activity, but also the perception about the controllability of the entrepreneurial behavior itself.

Based on this theory, many scholars have implemented both tools for the measurements of entrepreneurship intention and its antecedents and research programs to evaluate the effects entrepreneurship education (Audet, 2004; Liñán, 2004; Tkachev & Kolvereid, 1999; Autio et al., 2001; Erikson, 1999; Fayolle et al., 2006; Kolvereid & Isaksen, 2006; Krueger et al., 2000; Veciana et al., 2005).

Human capital theory

The human capital theory assumes that every individual possesses a stock of knowledge, skills and other personal characteristics that define his or her level of productivity (Becker, 1964). According to this approach, individuals (or groups) with higher levels of such stocks will get a better performance than those with lower levels (Ployhart & Moliterno, 2011). Typical variables that characterize these stocks of individual resources include the level of education, the work experience, and the opinions and attitudes toward entrepreneurship due to education given by parents who have worked as entrepreneurs.

Unger, Rauch, Frese, and Rosenbusch (2011) proposed an interesting distinction between human capital investment and human capital assets to overcome the "static" view of human capital as a fixed set of knowledge, skills and experiences possessed by individuals. More specifically, these authors point out that human capital assets do not derive automatically from human capital investment. Individuals with differ-

ent levels of human capital assets—due to their effectiveness in the management of "intellectual capitalization" processes—while experimenting with the same investment, they can also extract very different assets (Sonnentag, 1998; Unger et al., 2011). A meta-analysis conducted by Unger et al. (2011) demonstrates how entrepreneurial success is more affected by human capital assets than human capital investment.

By following this theoretical approach, it is evident that an individual's propensity towards an entrepreneurial activity is influenced by the quality and significance of education and, even more intensively, of entrepreneurship educations (Mincer & Polachek, 1974), due to the ability of such opportunities to increase the value of key stocks that contribute to success in entrepreneurship.

The Effects of Entrepreneurship Education

A wide number of studies have been focused on the effects produced by entrepreneurship education. The most explored effects of entrepreneurship education are the entrepreneurship intentions, the entrepreneurship-related human capital assets, the entrepreneurship outcomes, and the sorting effect.

Entrepreneurship education and entrepreneurship intentions

Although many scholars have investigated the relationship between entrepreneurship education and entrepreneurship intentions, under the belief that entrepreneurship intentions was one of the major effects of entrepreneurship education, the studies produced ambiguous and contradictory results (Martin et al., 2013; Bae et al., 2014).

Indeed, if some studies highlight how entrepreneurship education has a positive effect on the perceived attractiveness and feasibility of starting NewCo (Tkachev & Kolvereid, 1999; McMullan, 2002; Peterman & Kennedy, 2003; Fayolle, Gailly, & Lassas-Clerc, 2006; Souitaris et al., 2007; Martin et al., 2013; Bae et al., 2014), other researches seem to point out how the effects of entrepreneurship education on the intention to build a start-up are sometimes absent (Von Graevenitz et al., 2010; Fayolle & Gailly, 2015), if not negatives (Oosterbeek et al., 2010).

Von Graevenitz, Harhoff, and Weber (2010) underlined that such studies show many methodological limitations, as they often: a) do not adopt a pre-test or post-test control group design; b) do not use control groups; and c) the subject of the research often shows pre-education entrepreneurial intentions as individuals who have spontaneously joined an entrepreneurship education program.

The two most recent meta-analyzes conducted with appreciable methodological rigor concluded that there was a small but positive relationship between entrepreneurship education and entrepreneurship intentions (Martin et al., 2013; Bae et al., 2014).

Exploring the relationship between entrepreneurship education and entrepreneurship intentions, scholars have further emphasized that entrepreneurship intentions is also influenced by personal and environmental factors, among which are:

- education-related factors;
- factors related to the previous entrepreneurial activity of the individual; and
- factors related to demographic, attitudinal and personality traits of the individual.

Several studies have demonstrated the importance of social status in entrepreneurship and the role of the social environment of participants (Begley et al., 1997; Lee et al., 2011; Schmitt-Rodermund, 2004) and the impact that cultural values and norms may have on attitudes, intents or entrepreneurial behaviors (Fayolle, Basso, & Bouchard 2011; Hayton, George, & Zahra, 2002). The fact that the close relatives of an individual can be "role models" in supporting or not the opportunity for the latter to undertake an entrepreneurship career has also been empirically demonstrated. Findings show that the mother and father of entrepreneur candidate play a key role in the development of his perception of feasibility and desirability associated with starting an entrepreneurial career (Matthews et al., 1995; Scott & Twomey, 1988).

Entrepreneurship education and entrepreneurship-related human capital assets

Martin, McNally, and Kay (2013) conducted a meta-analysis that showed a weighted correlation of .217 (K=33, N=11,125) between entrepreneurship education and total entrepreneurship-related human capital assets. The total entrepreneur-

ship-related human capital assets variable is the merger of the following three main sub-groups of assets:

- entrepreneurship-related knowledge and skills;
- positive perceptions of entrepreneurship; and
- intentions to become an entrepreneur.

The results of this meta-analysis of correlations of entrepreneurship education with the three sub-groups of entrepreneurship-related human capital assets showed a weighted correlation between entrepreneurship education and entrepreneurship-related knowledge and skills of .237 (K=17, N=8334, where *K* is the number of samples and *N* is the sample size), a weighted correlation between entrepreneurship education and positive perceptions of entrepreneurship of .109 (K=18, N=3828) and a weighted correlation between entrepreneurship education and intentions to become an entrepreneur of .137 (K=19, N=3314).

It is particularly interesting that the 80% credibility interval for each weighted correlations above depicted showed that, while the weighted correlation between entrepreneurship education and entrepreneurship-related knowledge and skills ranged between r_w = .021 and r_w =.453 showing always a positive relationship between the two variables, the weighted correlation between entrepreneurship education and intentions to become an entrepreneur ranged between r_w = –.173 and r_w =.448. This finding can empirically support the opinion of scholars that denounce an inconsistent and ambiguous relationship between entrepreneurship education and entrepreneurship intentions (Oosterbeek et al., 2010; Von Graevenitz et al., 2010; Fayolle & Gailly, 2015).

Entrepreneurship education and entrepreneurship outcomes

Martin, McNally, and Kay (2013) also emphasized that the entrepreneurship education is positively associated with entrepreneurship outcomes. More specifically, the results showed a weighted correlation of .159 (K=13, N=10,524) between entrepreneurship education and overall entrepreneurship outcomes. The overall entrepreneurship outcomes variable is the merger of the following two main subgroups of outcomes:

- start-up; and
- entrepreneurship performance (including success in terms of duration, financial performance, and personal income from owned business).

The results of this meta-analysis of correlations of entrepreneurship education with the two sub-groups of outcomes showed a weighted correlation of .124 (K=6, N=6706) between entrepreneurship education and start-up and a weighted correlation of .166 (K=9, N=5790) between entrepreneurship education and entrepreneurship performance.

The 80% credibility interval for each weighted correlation depicted above showed a weighted correlation between entrepreneurship education and overall entrepreneurship outcomes ranging between $r_w = .036$ and $r_w = .281$, a weighted correlation between entrepreneurship education and start-up ranging between $r_w = .020$ and $r_w = .228$, and a weighted correlation between entrepreneurship education and entrepreneurship performance ranging between $r_w = .006$ and $r_w = .326$

These findings seem to confirm the role of entrepreneurship education in enhancing overall entrepreneurship outcomes.

Entrepreneurship education and sorting effect

Von Graevenitz, Harhoff, and Weber (2010) proposed a radical change of perspective in considering the effect produced by entrepreneurship education, suggesting to evaluate how entrepreneurship education will increase the sorting of trainees into two groups that are increasingly sure that they are or are not entrepreneurs, thus generating the so-called "sorting effect". The hypothesis analyzed by these authors is that the entrepreneurship education, rather than influencing entrepreneurship intentions, helps trainees to be more aware about what building a start-up means and involves. This new awareness contributes decisively to activating in individuals a process of assessing the congruence between the entrepreneurial activity to be exercised and his interests and attitudes towards that particular work activity. Therefore, this perspective underlines that the main effect of entrepreneurship education is to help the individual understand whether or not entrepreneurship is for him or her. A corollary of this perspective is that entrepreneurship education produces a polarizing effect on trainees' opinions, intention and propensity towards entrepreneurship (Von Graevenitz et al., 2010).

Entrepreneurship Education and the Selection Effect of Pre-Education Entrepreneurial Intentions

Bae, Qian, Miao, and Fiet (2014) formulated the hypothesis that the complex relationship between entrepreneurship education and entrepreneurship intention can be better explained considering the construct of "reverse causation."

Since the researches aimed at investigating the relationship between entrepreneurship education and entrepreneurship intention was mainly conducted on subjects enrolled in entrepreneurship courses, Bae et al. (2014) underline that these subjects are not randomly selected. Indeed, it is plausible to assume that an individual genuinely interested in undertaking an entrepreneur's career will enroll in an entrepreneurship course more likely than an individual who does not manifest such interest (Kolvereid & Moen, 1997). From this point of view, it is legitimate to hypothesize that post-education entrepreneurial intentions showed by the trainees of an entrepreneurship education course are not influenced by the entrepreneurship education course but are mainly the effect of the trainees' pre-education entrepreneurial intentions. In summary, Bae et al. (2014) suggested that post-education entrepreneurial intentions are affected by pre-education entrepreneurial intentions much more than entrepreneurship education. The results of hierarchical multiple regression analyzes of pre-education entrepreneurship intentions and entrepreneurship education on post-education entrepreneurial intentions fully confirm this hypothesis (Bae et al., 2014). The effect of pre-education entrepreneurial intentions on post-education entrepreneurial intentions results as statistically significant (β = .571, p <.001), while the effect of entrepreneurship education on post-education entrepreneurial intentions is not significantly different from zero (β = .043).

"It is legitimate to hypothesize that post-education entrepreneurial intentions showed by the trainees of an entrepreneurship education course are not influenced by the entrepreneurship education course but are mainly the effect of the trainees' pre-education entrepreneurial intentions".

Following these authors, the small and positive relationship between entrepreneurship education and post-education entrepreneurial intentions is the result of

a self-selection bias triggered by the trainees themselves as a result of their choice to attend an entrepreneurship course (Bae et al., 2014).

Conclusion

A significant but small positive correlation between entrepreneurship education and entrepreneurial intentions ($\rho\hat{}$= .143, where $\rho\hat{}$ is the sample size weighted mean correlation) has been found in the recent meta-analysis conducted by Bae et al. (2014). The main outcomes of this study are largely consistent with the meta-analysis conducted by Martin et al. (2013).

However, Bae et al. (2014) demonstrated that the small and positive relationship between entrepreneurship education and post-education entrepreneurial intentions is not different from zero if controlled for pre-education entrepreneurial intentions.

These findings have also pushed scholars to propose selection-based explanations about the relationship between entrepreneurship education and entrepreneurship intentions, in opposition to treatment-based explanations that argue that entrepreneurship education changes trainees' entrepreneurship intentions, interpreting entrepreneurship education as a powerful tool for professional guidance of young entrepreneur candidates.

The meta-analysis conducted by Bae et al. (2014) showed also that the relationship between entrepreneurship education and entrepreneurship intentions ($\rho\hat{}$ = .143, where $\rho\hat{}$ is the sample size weighted mean correlation) is greater than the relationship between business education and entrepreneurship intentions ($\rho\hat{}$ = .051), confirming the uniqueness and legitimacy of entrepreneurship education in fostering entrepreneurship and, indirectly, entrepreneurial ecosystem.

References

Acs, Z. J., & Audretsch, D. B. (1988). Innovation in large and small firms - An empirical analysis. *American Economic Review, 78*, 678–690.

Acs, Z. J., Autiob, E., & Szerb L. (2014). National systems of entrepreneurship: Measurement issues and policy. *Research Policy, 43*, 476–494.

Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). A knowledge spillover theory of entrepreneurship. *Small Business Economics*, 32, 15–30.

Acs, Z. A., & Sanders, M. W. J. L. (2013). Knowledge spillover entrepreneurship in an endogenous growth model. *Small Business Economics*, *41*(4), 775–795.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179–211.

Astebro, T., Bazzaziana, N., & Braguinsky, S. (2012). Startups by recent university graduates and their faculty: Implications for university entrepreneurship policy. *Research Policy*, *41*(4), 663–677.

Audet, J. (2004). A longitudinal study of the entrepreneurial intentions of university students. *Academy of Entrepreneurship Journal*, *10*(1), 3–16.

Autio, E., Keeley, R. H., Klofsten, M., Parker, G. G. C., & Hay, M. (2001). Entrepreneurial intent among students in Scandinavia and in the USA. *Enterprise and Innovation Management Studies*, *2*(2), 145–160.

Bae, T. J., Qian, S., Miao, C., & Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, 38(2), 217–254.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman.

Bagozzi, R., Baumgartner, J., & Yi, Y. (1989). An investigation into the role of intentions as mediators of the attitude-behavior relationship. *Journal of Economic Psychology*, *10*, 35–62.

Baumol, W. (2010). *The microtheory of the innovative entrepreneur.* Princeton, NJ: Princeton University Press.

Becker, G. (1964). *Human capital*. New York, NY: Columbia University Press.

Begley, T. M., Tan, W. L., Larasati, A. B., Rab, A., Zamora, E., & Nanayakkara, G. (1997). The relationship between socio-cultural dimensions and interest in starting a business: a multi-country study. *Frontiers of Entrepreneurship Research*, *17*. Retrieved from http://fusionmx.babson.edu/entrep/fer/papers97/begley/beg.htm

Birch, D. L. (1979). *The job generation process*. Cambridge, MA: MIT Press.

Birch, D. L., & Medoff, J. (1994). Gazelles. In L. C. Solmon & A. R. Levenson (Eds.), *Labor markets, employment policy and job creation* (pp. 159–167). Boulder, CO: Westview Press.

Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of Management Review*, *13*, 442–453.

Blanchflower, D. G. (2000). Self-employment in OECD countries. *Labour Economics*, *7*, 471–505.

Blanchflower, D. G., Oswald, A., & Stutzer, A. (2001). Latent entrepreneurship across nations. *European Economic Review*, *45*, 680–691.

Cieslik, J. (2017). *Entrepreneurship in emerging economies.* Cham: Palgrave Macmillan.

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, *18*, 301–331.

Donckels, R. (1991). Education and entrepreneurship experiences from secondary and university education in Belgium. *Journal of Small Business and Entrepreneurship*, 9(1), 35–42.

Erikson, T. (1999). A study of entrepreneurial career choices among MBAs—The extended Bird model. *Journal of Enterprising Culture*, *7*(1), 1–17.

European Commission. (2009). Entrepreneurship in the EU and beyond. A survey in the EU, EFTA countries, Croatia, Turkey, the US, Japan, South Korea and China. *Flash Eurobarometer* 283. Retrieved from http://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_283_en.pdf

Fayolle, A., Basso, O., & Bouchard, V. (2011). Understanding the impact of culture on firm's entrepreneurial orientation and behaviour: A conceptual framework. In A. Fayolle, & K. Todorov (Eds.), *European Entrepreneurship in the Globalizing Economy* (pp. 44–68). Cheltenham, UK: Edward Elgar Publishing Limited.

Fayolle, A., Gailly, B., & Lassas-Clerc, N. (2006). Assessing the impact of entrepreneurship education programmes: A new methodology. *Journal of European Industrial Training*, *30*, 701–720.

Fayolle, A., & Gailly, B. (2015). The impact of entrepreneurship education on entrepreneurial attitudes and intention: Hysteresis and persistence. *Journal of Small Business Management*, *53*(1), 75–93.

Gartner, W. B., Bird, B. J., & Starr, J. A. (1992). Acting as if: Differentiating entrepreneurial from organizational behavior. *Entrepreneurship Theory and Practice*, *16*(3), 13–31.

Gartner, W. B., & Vesper, K. H. (1994). Experiments in entrepreneurship education: Successes and failures. *Journal of Business Venturing*, *9*(3), 179–187.

Gorman, G., Hanlon, D., & King, W. (1997). Some research perspectives on entrepreneurship education, enterprise education, and education for small business management: A ten-year literature review. *International Small Business Journal*, *15*, 56–77.

Grimaldi, R., Kenney, M., Siegel, D. S., & Wright, M. (2011). 30 years after Bayh–Dole: Reassessing academic entrepreneurship. *Research Policy*, *40*, 1045–1057.

Haltiwanger, J. C., Jarmin, R. S., & Miranda, J. (2010). *Who creates jobs? Small vs. large vs. young* (Working Paper No. 16300). Retrieved from http://www.nber.org/papers/w16300.

Hayton, J. C., George, G., & Zahra, S. A. (2002). National culture and entrepreneurship: A review of behavioral research. *Entrepreneurship Theory and Practice*, *26*(4), 33–52.

Henrekson, M., & Johansson, D. (2010). Gazelles as job creators: A survey and interpretation of the evidence. *Small Business Economics*, *35*(2), 227–244.

Hood, J. N., & Young, J. E. (1993). Entrepreneurship's requisite areas of development: A survey of top executives in successful entrepreneurial firms. *Journal of Business Venturing*, *8*(2), 115–135.

Janssen, F. (2006). Do managers' characteristics influence the employment growth of SMEs? *Journal of Small Business & Entrepreneurship*, *19*(3), 293–315.

Katz, J., & Gartner, W. (1988). Properties of emerging organizations. *Academy of Management Review*, *13*, 429–441.

Kolvereid, L., & Isaksen, E. (2006). New business start-up and subsequent entry into self-employment. *Journal of Business Venturing*, *21*(6), 866–885.

Kolvereid, L., & Moen, Ø. (1997). Entrepreneurship among business graduates: Does a major in entrepreneurship make a difference? *Journal of European Industrial Training*, *21*(4), 154–160.

Kuratko, D. F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice*, *29*(5), 577–598.

Krueger, N. (1993). The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship: Theory and Practice, 18*, 5–21.

Krueger, N., & Brazeal, D. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship: Theory and Practice 18*, 91–104.

Krueger, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing, 15*(5–6), 411–432.

Lee, S. H., & Wong, P. K. (2004). An exploratory study of technopreneurial intentions: A career anchor perspective. *Journal of Business Venturing, 19*(1), 7–28.

Lee, L., Wong, P. K., Der Foo, M., & Leung, A. (2011). Entrepreneurial intentions: The influence of organizational and individual factors. *Journal of Business Venturing, 26*(1), 124–136.

Liñán, F. (2004). Intention-based models of entrepreneurship education. *Piccola Impresa/ Small Business 3*, 11–35.

Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice, 33*(3), 593–617.

Levie, J., & Autio, E., (2008). A theoretical grounding and test of the GEM model. *Small Business Economics, 31*, 235–263.

Little S. E., Go, F. M., & Shuk-Ching Poon, T. (2017). *Global innovation and entrepreneurship*. Cham: Palgrave Macmillan.

Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing, 28*(2), 211–224.

Matthews, C. H., & Moser, S. B. (1995, June). The impact of family background and gender on interest in small firm ownership: A longitudinal study. In *Proceedings of the ICSB 40th World conference, Sydney* (pp. 245–262).

McMullan, W., Chrisman, J., & Vesper, K. (2002). Lessons from successful innovations in entrepreneurial support programming. In J. Chrisman, J. Holbrook, & J. Chua (Eds.), *Innovation and entrepreneurship in Western Canada: From family businesses to multinationals* (pp. 207–223). Calgary, AB: University of Calgary Press.

McMullan, W. E., & Long, W. A. (1987). Entrepreneurship education in the nineties. *Journal of Business Venturing, 2*(3), 261–275.

Mincer, J., & Polachek, S. (1974). Family investments in human capital: Earnings of women. *Journal of Political Economy, 82*(2), S76–S108.

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

Parker, S. C. (2009). *The economics of entrepreneurship*. London: Cambridge University Press.

Peterman, N., & Kennedy, J. (2003). Enterprise education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice, 28*, 129–144.

Ployhart, R. E., & Moliterno, T. P. (2011). Emergence of the human capital resource: A multilevel model. *Academy of Management Review, 36*(1), 127–150.

Plummer, L. A., & Acs, Z. J. (2012). Localized competition in the knowledge spillover theory of entrepreneurship. *Journal of Business Venturing, 29*(1), 121–136.

Reynolds, P. D., Bosma, N., & Autio, E. (2005). Global entrepreneurship monitor: Data collec-

tion design and implementation 1998–2003. *Small Business Economics 24*, 205–231.

Sánchez, J.C. (2011). University training for entrepreneurial competencies: Its impact on intention of venture creation. *International Entrepreneurship and Management Journal*, *7*(2), 239–254.

Schumpeter, J. A. (1934). *The theory of economic development: An inquiry into pro-fits, capital, credit, interest, and the business cycle*. Cambridge, MA: Harvard University Press.

Schwarzkopf, C. (2016). *Fostering innovation and entrepreneurship: Entrepreneurial Ecosystem and Entrepreneurial Fundamentals in the USA and Germany*. Karlsruhe: Springer Gabler.

Scott, M. G., & Twomey, D. F. (1988). The long-term supply of entrepreneurs: Students' career aspirations in relation to entrepreneurship. *Journal of Small Business Management, 26*(4), 5–12.

Shapero, A., & Sokol, L. (1982). The social dimensions of entrepreneurship. In C. Kent, D. Sexton, & K. H. Vesper (Eds.), *The encyclopedia of entrepreneurship* (pp. 72–90). Englewood Cliffs, NJ: Prentice-Hall.

Sheshinski, E., Strom, R., & Baumol, W. (2007). *Entrepreneurship, innovation, and the growth mechanism of the free-enterprise economies*. Princeton, NJ: Princeton University Press.

Schmitt-Rodermund, E. (2004). Pathways to successful entrepreneurship: Parenting, personality, early entrepreneurial competence, and interests. *Journal of Vocational Behavior, 65*(3), 498–518.

Solomon, G.T., Duffy, S., & Tarabishy, A. (2002). The state of entrepreneurship education in the United States: A nationwide survey and analysis. *International Journal of Entrepreneurship Education*, *1*(1), 65–86.

Sonnentag, S. (1998). Expertise in professional software design: A process study. *Journal of Applied Psychology, 83*, 703–715.

Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing, 22*, 566–591.

Sternberg, R., & Wennekers, S. (2005). Determinants and effects of new business creation using global entrepreneurship monitor data. *Small Business Economics, 24*, 193–203.

Terjesen, S., & Wang, N. (2013). Coase on entrepreneurship. *Small Business Economics*, *40*(2), 173–184.

Tkachev, A., & Kolvereid, L., (1999). Self-employment intentions among Russian students. *Entrepreneurship & Regional Development, 11*, 269–280.

Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing, 26* (3), 341–358.

Veciana, J. M., Aponte, M., & Urbano, D. (2005). University students' attitudes towards entrepreneurship: A two countries comparison. *International Entrepreneurship and Management Journal*, *1*(2), 165–182.

Vesper, K. H. & McMullen, W. E. (1988). Entrepreneurship: Today courses, tomorrow degrees? *Entrepreneurship Theory and Practice*, *13*(1), 7–13.

Von Graevenitz, G., Harhoff, D., & Weber, R. (2010). The effects of entrepreneurship education. *Journal of Economic Behavior & Organization*, *76*(1), 90–112.