The Impact of Entrepreneurship Education Programs on Entrepreneurship Intention: Updating the Field of Entrepreneurship Education
By
@ 2018

Ahmed Ali Alanazi

M.S., University of Kansas, 2013

Submitted to the graduate degree program in The Department of Educational Psychology, Research, Evaluation Measurement and Statistics program, and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Master of Science.

Dr. Jonathan Templin, Chairperson

Dr. Yong Zhao

Dr. Neal Kingston

Date Defended: December 7, 2018

The thesis committee for Ahmed Alanazi certifies that this is the approved version of the following thesis:

The Impact of Entrepreneurship Education Programs on Entrepreneurship Intention: Updating the Field of Entrepreneurship Education

Chair: Jonathan Templin

Date Approved: 7 December 2018

Abstract

Entrepreneurship education programs have had an increasing presence in higher education institutions in the last few years. Despite their popularity and the rapid growth of these programs locally and internationally, the extent of their impact on entrepreneurship intention is still unclear. Thus, research findings continue to create conflict among researchers. This thesis meta-analyzed 47 effect sizes from 38 studies published from 2014 to 2018 to reveal the impact of entrepreneurship education on entrepreneurship intention in higher education settings. The results show clear evidence that entrepreneurship education affects entrepreneurship intention, the weighted mean effect size was found to be = .313 (lower limit = 0.262, upper limit = .364). Higher education institutions and government agencies should focus on these types of education programs to support the economy, innovation, and start-up businesses, and to attract companies locally. Discussion and research limitations are discussed in this thesis.

Acknowledgments

I have been extremely fortunate to work with outstanding scholars at the School of Education at the University of Kansas. My biggest supporter, Professor Jonathan Templin, sustained me along the way with his encouragement, guiding me to a successful completion of this degree in a timely fashion. Prof. Templin was not only an academic advisor, he was also a source of positivity throughout my academic journey, always happy to answer my questions about statistics and measurement. A renowned statistician, Prof. Templin employs advanced statistical techniques and can answer the most complex research questions. I will be forever grateful for the opportunity to learn from his experience and research skills.

Dr. Yong Zhao, a critical thinker and educational pioneer, has challenged me to *think* about learning and education from a variety of perspectives. After every meeting with Dr. Zhao, I leave his office inspired with new research questions and a greater appetite for knowledge. Dr. Zhao is a talented educator whose training has taught me to always evaluate educational outcomes with healthy skepticism. He has forced me to think critically about why some educational programs work effectively while others do not. Throughout my program of study, Dr. Zhao has inspired and shaped my mind to think outside of the research arena and apply my knowledge in a practical way to produce positive outcomes. Dr. Zhao has a unique mind that understands both researchers and practitioners in a way that most cannot.

Finally, I would like to acknowledge my meta-analysis and research design consultant, Dr. Neal Kingston, who was an outstanding academic partner as I constructed this thesis. He was always available to entertain my questions related to meta-analysis. With Dr. Kingston's help and natural talent for equation composition, I can say with confidence that the data collected by my research withstand rigorous meta-analysis. Because of Dr. Kingston, the bar has been set very high as I evaluate the quality of new studies' findings.

I sincerely thank all the EPSY department faculty members at the School of Education at Kansas University. It has been an honor to work with you on this project.

Dedication

I would like to express my gratitude to all the people who believed in me throughout this challenging academic journey. I dedicate this thesis to the memory of my father and mother. I wish they could have lived to see this accomplishment. I would like to give special thanks and recognition to my wife, Reem Alanazi, without whom I would not have been able to accomplish this thesis. She has been my biggest champion, always believing in me. For all the happiest and most discursive moments, Reem was there to share them with me. In addition to my steadfast wife, with particular love and appreciation I would like to dedicate this thesis to my sons, Rayan and Rakan, who brought me the greatest joy and happiness in the most stressful of times. I would be remiss not to extend my *sincere appreciation* to my siblings. I am blessed to have the most loving brothers and sisters who have provided unending support as I have worked toward achieving my academic goals. For them especially, and for so many others, I am eternally grateful.

Table of Contents

Introduction

Entrepreneurship education has been an increasingly critical element in education recently. Because education affects societies, higher education institutions provide entrepreneurship education degrees, courses, training programs, and learning-by-doing workshops for several purposes on different individual, university, national, and international levels to support society. A few of these meaningful purposes include, but are not limited to, developing students' skills, supporting higher education institutions financially, enhancing people's awareness of entrepreneurial initiatives, enriching and nurturing educational environments, improving education systems, and supporting the country economically and culturally by producing creative students and bringing innovations by local people to the local environment. Consequently, entrepreneurship programs are important for several reasons in that they enrich an economy, add value to nations, and bring innovations, in addition to helping start-up business growth (Zhao, Seibert, & Hills, 2005). Since the first entrepreneurship class was taught at Harvard in 1945 (Samwel Mwasalwiba, 2010), scholars from different fields in different countries, especially in economics programs and business schools, have started investigating the impact of this type of education and its short- and long-term outcomes.

Entrepreneurship has taken on a greater role as finance and informational technology have begun to see the benefits of working together. Thus, entrepreneurship is a critical factor in economic development with the understanding that any country that wishes to grow requires innovations to increase jobs, equity, and wealth for its residents. Several countries have determined that entrepreneurship is the key to making this a reality. Since the beginning of these entrepreneurship programs, they have made gains in countries as diverse as Sweden, the United States, France, China, Nigeria, and Indonesia to name a few, which has, in turn, helped

strengthen the economies of these countries through markets developed by individuals (Kiyani, 2017). In other countries such as Mexico, entrepreneurship coursework is included not only in higher education but also in high schools (de Lourdes Cárcamo-Solís, del Pilar Arroyo-López, del Carmen Alvarez-Castañón, & García-López, 2017). Thus, policymakers, stakeholders, practitioners, and researchers spend time and effort, and strive to make the most advantageous choices from this type of education. The field is growing quickly, and articles are being published monthly investigating the impact of entrepreneurship, demonstrating that this research area has been rapidly increasing, especially in the last few years (Liñán, & Fayolle, 2015; Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017).

This type of education is affecting people's intention. For example, Nilsson (2012) found that those acquiring entrepreneurship education are more likely to establish firms than their counterparts who had not received an entrepreneurship education. Lee, Chang, and Lim (2005) found significant differences between entrepreneurship education programs (EEPs) learners and those who did not study an EEP course in that the intention of venture creation increased after attending the EEP course. Moreover, Korean learners' intention as EEP course takers is significantly higher than those Koreans who had not taken an EEP course. Despite the nationalities, EEP students have higher and significant differences from those who have not taken an EEP course. Unemployment, under-employment, and the reduction of poverty are best served in recessionary economies by self-employment and entrepreneurship if young college-educated workers cannot find employment in more traditional venues (Neneh, 2014); therefore, it is in a country's best interest to ensure that its population has access to EEPs as an economic protection if nothing else. While not new, Entrepreneurship Education has seen a dramatic increase in popularity and enrollment since its inception over four decades ago (Kuratko, 2005 in

Duval-Couetil 2013). The question that plagues many researchers is whether EEPs help by providing the skills and tools necessary to strike out on one's own, or whether entrepreneurs have some innate characteristics that make them more prone to this behavior (Henry, Hill, & Leitch 2005).

Definition of Entrepreneurship Education

Although the concept of entrepreneurship programs has grown rapidly in acceptance since the 1970s and 80s, scholars also still vary from one discipline to another when defining what constitutes Entrepreneurship Education Programs (EEPs). Some scholars focus on encouraging students in learning environments to start new businesses (Nielsen & Gartner, 2017), others focus on developing students' skills (e.g., creativity, risk taking) and through project-based learning approaches (Zhao, 2012), whereas others focus on values creation (Lackéus, Williams-Middleton, 2015; Matlay, 2006). When looking back at earlier studies published on entrepreneurship education (e.g., Chen, Greene, & Crick, 1998; Streeter, Jaquette Jr, & Hovis, 2002; Duval-Couetil, 2013), one can recognize that there has been a lack of consistency among entrepreneurship educators when defining the term itself. In fact, authors of entrepreneurship education programs claim that the definition has never been stable. However, the divergence/variation within the definitions is healthy, especially in this educational context, indicating healthy debate among scholars, and that is due to creativity being one of the core characteristics of the entrepreneurial spirit.

Even earlier entrepreneurship studies (e.g., Hansemark, 1998) state that the term *entrepreneurship education* was still confusing, and not yet well-defined intra-and inter-nationally. For example, Lee, Chang, and Lim (2005) state that "there is no universal definition of entrepreneurship and scholars' view of the topic has changed considerably since Schumpeter

(1934) defined it for the first time" (p.28). When defining entrepreneurship characteristics, who is defined as an entrepreneur is still unclear (Hansemark, 1998). EEPs have become highly successful despite vague definitions for the skills and tools needed to achieve standardized goals. This lack of consistency over several decades has led to disputes over terminology as well (Linan, 2004). The lack of consensus on the definition of entrepreneurship has driven educational programs to largely divergent and disparate goals. Researchers themselves (e.g., Josien & Sybrowsky, 2013) in the entrepreneurship arena state that the definition of entrepreneurship education is not clear, so there is a lack of consistency among researchers. Among these variations in defining the terms of EEPs and their well-established goals, those definitions share a common ground: value creation and creativity (Lackéus, 2015).

The divergent definitions of the term entrepreneurship education may have been led by the type of teaching purposes in creating these EEPs. For instance, those entrepreneurship education programs focusing on teaching "*about*" entrepreneurship education, are guided mainly by the content of the courses, teaching, and the development of skills and strategies. On the other hand, those entrepreneurship programs focusing on teaching "*through*" entrepreneurship education, which are run by using experiential approaches such as engaging individuals in entrepreneurship practices (Kyrö, 2005), concentrate on producing entrepreneurial spirits (Zhao, 2012). The latter is a learning-by-doing approach as presented by Dewey's education proponents. Different scholars define entrepreneurship education differently based on their views and purposes of entrepreneurship education.

The reality of entrepreneurship education programs is that most of them teach skills as well as attempt to create mindsets throughout their activities (Duval-Couetil, 2013). In fact, because of the diverse variation among entrepreneurship programs, there have been two major teaching

schools which have emerged, a skills-based approach where entrepreneurial spirits are born, not made, or an aptitude-based approach, where skills can be taught to anyone with an entrepreneurial ambition (Josien & Sybrowsky, 2013). To sum up, Liñán and Fayolle (2015) conducted a systematic review of 409 studies published about EEP and entrepreneurship intention, and they concluded that the research area of entrepreneurship-education entrepreneurship-intention has been a heterogeneous area.

Entrepreneurship Education Programs (EEPs)

Entrepreneurship Education Programs (EEPs) are no longer only small programs for elective courses in undergraduate or graduate schools; they have become a doctorate category at international universities. In fact, the power of entrepreneurship is that it is associated with both education and economy simultaneously (de Lourdes et al., 2017). It is the ability of EEPs to empower students with the skills necessary to create new ventures that have the potential to become multinational endeavors that has contributed to their popularity worldwide despite different languages and cultures (Matlay, 2006; Maritz, Brown, & Shieh, 2010). Moreover, there have been more online entrepreneurship certificates and accredited programs offered in higher education institutions. Harvard Business School takes credit for the earliest EEP in America with Myles Mace's initial course in the late 1940s (Katz, 2003) and to this day these EEPs can be found within business schools at most universities.

Several entrepreneurship scholars claim that the only approach to creating an entrepreneurship spirit is by using learning-by-doing educational strategies (Lackéus, 2015), or as Lackéus, Lundqvist, and Williams-Middleton (2013) proposed, a learning-by-creating-value approach. In other words, all entrepreneurship education programs should be about "experiential learning" (Williams, Middleton, Mueller, Blenker, Neergaard, & Tunstall, 2014). Typically,

intention models account for between 40-60% of the variance, so researchers often strive to include more variables (Liñán, & Fayolle, 2015). This study has different participants from twelve different countries, yet the findings varied by region when control groups were assessed for validity. Fayolle, Gailly, and Lassas-Clerc (2006) found a positive impact of EEP on specific groups of participants, specifically participants who had never been exposed to entrepreneurial programs and those who had been exposed to entrepreneurship through their family.

For Differences among Samples

There seem to be significant differences when students in EEPs are assessed in terms of viewpoint and planning that are favorable to entrepreneurship versus students who do not possess these qualities, but more research is needed in this area to avoid generalizations (Zhao et al. 2005). Studies are also still needed on the impact of not only corporate culture on individual attitude development, but also the legal, regulatory, professional, and national differences that may arise (Liñán & Fayolle, 2015). Culture also seems to play a role if only in terms of exposure. It is believed that Entrepreneurship Education is responsible for the higher aims and goals expressed by MIT students than by their German colleagues (Franke & Luthje, 2004). The strength of established EE programs in the United States also seems to give credence to this when viewed from the Korean perspective (Lee et al., 2005). Likewise, American secondary students are far more likely to be acquainted and comfortable with entrepreneur-related coursework compared to their Japanese and Korean counterparts where these programs are often seen as more Gen-Ed courses than as a major focus (Chosun Daily Newspaper; Lee et al., 2005).

Where Do Entrepreneurship Education Programs Live?

EEPs are usually housed within school of business in higher education institutions (Jaquette, 2004). Higher education is not limited to offering entrepreneurship training in business schools

only, despite a clear offering for finance and business majors in entrepreneurship coursework and training. Not surprisingly, several studies (e.g., Fayolle, Gailly, & Lassas-Clerc, 2006) have indicated that some student groups are impacted by entrepreneurship programs more than other students depending on their backgrounds. However, studies have been done that have focused on EEPs in business schools (e.g., Byabashaija & Katono, 2011; Florin, Karri, & Rossiter, 2007), entrepreneurship programs (Radu & Loué, 2008), management (e.g., Oosterbeek, Van Praag, & Ijsselstein, 2010), and engineering departments (e.g., Fayolle, Gailly, & Lassas-Clerc, 2006b). Nevertheless, other research points to its adoption in the arts and soft sciences such as computer science, history, geography, humanities and law, as well as in the hard sciences such as biology, physics, and medicine (Keat, Selvarajah, & Meyer, 2011; De Clercq, Honig, & Martin, 2013; Dohse & Walter, 2010; Wu & Wu, 2008). To keep up with the demands of entrepreneurially-minded students in a variety of disciplines, more colleges and universities have had to offer additional coursework in this area (Law & Breznik, 2017).

EE programs are typically conducted in higher education institutions, not in K-12 schools, yet there are some limited examples of research having been done in K-12 settings (e.g., Athayde, 2009; Huber, Sloof, & Van Praag, 2014). The core concepts of EEPs can be understood at any age and there are some K-12 schools that have adopted subjects to encourage students to consider starting their own business in the future, but most programs remain at the collegiate level (Hannon, 2006; De Lourdes Cárcamo-Solís et al, 2017).

Many universities with business programs require more than a quarter of graduation credits be focused on entrepreneurship and start-up coursework and training (Arranz, Ubierna, Arroyabe, Perez, & Fdez. de Arroyabe, 2017). Pedagogy has subsequently shifted because of the focus of entrepreneurial education on self-learning, group work, and collaborative projects that help build

skills toward self-employment over more traditional lecture formats. Undergraduate students often do not have as many support systems in place as older students who are working, often already full-time, and are less likely to branch out on their own immediately after graduation due to societal concerns regarding student loans and gaining experience in an established workforce. As a result, many academic programs have faced criticism for their inability to recognize these differences while continuing to offer and teach coursework at the undergraduate level instead of at a graduate or post-graduate level, or as short course offerings versus a degree program (Laukkanen, 2000).

The Critical Role of Entrepreneurship

Despite their growing popularity, entrepreneurship programs are not easily implemented and taught in higher education. They require the involvement of stakeholders, who support the schools as well as other resources that help the sustainability of the schools, in addition to partners established after the students start the initiatives. As documented in the literature, the field of business is the leading field for entrepreneurship, so schools of education are still considered new to entrepreneurship programs when compared to business or engineering departments (Duval-Couetil, 2013). The lack of agreement among scholars regarding the definition of entrepreneurship and types of programs, syllabi, and courses required has led scholars to state "the content of syllabi of courses developed by entrepreneurship scholars differs to such an extent that it is difficult to determine if they even have a common purpose" (Henry et al., 2005, p.103).

Governments are Pushing Towards Entrepreneurship Education

Self-employment has been marketed to younger generations as a means to end poverty by the governments of many developing countries and entrepreneurship education programs have been

developed as a means of training these youth (Shamsudeen, Liman, & Haruna, 2017). To combat elevated levels of job insecurity in Nigeria, the Federal Ministry of Education has instituted mandatory coursework in EE for all secondary education students (Oguntimehin & Olaniran, 2017). Likewise, the Ministry of Small and Medium-sized Enterprises (SMEs) and Startups in Korea supports and encourages EE in university coursework as a means of creating stronger business communities throughout the country (Byun, Sung, Park, & Choi, 2018). The Ministry of Agriculture in Indonesia, for example, launched its new initiative Agricultural Young Entrepreneurship Growing Program in 2016 to decrease the rate of unemployment (Ridha & Wahyu, 2017). One of the fastest growing international destinations for international students who desire a quality education is Malaysia. Part of the appeal is the Malaysian government's concerted effort to offer quality EEPs for both international students and the local population, and it is due to these efforts that an increase in entrepreneurial intention has been measured (Joseph, 2017). It can be shown that Ministries of Education in some countries are advocating implementing EEPs in higher education institutions (Chea, 2017) with the focus being the short-term goal of increasing entrepreneurial intention in younger generations to build a long-term goal of economic development for the country as a whole.

Facets of Entrepreneurship Education Programs (EEPs)

Although there is no single agreed-upon standard of EEP internationally, practitioners usually create different forms of EEPs within the framework of Theory of Planned Behavior (Ajzen 1991, 2002) or Shapero's Entrepreneurial Event model (Shapero & Sokol, 1982). Facets of entrepreneurship are usually taught in courses housed within business departments/programs. Also, another facet of entrepreneurship education is through obtaining degrees in entrepreneurship and innovation. Higher education institutions are offering bachelor's, master's

and doctoral degrees in entrepreneurship. These degrees include a Ph.D. in Entrepreneurship and Innovativeness (University of Missouri-Kansas City, USA; University of Osijek Faculty of Economics, Croatia), a Ph.D. in International Entrepreneurship (Horizons University, France) and a Ph.D. in Management - Entrepreneurship (University of Ottawa, Canada), and other Ph.Ds. in entrepreneurship degrees.

Further, another dimension of entrepreneurship education is found in training. Several countries have seen the need for a relationship between universities offering entrepreneurship training and the business community. In Malaysia, the Ministry of Education has helped universities foster this connection between consultants and students by providing funding for more skills and pragmatic training through the Centers of Entrepreneurship Development with the goal of developing a better prepared workforce (Olugbola, 2017). It has been established that this can also be accomplished through curricula and extracurricular activities (Arranz et al., 2017), as well as workshops and courses (Solesvik, 2017). As a result, EEP curricula are newer additions to higher education institutions for both graduate and undergraduate students (Josien & Sybrowsky, 2013).

Assessment-Centered Approaches

After extensive systematic review, Duval-Couetil (2013) provides the commonly used assessment approaches and plans to evaluate entrepreneurship education programs. Those assessment approaches use a Stakeholder-Driven framework that focuses on the priorities of stakeholders. As stakeholders differ in their purposes in entrepreneurship programs, they can pose different questions from various perspectives that can become evaluative questions, adding to both formative and summative assessment. As Rossi, Lipsey, and Freeman (2003) suggested, the involvement of stakeholders early in program evaluation is a critical and helpful factor in the

development of the program considering the stakeholders' objectives. Other assessment approaches/strategies discussed by Duval-Couetil (2013) include finding assessment standards that work department wide, devoting resources to assessment, involving assessment experts and instructors, and then analyzing the practicality of the assessment. Other scholars (e.g., Fayolle, Gailly, & Lassas-Clerc, 2006) assessed entrepreneurship education programs using the Theory of Planned Behavior since it is clear that assessment is one of five essential components of successful EEPs (Maritz et al., 2010). Without assessment, EEPs are not well-developed, especially with the rapidly ongoing changes in the field of entrepreneurship programs as they expand worldwide and in different cultural environments.

Entrepreneurship Intention (EI) Findings

Intentionality is often the key to any successful entrepreneurial endeavor. Pre-organizational thinking and planning form a critical part of any emergent activity and there is a growing body of evidence to support this notion (Krueger & Carsrud, 1993). Entrepreneurship Intention (EI) has been a central element in the literature of entrepreneurship education programs (EEPs). Research on entrepreneurship education and entrepreneurship intention has been driven by two major theories: Ajzen's Theory of Planned Behavior (TPB) and Shapero's Entrepreneurial Event model (Ajzen, 1985, 1991, 2002; Shapero & Sokol,1982). Some research uses both the TPB theory and the Shapero model (e.g., Patricia & Silangen, 2016; Hallam & Zanella, 2017). In addition, there are a few studies that also used entrepreneurial cognition theory (Zhang, Duysters, & Cloodt, 2014). What is surprising is that risk-taking and creativity, along with being proactive and imaginative, are taught within EEPs, which demonstrates a marked change from more traditional education in business schools that focused on gaining acceptance in and the development of large corporations (Byun et al., 2018). Action theory demonstrates that personal ability, behavior, and

goal-setting are necessary for action to occur (Frese, 2009; Solesvik, 2017). The Theory of Planned Behavior (Ajzen, 1985, 1991; 2002) and the Entrepreneurial Event model (Shapero & Sokol,1982) have become paramount in EI programs. However, further studies have demonstrated that a strong indicator of the likelihood that someone will start a new business can be predicted by the Theory of Planned Behavior, but this must be understood as an activity requiring planning and patience as it may be as much as two decades later (Liñán & Fayolle, 2015).

Factors Effecting Entrepreneurship Intention

There are several commonly examined variables that affect entrepreneurship intention in the entrepreneurship literature. However, the most examined variables include, but are not limited to, attitudes toward entrepreneurship, subjective norms, and perceived behavioral control as suggested by the Theory of Planned Behavior (Ajzen, 1991, 2002). In addition, parental business relationships, creativity, exposure to EEP, perceived desirability, need for achievement, gender, age, and other background variables are also examined in research, but are often downplayed. Whether this is intentional or not, Ndofirepi and Rambe (2017) assert that to ignore outside influences when examining the relationship between EE and EI is erroneous. Moreover, self-efficacy is a crucial factor in entrepreneurial intentions towards entrepreneurship (Krueger, Jr. & Brazeal, 1994; Zhao et al. 2005). According to Zhang, Duysters and Cloodt (2014), knowing an independent business owner either from a friend, family, or work network can greatly enhance one's personal level of interest in entrepreneurship intention. Students who feel compelled to strike out on their own in business are generally seen as having greater personal levels of achievement, internal locus of control, and an entrepreneurial spirit than those students planning more traditional career paths (Çolakoğlu & Gözükara, 2016). Optimism, innovativeness, risk-

taking, and competitiveness (Ozaralli & Rivenburgh, 2016) along with "social (experience and education), societal (economic and political climate), and personality factors" can contribute to students' entrepreneurial intention (Ozaralli & Rivenburgh, 2016, p.1). One study in Nigeria (Jewku, 2016) also found that EI can be highly influenced by psychosocial factors such as gender, social networks, concerns over the probability of success, and the pioneering ability of the individual.

Differences in Findings

It is safe to say that more research is needed on Entrepreneurial Education and its influence on learners when one examines the conflicting results seen in previous studies. Take for example the delivery of program information. Dohse and Wlater (2010) have found that EE works best when delivered to students through activities such as seminars than through more traditional lecture formats and may speak to why some departments have higher success rates in EI. They also found that "regional context" had a significant impact on EE. While neither gender nor familial or celebrity connections to the business world seemed to have an impact on students enrolled in EEPs, a favorable disposition and engagement in workshops did (Pruett, 2012). Compare this to other studies (Rodrigues, Dinis, do Paço, Ferreira, & Raposo, 2012) that show that students with negative EI still have the same level of intention after attending an EEP, while high EI still have the same EEP after training. Yet Neneh (2014) reports higher EI means for males than females, and Yukongdi & Lopa (2017) found a negative effect of education/training on entrepreneurship on EI. Thus, the argument as to whether participants are born or made is challenged depending on the method of instruction, but this "nature versus nurture" dichotomy has proven a challenge for those defending either side (Rodrigues et al., 2012).

What is the comparison when intention is factored in? Fayolle, Gailly, & Lassas-Clerc (2006b) did not initially find significant differences when they measured an EEP program on entrepreneurship intention, but their limited three-day study did show a clear strengthening of innate confidence and behavioral control following entrepreneurial teaching programs. Likewise, Huber et al. (2014) found the participants' knowledge in the entrepreneurship program was not affected. However, non-cognitive skills were strongly affected positively by the entrepreneurship education program. Other recent studies (e.g., Ahmed, Chandran & Klobas, 2017) found that EEPs do not add a more significant contribution to students' attention than a business class. In fact, business students had higher EI than EEP students (Ahmed et al., 2017). Other studies (e.g., Mahendra, Djatmika, & Hermawan, 2017) found almost no effect of EEP on EI. Indeed, Karimi, Biemans, Lans, Mulder, & Chizari (2012) found no significant effect of EEP on entrepreneurship intention. Nowiński, Haddoud, Lančarič, Egerová, and Czeglédi (2017) found conflicting differences about the impact of EEP on EI in the same analysis but in different countries. They found a negative, but insignificant, effect of EEP on EI with their Slovakian sample. On the other hand, they found a positive and significant effect of EEP on EI with their sample from Poland.

What role, if any, does age play in the equation? Some countries have implemented entrepreneurship education in high schools, others in higher education institutions as a major and also as Ph.D. degrees, while others have not implemented it in higher education institutions. Studies back up the claim that even the most motivated individuals are far more likely to follow a traditional career path the greater the undergraduate credits they acquire and make little connection between their collegiate training and starting their own business regardless of future intentions (Arranz et al., 2017).

Statement of the Problem

Although there is a plethora of studies published by highly-cited scholars and reports published by well-known educational organizations, the findings of the impact of entrepreneurship education programs on entrepreneurship intention are still up for debate and those conflicts continue. Some studies report a high impact of EEP on Entrepreneurship Intention (EI) (e.g., Adekiya & Ibrahim, 2016), while others report a moderate impact (e.g., Welsh, Tullar & Nemati, 2016; Barba-Sánchez & Atienza-Sahuquillo, 2018), some report weak or almost no impact (e.g., Westhead & Solesvik, 2016), and others (e.g., Yukongdi & Lopa, 2017) reported a negative impact of EEP on EI among students in higher education. Further, for example, some of the multi-sample studies (e.g., Nowiński et al., 2017) found a negative impact of EEP on EI on Slovakian students, but a positive impact on Czech, Polish, and Hungarian students. On the other hand, Holienka (2014) found a highly positive impact of student intention to starting a business in the near future. Although many of the findings in the literature of entrepreneurship education programs indicate that entrepreneurship education has positive outcomes, the extent of these program outcomes is omitted (Duval-Couetil, 2013). There has been a concerted effort on the part of researchers to demonstrate a comprehensive link between EE and EI, yet these relationships remain unclear with further areas of study needed (Bae, Qian, Miao, & Fiet, 2014).

There is no meta-analysis in the field of entrepreneurship education that measures the effect of entrepreneurship education programs on entrepreneurship intention in higher education settings. Although Bae, Qian, Miao, and Fiet (2014) meta-analyzed 73 business and entrepreneurship studies confirming the effect of entrepreneurial education programs on entrepreneurial intentions, their meta-analysis included all education levels, by combining higher education with K-12 samples. However, since its inception EEPs have been taught to higher

education students as that had always been the intention. Nabi et al., (2017) criticized this meta-analytic review because they mixed higher education samples with K-12 education samples. Consequently, the role of intention and its influence on individual's behavior should be investigated with more detail as an important construct (Fayolle & Liñán, 2014; Kereuger, 2009; Solesvik, 2017). Attitudinal and intentional thinking on the part of students who have engaged in EEPs varies significantly from those who have not, though the generalizability of these studies remains unclear (Liñán & Fayolle, 2015). Most of the existing studies about EEP focus on higher education since those are the people who can more likely start a business than K-12 students. The core problem for which this meta-analysis has been conducted is to determine the effect of Entrepreneurship Education Programs on entrepreneurship intention in higher education settings using the recent articles published after Bae et al's (2014) meta-analytic review. Samwel Mwasalwiba (2010) conducted a semi-systematic review on entrepreneurship education effectiveness; however, he concluded that a meta-analysis would be an appropriate approach to evaluate EEP effectiveness since findings are in conflict.

Bae and colleagues used Hunter and Schmidt's (2004) methods to implement a fixed effect meta-analysis. In the fixed-effect approach, the true effect size is equal across all studies in different nations and cultures. However, this may not be the case among different nations, countries, cultures, education levels, and varying education systems. In this meta-analysis, the author chose the random effect approach in which the assumption that underlies the analysis is that the effect sizes are normally distributed (Borenstein, Hedges, Higgins, & Rothstein, 2011). The definition of Entrepreneurship Education (EE) itself is not agreed upon across countries and even among researchers, as discussed earlier. As a result, how people perceive entrepreneurship education as well as EI is different, so a random-effect approach

was appropriate in this case. Thus, another critical reason for conducting this random-effect model is due to the EI being a dynamic construct, which is not the same across individuals, education systems, and cultures. First, constructs are complex and dynamic. Second, people are taught differently across diverse education systems. In fact, Zhao (2012) found that education systems that focus on test scores (e.g., China) produce not very creative people when one is evaluated based on their test scores and those high achievers have low confidence levels. In addition, creativity is highly correlated with EI (Yar Hamidi, Wennberg & Berglund, 2008) while it has a low correlation coefficient with academic achievement, r = .22 (Gajda, Karwowski, & Beghetto, 2017). That is to say that there cannot be one true effect size across all the differences among education systems, cultural values, and institutional goals. Thus, the random-effect has been chosen for conducting this meta-analysis.

Methodology

Sampling of Studies

The target population of this meta-analytic review was the studies that reported on the effect of entrepreneurship education on entrepreneurship intention between early 2014 until November 2018. As a means of searching related studies about entrepreneurship education and entrepreneurship intention in higher education settings, the author used electronic databases and search engines including the University of Kansas libraries, ScienceDirect, ERIC, Journal of Entrepreneurship Education, Journal of Innovation and Entrepreneurship, Education + Training, and the Google Scholar search engine. The author also reviewed the 409-paper systematic review article by Liñán and Fayolle (2015) to identify studies. The key words used for the search were "Entrepreneurship Education," "Entrepreneurial Education," "Entrepreneurship Intention," and/or "Entrepreneurial Intention." This electronic search was followed by a manual search

which resulted in over 918 articles which eventually identified 38 articles with 47 effect sizes that would likely fit the meta-analytic review. Each article was carefully read and evaluated to decide the appropriateness of each study using pre-set criteria.

Inclusion and Exclusion Criteria

For articles to be included in the current meta-analysis, each article had to fit three conditions: the study (1) investigated the impact of entrepreneurship education/training on entrepreneurship intention; (2) was conducted in higher education settings on adult participants; and (3) reported quantitative data, including sample sizes, correlation coefficient between entrepreneurship education and entrepreneurship intention or other statistics, such as means, standard deviations, regression coefficients, and t-values that can be used to calculate r between EE and EI. For studies that did not report the needed statistics to calculate effect sizes, the researcher contacted the corresponding authors of these studies to obtain the needed statistics to calculate the effect size. Of the authors contacted, only those who responded with this information were included in the study. The means differences, for example, were converted to *g* values and then to *r*. When all values were converted to *r* values, the author then converted all correlation coefficients to Fisher's Z values to do the calculate the Fixed-effect model and the Random-effect model results.

List of studies included in the meta-analysis:

Author(s)	Year	Sample Size
Newbold and Erwin (Study 1)	2014	64
Newbold and Erwin (Study 2)	2014	260
Newbold and Erwin (Study 3)	2014	195
Zhang, Duysters, and Cloodt	2014	494
Denanyoh, Adjei, and Nyemekye	2015	228
Nasiru, Keat, and Bhatt	2015	595
Nasiru, Keat, and Bhatti	2015	296
Mustapha and Selvaraju	2015	178
Murugesan and Jayavelu (Business Sample)	2015	100
Murugesan and Jayavelu (Engineering Sample)	2015	100
Murugesan and Jayavelu (Art and Science Sample)	2015	250
Oyugi	2015	261
Politis, Ketikidis, Diamantidis, and Lazuras	2016	111
Ramoni	2016	229
Westhead and Solesvik	2016	189
Welsh, Tullar and Nemati	2016	671
Adekiya and Ibrahim	2016	255
Shirokova, Osiyevskyy, and Bogatyreva	2016	70,164
Mbuya and Schachtebeck	2016	603
Khuong and An	2016	401
Maresch, Harms, Kailer, and Wimmer-Wurm	2016	3581
Rezaei, Zarei, and Ganjouei	2016	186
Nowiński et al (*Hungary* sample)	2017	253
Nowiński et al (*Poland* sample)	2017	421
Nowiński et al (*Czech Rep.* sample)	2017	178
Nowiński et al (*Slovakia* sample)	2017	170
Miranda, Chamorro-Meraa, and Rubio	2017	1178
Mamun, Nawi,Mohiuddin, Shamsudin, and Fazal	2017	375
Yukongdi and Lopa	2017	393
Matsheke and Dhurup	2017	263
Ndofirepi and Rambe	2017	154
Zollo, Laudano, Ciappei, and Zampi	2017	272
Cera and Furxhiu	2017	63
Zaki	2017	164
Rambe, Ndofirepi and Dzansi (Zimbabwe Sample)	2017	153
Rambe, Ndofirepi and Dzansi (South Africa Sample)	2017	131
Ramli and Basbeth,	2018	114
Oluwafunmilayo, Moses, Olokundun, and Grace	2018	339
Ali, Zakaria, Jaganathan, Rashid, Yacob and Gorondutse	2018	335
Saji and Nair	2018	63
Barba-Sánchez and Atienza-Sahuquillo1	2018	216
Barba-Sánchez and Atienza-Sahuquillo2	2018	198
Suffian, and Rosman, et all.	2018	260

Israr and Saleem	2018	510
Hien and Cho (Factor 1)	2018	293
Hien and Cho (Factor 2)	2018	293
Jahani, Babazadeh, Haghighi, and Cheraghian	2018	76

Analysis

Calculating the Effect Sizes

Pearson's correlation coefficient (r) that represents the relationship between EEP and EI served as the effect size in this meta-analysis. These r values were mainly extracted from correlation studies or from the studies that used pre and post test scores, matched groups, or independent groups. For the studies that used r, the author converted r to Fisher's Z score using r and the sample size. For the studies that used mean differences, the author computed *g* after calculating *d* (standardized mean difference). Because d has a slight bias, so it overestimates the value in small sample sizes, the author used the correction factor, which is called J, then calculated Hedges' g (Hedges, 1981). Using the necessary formulas suggested by Borenstein, Hedges, Higgins, and Rothstein (2011), all of the Fisher's z and their related-values were used to compute the Fixed-effect model results, then the Random-effect model results, and then to the summary effect with confidence intervals.

Results

This meta-analysis revealed the effect of entrepreneurship education on entrepreneurship intention. A significantly and positively moderate summary effect was found of entrepreneurship education on entrepreneurship intention, the weighted mean of effect size = .313 (lower limit = 0.262, upper limit = .364). When looking at the meta-analyzed studies, one can recognize that most of the studies found high or moderate effect of these educational programs on entrepreneurial intention. A few other studies, on the other hand, found low or negative impact of entrepreneurship education programs on entrepreneurship intention.

Heterogeneity of Effect Sizes

As expected for the case of entrepreneurship education programs impact, the I^2 statistic was large, 94, indicating that about 94% of variability in the correlation between entrepreneurship education programs and entrepreneurship intention is due to differences among the studies included in the current meta-analytic review. Bae et al. (2014) also found a high I^2 (88%) statistic. These similar findings explain the heterogeneity within the field of entrepreneurship education. This large variation also suggests moderator analysis when there are enough effect sizes and suggests a need for more investigation into the field of entrepreneurship education.

Discussion and Implication

This meta-analysis revealed the effect of entrepreneurship education on entrepreneurship intention. A positively moderate summary effect was found of entrepreneurship education on entrepreneurship intention (weighted mean effect size = .313, lower limit = 0.262, upper limit = .364). These results show evidence that the entrepreneurship education programs positively and significantly affect entrepreneurial intention in higher education settings, the birthplace of these educational programs. Interestingly, the more the author searched by year, the more articles appeared in databases and search engines about entrepreneurship education programs and entrepreneurship intention. The articles published in 2016 (155 articles) increased in the following year (170 articles). One of the reasons that might explain this increase may be due to government agencies in some countries (to name a few, Malaysia, Indonesia, and Nigeria) pushing higher education institutions towards greater implementation of these effective entrepreneurship programs.

As has been the case in some countries and organization reports, ministries of education and government agencies should focus on these types of education programs to support innovations

and start-up businesses, and to attract companies locally. Based on the documented literature and the searches the author conducted to collect articles for this meta-analysis, these programs are mainly taught and conducted in higher education settings and for adults which supports the view that EEPs work best for this target audience than in a K-12 setting.

These similar findings between Bae et al.'s (2014) meta-analytic review and the current meta-analytic review explain the heterogeneity within the field of entrepreneurship education findings. This large variation also suggests robust moderator analysis when there are enough effect sizes and a need for more investigation into the field of entrepreneurship education. Zhao (2012) asserts that if countries are interested in enhancing entrepreneurial people's skills, education systems need to implement project-based learning approaches, reduce excessive testing and omit standardized testing, focusing on individual differences, and providing students with more freedom to be creative and innovative. In short, education systems should always be looking for innovative ways to shape the mindset that students and future citizens need to be successful in an ever-changing world.

Not surprisingly, pedagogy based on learner-driven and hands-on problem-solving coursework that places greater responsibility for completion on the individual has a higher likelihood of building the time management and interpersonal skills necessary for today's workforce (Arranz et al., 2017). The inclusion of areas of research outside of traditional business arenas, namely those found in cognitive psychology that measure intention (Fayolle and Liñán, 2014) indicate that as more fields of study lend and blend their research areas of expertise, more research can be re-examined in a different light. As educators, it is in our best interests to stay current on what methodologies work best for today's students and a cross-disciplinary approach to our research and teaching practices may aid in this endeavor.

Future Research

Much of the research is quantitative in nature, and there are only a few qualitative studies published about entrepreneurship education and entrepreneurship intention when compared to published quantitative studies. Most of the quantitative studies test the Theory of Planned Behavior (TPB) and the Shapero Entrepreneurial Event model, and then reported on whether there were significant relationships or not in addition to demographic variables. However, an attempt at developing these theories is rare. It would be helpful for the field, especially with the proven evidence of large variation among effect sizes, to revise the TPB theory and the Entrepreneurial Event model by interviewing entrepreneurs in higher education settings and then updating these constructs as needed.

There are debates among researchers in the literature over the relationships of a set of influential factors related to entrepreneurship spirit. These debates include, but are not limited to, academic achievement and creativity (Gajda, Karwowski, & Beghetto, 2017), confidence and academic achievement (Zhao, 2012), and entrepreneurship intention and creativity (Yar Hamidi, Wennberg, & Berglund, 2008; and Lee & Wong, 2004). The relationships among the aforementioned constructs should be investigated. In addition, there are a few recently published articles (Le Dinh, Vu, & Ayayi, 2018; Nambisan, 2017; Richter, Kraus, & Syrjä, 2015) about digital entrepreneurship, and this seems an area likely to grow in popularity in the field of entrepreneurship education in higher education settings.

Limitations

This meta-analysis is not free of limitations. This meta-analysis included only higher education students or adults, excluding K-12 education settings from 2014 onward. It would be useful for the field to meta-analyze K12 settings as well. One of the reasons to exclude these K-12

education examples is that one of the main goals of conducting this meta-analysis was to reveal the impact of entrepreneurship education programs on adult participants. In addition, some of the articles are written in different languages other than English so the author did not include any of these items. Theses, dissertations, and conference proceedings were also not included in this meta-analytic review. Some of the authors who were contacted to obtain basic statistics (e.g., correlations, means, and standard deviations) did not respond to the author's email. Therefore, their published articles were excluded due to lack of required statistics to calculate effect sizes.

References

Adekiya, A. A., & Ibrahim, F. (2016). Entrepreneurship intention among students. The antecedent role of culture and entrepreneurship training and development. *The International Journal of Management Education*, *14*(2), 116-132.

Ahmed, T., Chandran, V. G. R., & Klobas, J. (2017). Specialized entrepreneurship education: Does it really matter? Fresh evidence from Pakistan. *International Journal of Entrepreneurial Behavior & Research*, *23*(1), 4-19.

Ajzen, I. (1985). *From intentions to actions: A theory of planned behavior*. In Action Control (pp. 11-39). Berlin: Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, *32*(4), 665-683.

Ali, J., Zakaria, N., Jaganathan, M., Rashid, N. A. M., Yacob, P., & Gorondutse, A. H. (2018). Determinants of Entrepreneurial Intention: Empirical Insights from Malaysian Undergraduate Business Students.

Arranz, N., Ubierna, F., Arroyabe, M. F., Perez, C., & Fdez. de Arroyabe, J. C. (2017). The effect of curricular and extracurricular activities on university students' entrepreneurial intention and competences. *Studies in Higher Education*, *42*(11), 1979-2008.

Athayde, R. (2009). Measuring enterprise potential in young people. *Entrepreneurship Theory and Practice*, *33*(2), 481-500.

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.

Barba-Sánchez, V., & Atienza-Sahuquillo, C. (2018). Entrepreneurial intention among engineering students: The role of entrepreneurship education. *European Research on Management and Business Economics*, *24*(1), 53-61.

Borenstein, M., Hedges, L. V., Higgins, J. P., & Rothstein, H. R. (2011). *Introduction to meta-analysis.* Hoboken, NJ: John Wiley & Sons.

Byabashaija, W., & Katono, I. (2011). The impact of college entrepreneurial education on entrepreneurial attitudes and intention to start a business in Uganda. *Journal of Developmental Entrepreneurship*, *16*(01), 127-144.

Byun, C. G., Sung, C., Park, J., & Choi, D. (2018). A study on the effectiveness of entrepreneurship education programs in higher education institutions: A case study of Korean graduate programs. *Journal of Open Innovation: Technology, Market, & Complexity*, *4*(3), 26.

Cera, E., & Furxhiu, N. (2017). Factors which influence students' entrepreneurship intentions: The role of education programs, subjective norms and perceived behavioral control. *Journal of Educational and Social Research*, *7*(1), 173.

Chea, C. C. (2017). Entrepreneurship intention in an open and distance learning (ODL) institution in Malaysia. *Malaysian Online Journal of Educational Management*, *3*(3), 31-33.

Chen, C. C., Greene, P. G., & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers*? Journal of Business Venturing*, *13*(4), 295-316.

Çolakoğlu, N., & Gözükara, İ. (2016). A comparison study on personality traits based on the attitudes of university students toward entrepreneurship. *Procedia-Social and Behavioral*

Sciences, *229*, 133-140.

De Clercq, D., Honig, B., & Martin, B. (2013). The roles of learning orientation and passion for work in the formation of entrepreneurial intention. *International Small Business Journal*, *31*(6), 652-676.

De Lourdes Cárcamo-Solís, M., del Pilar Arroyo-López, M., del Carmen Alvarez-Castañón, L., & García-López, E. (2017). Developing entrepreneurship in primary schools. The Mexican experience of "My first enterprise: Entrepreneurship by playing." *Teaching and Teacher Education*, *64*, 291-304.

Denanyoh, R., Adjei, K., & Nyemekye, G. E. (2015). Factors that impact on entrepreneurial intention of tertiary students in Ghana. *International Journal of Business and Social Research*, *5*(3), 19-29.

Dohse, D., & Walter, S. G. (2010). The role of entrepreneurship education and regional context in forming entrepreneurial intentions (No. 2010, 18). Document de treball de l'IEB.

Duval-Couetil, N. (2013). Assessing the impact of entrepreneurship education programs: Challenges and approaches. *Journal of Small Business Management*, *51*(3), 394-409.

Fayolle, A., Gailly, B., & Lassas-Clerc, N. (2006a). Assessing the impact of entrepreneurship education programmes: A new methodology. *Journal of European Industrial Training*, *30*(9), 701–720.

Fayolle, A., Gailly, B., & Lassas-Clerc, N. (2006b). Effect and counter-effect of entrepreneurship education and social context on student's intentions. *Estudios de Economía Aplicada*, *24*(2), 509-524.

Fayolle, A., & Liñán, F. (2014). The future of research on entrepreneurial intentions. *Journal of Business Research*, *67*(5), 663-666.

Florin, J., Karri, R., & Rossiter, N. (2007). Fostering entrepreneurial drive in business education: An attitudinal approach. *Journal of Management Education*, *31*(1), 17-42.

Franke, N., & Lüthje, C. (2004). Entrepreneurial intentions of business students—A benchmarking study. *International Journal of Innovation and Technology Management*, *1*(03), 269-288.

Frese, M. (2009). Towards a psychology of entrepreneurship—an action theory perspective. *Foundations and Trends in Entrepreneurship, 5*(6), 437-496.

Gajda, A., Karwowski, M., & Beghetto, R. A. (2017). Creativity and academic achievement: A meta-analysis. *Journal of Educational Psychology*, *109(*2), 269.

Hallam, C. R., & Zanella, G. (2017). Self-efficacy and entrepreneurial intentions in nascent technology entrepreneurs: A temporal construal theory approach. *International Journal of Techno-entrepreneurship*, *3*(4), 263-277.

Hannon, P. D. (2006). Teaching pigeons to dance: sense and meaning in entrepreneurship education. *Education + Training*, *48*(5), 296-308.

Hansemark, O. C. (1998). The effects of an entrepreneurship programme on need for achievement and locus of control of reinforcement. *International Journal of Entrepreneurial Behavior & Research*, *4*(1), 28-50.

Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics*, *6*(2), 107-128.

Henry, C., Hill, F., & Leitch, C. (2005). Entrepreneurship education and training: Can entrepreneurship be taught? Part I. *Education + Training*, *47*(2), 98-111.

Hien, D. T. T., & Cho, S. E. (2018). Relationship between entrepreneurship education and innovative start-up intentions among university students. *International Journal of*

Entrepreneurship, 22(3), 1.

Holienka, M. (2014). Youth entrepreneurship in Slovakia: A GEM based perspective. *Comenius Management Review*, *8*(2), 41-50.

Huber, L. R., Sloof, R., & Van Praag, M. (2014). The effect of early entrepreneurship education: Evidence from a field experiment. *European Economic Review*, *72*, 76-97.

Hunter, J. E., & Schmidt, F. L. (2004). Methods of meta-analysis: Correcting error and bias in research findings. Sage.

Israr, M., & Saleem, M. (2018). Entrepreneurial intentions among university students in Italy. *Journal of Global Entrepreneurship Research*, *8*(1), 20.

Jahani, S., Babazadeh, M., Haghighi, S., & Cheraghian, B. (2018). The effect of entrepreneurship education on self-efficacy beliefs and entrepreneurial intention of nurses. *Journal of Clinical & Diagnostic Research*, *12*(6).

Jaquette, Jr., J. P. (2004). University-wide entrepreneurship education: Alternative models and current trends. *Southern Rural Sociology*, *20*(2), 44-71.

Joseph, I. (2017). Factors influencing international student entrepreneurial intention in Malaysia. *American Journal of Industrial and Business Management*, *7*(04), 424.

Josien, L., & Sybrowsky, J. (2013). Teaching entrepreneurship in action: Using Ebay as an educational tool. *Journal of Entrepreneurship Education*, *16*, 1.

Karimi, S., Biemans, H., Lans, T., Mulder, M., & Chizari, M. (2012). The Role of Entrepreneurship Education in Developing Students' Entrepreneurial Intentions.

Katz, J. A. (2003). The chronology and intellectual trajectory of American entrepreneurship education: 1876–1999. *Journal of Business Venturing*, *18*(2), 283-300.

Keat, O. Y., Selvarajah, C., & Meyer, D. (2011). Inclination towards entrepreneurship among

university students: An empirical study of Malaysian university students. *International Journal of Business and Social Science*, *2*(4).

Khuong, M. N., & An, N. H. (2016). The factors affecting entrepreneurial intention of the students of Vietnam national university—a mediation analysis of perception toward entrepreneurship. *Journal of Economics, Business and Management*, *4*(2), 104-111.

Kiyani, S. A. (2017). Role of Entrepreneurship Education on Student Attitudes. *Abasyn University Journal of Social Sciences, 10*(2).

Krueger Jr., N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice, 18*(3), 91-104.

Krueger, N. F., & Carsrud, A. L. (1993). Entrepreneurial intentions: Applying the theory of planned behaviour. *Entrepreneurship & Regional Development*, *5*(4), 315-330.

Kyrö, P. (2005). Entrepreneurial learning in a cross-cultural context challenges previous learning paradigms. The dynamics of learning entrepreneurship in a cross-cultural university context. Hämeenlinna: University of Tampere.

Lackéus, M., Lundqvist, M., & Williams Middleton, K. (2013). How can entrepreneurship bridge between traditional and progressive education? In ECSB Entrepreneurship education conference; Århus, Denmark; May 29-31.

Lackéus, M. (2015). Entrepreneurship in education: What, why, when, how. Background Paper.

Lackéus, M., & Williams Middleton, K. (2015). Venture creation programs: Bridging entrepreneurship education and technology transfer. *Education + Training*, *57*(1), 48-73.

Law, K. M., & Breznik, K. (2017). Impacts of innovativeness and attitude on entrepreneurial intention: Among engineering and non-engineering students. *International Journal of*

Technology and Design Education, *27*(4), 683-700.

Laukkanen, M. (2000). Exploring alternative approaches in high-level entrepreneurship education: creating micromechanisms for endogenous regional growth. *Entrepreneurship & Regional Development*, *12*(1), 25-47.

Le Dinh, T., Vu, M. C., & Ayayi, A. (2018). Towards a living lab for promoting the digital entrepreneurship process. *International Journal of Entrepreneurship*, *22*(1).

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, S. M., Chang, D., & Lim, S. B. (2005). Impact of entrepreneurship education: A comparative study of the US and Korea. *The International Entrepreneurship and Management Journal, 1*(1), 27-43.

Liñán, F. (2004). Intention-based models of entrepreneurship education. *Piccolla Impresa/Small Business, 3*(1), 11-35.

Liñán, F., & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: Citation, thematic analyses, and research agenda. *International Entrepreneurship and Management Journal*, *11*(4), 907-933.

Mahendra, A. M., Djatmika, E. T., & Hermawan, A. (2017). The Effect of Entrepreneurship Education on Entrepreneurial Intention Mediated by Motivation and Attitude among Management Students, State University of Malang, Indonesia. *International Education Studies, 10*(9), 61.

Mamun, A. A., Nawi, N. B. C., Mohiuddin, M., Shamsudin, S. F. F. B., & Fafzl, S. A. (2017). Entrepreneurial intention and startup preparation: A study among business students in Malaysia. *Journal of Education for Business, 92*(6), 296-314.

Maresch, D., Harms, R., Kailer, N., & Wimmer-Wurm, B. (2016). The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs. *Technological Forecasting and Social Change, 104*, 172-179.

Maritz, A., Brown, C., & Shieh, C. J. (2010). A blended learning approach to entrepreneurship education. *Scientific Economics Journal: Special Edition, Actual Problems of Economics*, *12*(2), 83-93.

Matlay, H. (2006). Researching entrepreneurship and education: Part 2: What is entrepreneurship education and does it matter? *Education + Training*, *48*(8/9), 704-718.

Matsheke, O., & Dhurup, M. (2017). Entrepreneurial-related programmes and students' intentions to venture into new business creation: Finding synergy of constructs in a university of technology. *Science, Technology and Society*, *22*(2), 259-283.

Mbuya, J. M., & Schachtebeck, C. (2016). Future entrepreneurs: Does the field of study matter? A comparison of students in a South African urban environment. *Problems and Perspectives in Management*, *14*(2), 228-235.

Miranda, F. J., Chamorro-Mera, A., & Rubio, S. (2017). Academic entrepreneurship in Spanish universities: An analysis of the determinants of entrepreneurial intention. *European Research on Management and Business Economics*, *23*(2), 113-122.

Murugesan, R., & Jayavelu, R. (2015). Testing the impact of entrepreneurship education on business, engineering and arts and science students using the theory of planned behaviour: A comparative study. *Journal of Entrepreneurship in Emerging Economies*, *7*(3), 256-275.

Mustapha, M., & Selvaraju, M. (2015). Personal attributes, family influences, entrepreneurship education and entrepreneurship inclination among university students. Kajian Malaysia:

Journal of Malaysian Studies, 33.

Mwasalwiba, E. S. (2010). Entrepreneurship education: a review of its objectives, teaching methods, and impact indicators. *Education + Training*, *52*(1), 20-47.

Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning & Education*, *16*(2), 277-299.

Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, *41*(6), 1029-1055.

Nasiru, A., Keat, O. Y., & Bhatti, M. A. (2015). Influence of perceived university support, perceived effective entrepreneurship education, perceived creativity disposition, entrepreneurial passion for inventing and founding on entrepreneurial intention. *Mediterranean Journal of Social Sciences*, *6*(3), 88.

Ndofirepi, T. M., & Rambe, P. (2017). Entrepreneurship education and its impact on the entrepreneurship career intentions of vocational education students. *Problems and Perspectives in Management, 15*(1-1), 191-199.

Neneh, B. N. (2014). An assessment of entrepreneurial intention among university students in Cameroon. *Mediterranean Journal of Social Sciences*, *5*(20), 542.

Newbold, K. F., & Erwin, T. D. (2014). The education of entrepreneurs: An instrument to measure entrepreneurial development. *Journal of Business and Entrepreneurship*, *26*(1), 141-178.

Nielsen, S. L., & Gartner, W. B. (2017). Am I a student and/or entrepreneur? Multiple identities in student entrepreneurship. *Education + Training*, *59*(2), 135-154.

Nilsson, T. (2012). Entrepreneurship education–does it matter? I*nternational Journal of*

Business and Management, 7(13), 40.

Nowiński, W., Haddoud, M. Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2017). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, 1-19.

Oguntimehin, Y. A., & Olaniran, O. O. (2017). The relationship between entrepreneurship education and students' entrepreneurial intentions in Ogun state-owned universities, Nigeria. *British Journal of Education*, *5*(3), 9-20.

Olugbola, S. A. (2017). Exploring entrepreneurial readiness of youth and startup success components: entrepreneurship training as a moderator. *Journal of Innovation & Knowledge, 2*(3), 155-171.

Oluwafunmilayo, A. M., Moses, C. L., Olokundun, M. A., & Grace, A. C. (2018). Assessing the influence of entrepreneurship education on self-efficacy, attitude and entrepreneurial intentions. *Covenant Journal of Entrepreneurship (Special Edition), 1*(1).

Oosterbeek, H., Van Praag, M., & Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European Economic Review*, *54*(3), 442-454.

Oyugi, J. L. (2015). The mediating effect of self-efficacy on the relationship between entrepreneurship education and entrepreneurial intentions of university students. *Journal of Entrepreneurship, Management and Innovation*, *11*(2), 31-56.

Ozaralli, N., & Rivenburgh, N. K. (2016). Entrepreneurial intention: antecedents to entrepreneurial behavior in the USA and Turkey. *Journal of Global Entrepreneurship Research, 6*(1), 3.

Patricia, P., & Silangen, C. (2016). The effect of entrepreneurship education on entrepreneurial

intention in Indonesia. (Development Research of Management): *Journal Manajemen*, *11*(1), 67-86.

Pruett, M. (2012). Entrepreneurship education: Workshops and entrepreneurial intentions. *Journal of Education for Business*, *87*(2), 94-101.

Politis, K., Ketikidis, P., Diamantidis, A. D., & Lazuras, L. (2016). An investigation of social entrepreneurial intentions formation among South-East European postgraduate students. *Journal of Small Business and Enterprise Development*, *23*(4), 1120-1141.

Radu, M., & Loué, C. (2008). Motivational impact of role models as moderated by" ideal" vs." ought self-guides" identifications. *Journal of Enterprising Culture*, *16*(04), 441-465.

Rambe, P., Ndofirepi, T. M., & Dzansi, D. (2017, September). Shaping the Entrepreneurship Intentions of Students: The Role of Education and Technological Creativity. In European Conference on Innovation and Entrepreneurship (pp. 537-547). Academic Conferences International Limited.

Ramli, A., & Basbeth, F. (2018). Careers in entrepreneurship: is education enough?

Ramoni, A. S. (2016). Determinants of entrepreneurial intention among Nigerian university graduates. *World*, *6*(1).

Rezaei, F., Zarei, A., & Ganjouei, F. A. (2016). The survey of impact of entrepreneurial courses on intention and psychological characteristics of physical education students (a case study of Iranian universities). *Turkish Journal of Sport and Exercise*, *18*(2), 79-84.

Richter, C., Kraus, S., & Syrjä, P. (2015). The share economy as a precursor for digital entrepreneurship business models. *International Journal of Entrepreneurship and Small Business*, *25*(1), 18-35.

Ridha, R. N., & Wahyu, B. P. (2017). Entrepreneurship intention in agricultural sector of young

generation in Indonesia. *Asia Pacific Journal of Innovation and Entrepreneurship, 11*(1), 76-89.

Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2003). *Evaluation: A systematic approach*. Thousand Oaks, CA: Sage Publications.

Rodrigues, R. G., Dinis, A., do Paço, A., Ferreira, J., & Raposo, M. (2012). The effect of an entrepreneurial training programme on entrepreneurial traits and intention of secondary students. In Entrepreneurship-born, made and educated. InTech.

Saji, B. S., & Nair, A. R. (2018). Effectiveness of Innovation and Entrepreneurship Education in UAE Higher Education. *Academy of Strategic Management Journal*, *17*(4), 1.

Shamsudeen, K., Liman, B. M., & Haruna, M. J. (2017). An Empirical Investigation on the Relationship between Entrepreneurial Orientation, Entrepreneurial Education and Entrepreneurial Intention in Nigeria: A study of some selected Students of Higher Learning.

Shapero, A. and Sokol, L. (1982). The social dimensions of entrepreneurship. In C.A.

Kent, D.L. Sexton, & K.H. Vesper (Eds.), Encyclopedia of entrepreneurship, Englewood Cliffs: Prentice Hall.

Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention–behavior link in student entrepreneurship: Moderating effects of individual and environmental characteristics. *European Management Journal*, *34*(4), 386-399.

Solesvik, M. Z. (2017). Hybrid entrepreneurship: how and why entrepreneurs combine employment with self-employment. *Technology Innovation Management Review, 7*(3).

Streeter, D. H., Jaquette Jr, J. P., & Hovis, K. (2002). University-wide entrepreneurship education: Alternative Models and Current Trends (No. 127271).

Suffian, M. Z. A., Rosman, M., Norlaila, I., Norizan, A., & Hasnan, M. T. M. T. (2018).

Entrepreneurial intention: An empirical study among undergraduate students. *Journal of Fundamental and Applied Sciences*, *10*(2S), 413-435.

Welsh, D. H., Tullar, W. L., & Nemati, H. (2016). Entrepreneurship education: Process, method, or both? *Journal of Innovation & Knowledge*, *1*(3), 125-132.

Westhead, P., & Solesvik, M. Z. (2016). Entrepreneurship education and entrepreneurial intention: Do female students benefit? *International Small Business Journal*, *34*(8), 979-1003.

Williams-Middleton, K., Mueller, S., Blenker, P., Neergaard, H., & Tunstall, R. (2014). Experience-based learning in entrepreneurship education-a comparative study of four programmes in Europe. In RENT (Research in Entrepreneurship and Small Business) XXVIII (pp. 1-15).

Wu, S., & Wu, L. (2008). The impact of higher education on entrepreneurial intentions of university students in China. *Journal of Small Business and Enterprise Development*, *15*(4), 752-774.

Yar Hamidi, D., Wennberg, K., & Berglund, H. (2008). Creativity in entrepreneurship education. *Journal of Small Business and Enterprise Development*, *15*(2), 304-320.

Yukongdi, V., & Lopa, N. Z. (2017). Entrepreneurial intention: a study of individual, situational and gender differences. *Journal of Small Business and Enterprise Development*, *24*(2), 333-352.

Zaki, K. G. (2017). Investigating the entrepreneurship behaviour among hospitality undergraduates in Egypt. *International Journal of Heritage, Tourism, and Hospitality*, *11*(3/2).

Zhang, Y., Duysters, G., & Cloodt, M. (2014). The role of entrepreneurship education as a predictor of university students' entrepreneurial intention. *International Entrepreneurship and*

Management Journal, *10*(3), 623-641.

Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, *90*(6), 1265.

Zhao, Y. (2012). *World class learners: Educating creative and entrepreneurial students*. Thousand Oaks, CA: Corwin Press.

Zollo, L., Laudano, M. C., Ciappei, C., & Zampi, V. (2017). Factors affecting universities' ability to foster students' entrepreneurial behaviour: An empirical investigation. *Journal of Management Development*, *36*(2), 268-285.