

IMPACT OF ENTREPRENEURSHIP TRAINING ON INTENTION TO START A BUSINESS: A META-ANALYSIS OF RESEARCH PUBLISHED IN THE LAST DECADE

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ABSTRACT

Research studies published in past on the subject of entrepreneurship training has reported equivocal results. This served as a motivation for this study to conduct meta-analysis of studies published in the last decade. Using psychometric meta-analysis 44 studies were included in this study. The study provides quantitative evidence by assessing the literature related to entrepreneurship education and the results suggest a positive association between entrepreneurship education and entrepreneurship intentions and other related outcomes. It was found that overall entrepreneurship education though has a small correlation coefficient but was statistically significant (correlation coefficient=0.221). The findings of the study provide several implications for those who are engaged in designing entrepreneurship education programs and policy makers.

Keywords: Entrepreneurship, Entrepreneurial Intentions, Training.

INTRODUCTION

Meta-analysis has been recommended as a reliable research tool for systematic and evidence-based examination of the phenomenon or the research question (Del Re, 2015; Hunter & Schmidt, 2004). The major strength of this methodology is in terms of its ability to summarize the empirical results reported by studies in the past literature and allow the researcher to draw consistent patterns as well as reliable conclusions. Looking into the set of evidence-based methodologies it has been argued that meta-analysis is an effective technique capable of summarizing the results from multiple studies while reducing the biases present in each of the studies reviewed (Rauch & Frese, 2006). This study attempts to analyze the impact of entrepreneurial training and educational interventions on shaping entrepreneurial intentions of the students. In the context of this study entrepreneurial training includes both formal entrepreneurship courses offered to the University students as well as non-credit based entrepreneurial interventions such as workshops, entrepreneurship camps, seminars etc. Entrepreneurial intentions include desires to create a start-up, start a new venture or join family business.

Studies in this field have reported equivocal findings (Lorz et al., 2011; Shook et al., 2003). In response, multiple attempts have been made to integrate theoretical findings of competing frameworks and models in form of conceptual review articles (Mwasalwiba, 2012; Pittaway & Cope, 2007) as well as meta-analytical studies (Bae et al., 2014; Frese et al., 2012) to establish association between entrepreneurial training and entrepreneurial intentions. However, these studies fall short on resolving this ambiguity completely (Bechard & Gregoire, 2005;

Dickson et al., 2008; Martin et al., 2013). Martin et al., (2013) reported a weak positive association (weighted correlation coefficient=0.137) using a meta-analysis of 17 studies. However, the major limitation of the study is in terms of limited information about the underlying conditions and moderating factors under which entrepreneurship training is likely to result into higher intentions among the students to start their business. Similarly, Entrepreneurship education has been perceived as a way of promoting enterprising attitudes and professional capabilities for mastering an entrepreneurial career after graduation. However, there is little agreement on the effects of entrepreneurship education on the different antecedents of intentions (Peterman & Kennedy, 2003; Weaver et al., 2006). In addition, there remains a lack of research about the generalizability of the intent-based models and entrepreneurship education impact coming from developing or entrepreneurially young contexts.

This study is first of its kind to contribute to the theory of entrepreneurship literature by providing meta-analytical evidence about how entrepreneurship education contributes to the development of career interest, intentions, and behavior? The analysis is anchored upon motivational theories such as the Theory of Planned Behavior (TPB) (Ajzen 1991) and social cognition theories such as the Social Cognitive Career Theory (SCCT) (Lent et al., 2002). The intention-based models derived around the TPB suggest that entrepreneurial intentions are a function of the perceived feasibility and perceived desirability of the entrepreneurial act (Krueger et al., 2000). The SCCT also offers a comprehensive framework in which the choice of career is a function of dynamic interaction among self-efficacy, outcome expectations, and personal goals (Lent et al., 2002). These constructs fully or partially mediate the influence of personal (demographic, attitudes, experience) or external (supports, barriers) factors, and explain (1) the development of interest for career, (2) actual career choices, and (3) stability of the performance.

THEORY AND HYPOTHESIS DEVELOPMENT

Entrepreneurial Intentions

Crant (1996), defined entrepreneurial intentions as an individuals' desire to have an ownership of a business. Other definitions include the desire to start a new venture or a start-up (Krueger et al., 2000). In the behavioral theories literature, intentions have been defined as a self-reported prediction to act in a certain way in future (Ajzen, 1991; Ajzen & Fishbein, 1977). In essence, intentions are the closest proxy of predicting actual behavior in near future (Ajzen, 1991; Bagozzi et al., 1989). Sheeran (2002), conducted a meta-analysis of 422 studies and reported a significant correlation coefficient of 0.53 between behavioral intentions and actual behavior. The above coefficient was reported to explain 28 per cent of the total observed variance. On the contrary, Douglas & Shepherd (2002), had reported that entrepreneurial intentions may not predict the entrepreneurial behavior in reality. However, majority of the studies considered entrepreneurial intentions as reasonable predictor that an individual will take up an entrepreneurial career path (Bae et al., 2014; Krueger et al., 2000; Lee et al., 2011; Basu, 2010; Athayde, 2009).

Entrepreneurship Education and Training

Entrepreneurship educational and training interventions include “*any type of pedagogical or process of education aimed at fostering favorable attitudes and skill sets for adoption of an entrepreneurial career path*” (Fayolle et al., 2006). Higher education institutions have been

increasingly called upon to provide more enterprising orientation among graduates (Henry et al., 2005). Therefore, there is a need to critically evaluate how entrepreneurship education contributes to the development of career interest, intentions, and behavior. Over the period various models of entrepreneurship education have emerged and each one targets different aspects of entrepreneurial skill sets (Bridge et al., 1998; Gorman et al., 1997; McMullan & Long, 1987). Researchers in the past have listed a number of pedagogical tools for different type of students that majorly aims at creating awareness, imparting training and in-depth courses for aspiring entrepreneurs (Jamieson, 1984). Similarly, Liñán (2004) added educational programs for start-up firms in the existing entrepreneurship education set of courses. Literature suggests that majority of entrepreneurship education programs at University level are intended to increase the awareness of entrepreneurial career and create an aspirational appeal among students towards being an entrepreneur (Garvan & OCinneide, 1994). Previous studies have reported that students who had studied courses on entrepreneurship are likely to report higher entrepreneurial intentions as compared to those who have not studied such courses (Galloway & Brown, 2002). Kolvereid & Moen (1997), also reported that those who graduate with entrepreneurship as their major specialization have a higher probability to start a new venture and also are likely to report higher entrepreneurial intentions. This may happen due to structured training and ability to identify business opportunities due to entrepreneurship education (DeTienne & Chandler, 2004). On the contrary there is another set of literature that suggests a negative association between entrepreneurship education and entrepreneurial intention (Honig & Hatch, 2004; Mentoor & Friedrich, 2007; Oosterbeek et al., 2010).

Impact of Entrepreneurship Education on Entrepreneurial Intentions

It was found that there are two major theoretical frameworks that support the argues a positive association between entrepreneurship education and entrepreneurial intentions. The first theory is the “*Human Capital Theory*” proposed by Becker (1975), whereas the most recent one is the “*Entrepreneurial Self-efficacy*” proposed by Chen et al., (1998).

Initially it was argued by the academic world that entrepreneurial intentions are an outcome of human capital (Davidsson & Honig, 2003). Human capital has been defined as “*the skills and knowledge that individuals acquire through investments in schooling, on-the job training, and other types of experience*”. Unger et al., (2011), reported a significant association between human capital and entrepreneurial success with a correlation coefficient of 0.098 with a sample of 70 independent studies. Similar evidences were provided by other authors reporting a significant association between human capital and performance of the entrepreneurs (Becker, 1975; Linan, 2008). In another recent meta-analysis carried out by Martin et al., (2013), a significant association was reported between entrepreneurship education and human capital. The study reported a weighted correlation coefficient ($rw=0.237$) and found it statistically significant between human capital assets associated with entrepreneurship and entrepreneurial education and a weighted correlation coefficient ($rw=0.159$) between human capital and entrepreneurial outcomes; ($rw=0.109$) between human capital and favorable disposition towards entrepreneurial activities and ($rw=0.137$) with entrepreneurial intentions.

The more recent theoretical framework is the entrepreneurial self-efficacy framework that argues a strong positive relationship between entrepreneurship courses and entrepreneurial intentions (Wilson et al., 2007; Zhao et al., 2005). Entrepreneurial self-efficacy has been defined as “*a belief in one’s ability to successfully perform the various roles and tasks of*

entrepreneurship” (Bae et al., 2014; Chen et al., 1998; McGee et al., 2009). In the entrepreneurship literature it has been recognized as a significant enabler of entrepreneurial intention (Chen et al., 1998; Krueger et al., 2000; Segal et al., 2007; Wang et al., 2002; San Tan & Ng, 2006). Bandura (1982, 1986) argued in support of significant association between entrepreneurship education and entrepreneurial self-efficacy citing four major factors that trigger entrepreneurial self-efficacy, namely (a) “*enactive mastery*” (b) “*vicarious experience*” (c) “*verbal persuasion*” and (d) “*emotional arousal*”. Exposure to various pedagogical tools such as business plan preparation, interaction with successful entrepreneurs is helpful to the students enrolled for entrepreneurship courses and not only keep them motivated but also generate deep interest towards entrepreneurial career options resulting into higher entrepreneurial self-efficacy (Honig, 2004; Stumpf et al., 1987; Zhao et al., 2005). Based on the above evidences the following hypothesis is proposed:

H1: Entrepreneurship education has a positive and significant relationship with entrepreneurial intentions

Impact of Student Engagement on Entrepreneurial Intentions

Student engagement has been defined as a psychological construct that measures the degree of involvement, interest, and motivation a student is willing to invest towards learning. According to Kuh et al., (2008), student engagement is “*the time and energy students devote to their learning, and the effort institutions make in using effective educational practices*”. It has been argued that, student engagement in the context of entrepreneurship education programs may be accomplished by implementing the common proposition that deep-learning is followed by and is reinforced by aspects such as a common understanding of “*learning objectives*”, “*student motivation*”, “*student autonomy*” to apply the learning (and not on the evaluations). Student engagement also includes peer to peer interaction between co participants and interactions with the teachers (Biggs, 2003). In order to accomplish the deep-learning mentioned above, it has been proposed that entrepreneurship education must be linked to hands-on application of the knowledge in form of real-life projects that are perceived by students to be valuable, so that they are motivated to invest time and effort to acquire skills needed for becoming a successful entrepreneur (Arvanites et al., 2006; Charney & Libecap, 2000). Applying instruction pedagogy that is based on practice is considered important for student engagement due to the inherent complexity and interrelatedness of the activities that an entrepreneur has to face, in particular if the objective of the educational program is to foster a set of entrepreneurial behavior among students as a desired outcome (Gibb, 2002; Berge et al., 2009; Brown et al., 2011; Chrisman & McMullan, 2004).

The domain of entrepreneurship education is based on a certain set of assumptions such as entrepreneurs have imperfect knowledge, takes calculative risk based upon individual judgement and selectively choose factors to be considered in the business plan. Therefore, it is argued that the entrepreneurship students must be given adequate exposure to the macro environmental factors, and must be engaged in, this intricate process. Past studies in this domain pursue to attain desired student engagement and favorable learning outcomes by imparting entrepreneurship education by using on “*Kolb’s learning model*” (Kolb, 1984), some studies have modified kolb’s model by adapting it in the context of entrepreneurship education, such as “*Intotalo’s framework*” (Luczkiw, 2008), and in particular the control variables of the experimentation aspects of the above models. For example, Sherman et al., (2008) argued that

students will be better engaged by adopting pedagogy that includes using experiential learning tools such as “*interviewing an entrepreneur*”, crafting a detailed project report or a business plan and participating in various entrepreneurship events and forums. Similarly, Solomon (2008) suggested the importance of using computer simulations, field trips, making business presentations to experts and other similar in-class activities such as role plays etc. Business plan preparation is the most common pedagogical tool used in various Universities and colleges offering entrepreneurship courses as a major hands-on learning tool (Tan and Ng, 2006).

H2: Effective student engagement positively influences entrepreneurial intentions

Impact of Format of Entrepreneurship Education Program

Literature review suggest that entrepreneurship education programs can be broadly classified into two formats, the first category includes training programs that are short term and focuses on skill development (Martin et al., 2013; Miron & McClelland, 1979). The second category of courses include full time graduate and post-graduate courses focusing on imparting knowledge related to various theoretical concepts, business opportunity identification, simulation of decision-making scenarios using case studies etc. (Di Tienne & Chandler, 2004; Lee et al., 2005). Drawing from the theories of educational psychology one can argue that if there is a similarity between the learning outcomes and the context of application where learned knowledge has to be applied it is likely that transfer of learning will occur in terms of practical application of the knowledge (Barnett & Ceci, 2002; Haskell, 2001; Woodworth & Thorndike, 1901). Based on the theory of transfer of learning it is argued that skill development training programs may result into successful outcomes related to starting of any trade or business whereas, long term educational programs may result into sound financial outcomes of the business over a long-term making such entrepreneurs more sustainable (Martin et al., 2013). Therefore, based on this the following hypothesis is proposed

H3: Short term training programs results into decisions related to starting a skill-based enterprise whereas, long term educational programs are related to entrepreneurial outcomes that are sustainable and long term.

METHOD

Data-Collection

In order to select the studies for conducting meta-analysis sample was searched using multiple sources. The first we conducted an extensive search on online data bases such as google scholar, EBSCO, JSTOR, SCOPUS, ProQuest and Science Direct. In the next stage we searched for articles in the entrepreneurship journals and finally we looked at the references of the studies published in the past. There is a possibility that there are few unpublished papers and technical reports that were not available due to paucity of time and resources. However, the literature collected for the study was presented for expert opinion. Experts were chosen from institutes of national repute engaged into entrepreneurship education and it was validated by the experts and it was found that the studies included in the study provides an extensive coverage of the topic.

Decision Rules

In order to select a study to be included in the meta-analysis the study followed Hunter and Schmidt (2004) inclusion criterion. The first step was to identify the papers that had measured the impact of entrepreneurship education, it was done by search for keywords such as “*entrepreneurship training*”, “*entrepreneurship program*”, “*entrepreneurship curriculum*”, “*entrepreneurship courses*” and “*entrepreneurship education*”. Since the major objective of the analysis is to measure the impact of entrepreneurship education on entrepreneurial intentions, it was deemed essential to search such studies specifically.

In the next step, it was decided to search entrepreneurial intentions as an independent keyword along with other similar keywords such as willingness to start a new business, venture or a start-up. Similarly, articles related to student engagement and entrepreneurial outcomes were also searched. Studies that measured the impact of duration or format of entrepreneurship education on entrepreneurial outcomes were also searched using relevant keywords. Enterprise feasibility was used as a negative keyword and studies related to feasibility were excluded from the study. The third selection rule was the data reported by the studies used for sample. It was decided to select only those studies that reported data that could be transformed into correlation coefficient. Finally, the study included age, gender and cultural context as moderators. Applying above decision rules for inclusion of studies a total of 44 independent studies were selected that represented a sample size of 17215 students.

Coding of Variables for Meta-Analysis

The study coded all 44 independent sample studies identified on 21 items; these were further classified into five categories: a) entrepreneurship education related variables; b) student engagement; c) entrepreneurial outcomes; d) program format; e) publication bias.

The entrepreneurship education related attributes had following sub-categories: knowledge and skills development, attitude towards entrepreneurial career, professional efficacy, personality development for becoming an entrepreneur, supportive learning environment. Similarly, engagement included sub-categories such as: academic challenge, active learning, student-faculty interactions and simulations and role plays. Entrepreneurial outcomes had three sub-categories: ideation stage, start-up stage, venture creation. Program duration was classified in two categories namely training programs and education programs. The study also investigated to compare the impact of entrepreneurship education on entrepreneurial intentions in published versus unpublished articles. The objective was to understand if there is a publication bias and due to which is there a significant difference in the results reported by published versus unpublished articles.

ANALYSIS AND RESULTS

The primary analysis was carried out using the measures of effect size i.e., correlation coefficient effect size (r) (Hunter & Schmidt, 2004) and the standardized mean difference effect size (d) (Jackson et al., 1995; Wilson & Lipsey, 2001). The correlation coefficient explains the association between outcome and the criterion variable across the sample units. Keeping in view the ability of r coefficient to predict the association equally well in case of multiple independent variables it was decided to use weighted r as the primary measure to indicate the effect size. It was decided to convert d statistic was converted to r statics following the guidelines suggested

by Wilson & Lipsey (2001). The studies included in the meta-analysis are noted with an asterisk mark in the list of references at the end of this paper. In this study, it was decided to consider the r observed in the studies and not the r corrected and weightage was assigned to r coefficients according to the sample size of the selected studies. The analysis of these weighted coefficients was done using Schmidt & Lee (2004) guidelines.

The analysis was conducted using the procedures suggested by Hunter and Schmidt (1990). The size effects were calculated in a “bare-bones” manner so that it accounted for the sampling error. It is argued that sampling error is inversely related to sample size when data are collected from a non-representative sample. Therefore, it is important to control for the sampling error as it may adversely impact the results of a meta-analysis. According to Koslowsky & Sagie (1994), sampling error may account for significant portion of artifactual variance i.e., to the tune of 90% for small sample and approximately 70% in case of large sample studies.

The results of the study find support for Hypothesis 1 and 2. The size effects obtained were found to be significantly different from zero. The 95% confidence interval estimates did not include zero in the interval and hence, there was an evidence that size effects were non-zero (Judge et al., 2002). In order to test the moderation effect of duration of the program as proposed in hypothesis 3 homogeneity was examined applying the 75% rule suggested by Hunter and Schmidt's (1990, 2004). The z score was found statistically significant when size effects were compared for both the moderator pairs.

Table 1 META-ANALYSIS RESULTS (ANALYSIS OF CORRELATION BETWEEN ENTREPRENEURSHIP EDUCATION AND ENTREPRENEURIAL OUTCOMES)						
Variable	r (weighted mean)	σ	No. of studies	Sample size	95% CI	80% CR
H1: Entrepreneurship education → entrepreneurial intentions						
Overall	0.221	0.179	35	12165	0.160 - 0.283	-0.069 - 0.450
knowledge and skills development	0.234	0.128	29	9020	0.159 - 0.351	0.023 - 0.157
attitude towards entrepreneurial career	0.187	0.220	32	6387	0.110 - 0.265	-0.094 - 0.474
professional efficacy	0.242	0.173	19	8751	0.160 - 0.323	0.023 - 0.462
personality development	0.104	0.189	17	3629	0.007 - 0.207	-0.165 - 0.358
supportive learning environment	0.139	0.248	21	3479	0.027 - 0.251	-0.176 - 0.457
H2: Effective student engagement → Entrepreneurial Intentions						
Overall	0.189	0.082	24	11007	0.108 - 0.281	0.041 - 0.211
academic challenge	0.213	0.097	18	9513	0.110 - 0.217	0.038 - 0.287
active learning	0.127	0.084	10	2908	0.061 - 0.198	0.022 - 0.236
student-faculty interactions	0.157	0.050	9	8213	0.109 - 0.211	0.036 - 0.279
simulation and role plays	0.167	0.134	9	5861	0.088 - 0.251	0.008 - 0.335
H3a: Short term training programs → Skill-based Enterprise Whereas						
Training and workshop	0.091	0.118	6	387	0.027 - 0.220	0.031 - 0.154
Academic semester courses	0.131	0.148	35	7114	0.097 - 0.194	-0.028 - 0.171
H3b: long term educational programs → Entrepreneurial Outcomes that are Sustainable and long term.						
Training and workshop	0.249	0.193	13	7318	0.139 - 0.401	0.011 - 0.463

Academic semester courses	0.122	0.143	25	8005	0.104 - 0.241	-0.015 - 0.339
Research Design						
Cross-sectional	0.142	0.149	28	9719	0.109 - 0.216	-0.044 - 0.358
Longitudinal	0.084	0.122	16	6608	0.051 - 0.168	-0.065 - 0.269
Publication Bias						
Published	0.178	0.182	32	8450	0.134 - 0.254	-.059 - .412
Unpublished	0.126	0.112	12	8765	0.109 - 0.229	.028 - .315

Results for the three hypotheses proposed in the study are summarized in Table 1. The study observed a weighted correlation coefficient (r) of 0.221 ($k=35$, $N=12165$) between entrepreneurship education and entrepreneurial intentions. Further, the author also examined the five factors of entrepreneurship education and found weighted correlations to be non-zero. The result observed a weighted correlation between the five factors and entrepreneurial intentions (EI) as follows: knowledge and skill development of 0.234 ($k=29$, $N=9020$), between attitude and EI of 0.187 ($k=32$, $N=6387$), between professional efficacy and EI of 0.242 ($k = 19$, $N = 8751$), between personality development and EI of 0.104 ($k=17$, $N=3629$), supportive learning environment and EI of 0.139 ($k=21$, $N=3479$).

Regarding effective student engagement and its impact on entrepreneurial intentions the results produced a weighted correlation coefficient of 0.189 ($k=24$, $N=11007$). The four sub factors of student engagement also resulted into non-zero size effects thus hypothesis found support in the results of the study. The moderation analysis of the duration of the program resulted a weighted correlation between short term training program and entrepreneurial outcomes of 0.091 ($k=6$, $N=387$) and the weighted correlation between short term academic program and entrepreneurial outcome of 0.131 ($k=35$, $N=7114$). A comparison of the two coefficients were statistically not found different ($z=2.668$, $p>0.05$). However, a comparison of weighted correlation coefficient between long term training program and entrepreneurial outcomes ($r=0.249$, $k=13$, $N=7318$) and long-term academic program and entrepreneurial outcomes ($r=0.122$, $k=25$, $N=8005$) was observed to be significantly different ($z=1.351$, $p<0.05$).

Finally, the study also investigated the impact of type of study i.e., cross-sectional versus longitudinal and publication bias on the results. Comparing the correlation coefficient of cross-sectional studies ($r=0.142$, $k=28$, $N=9719$) and longitudinal studies ($r=0.84$, $k=16$, $N=6608$) it was found that the two coefficients were not different significantly ($z=0.839$, $p>0.05$). Similarly, coefficient of published studies ($r=0.178$, $k=32$, $N=8450$) and that of unpublished studies ($r=0.126$, $k=12$, $N=8765$) were not different significantly ($z=-1.254$, $p>0.05$).

DISCUSSION

Though entrepreneurship education programs both training and academic programs are becoming popular worldwide, academic literature remains quite equivocal about the impact of such programs on the entrepreneurial intentions (Weaver et al., 2006). Though majority of the studies that were reviewed reported a positive association between entrepreneurial education and entrepreneurial intentions and other entrepreneurial outcomes however, a good number of studies published in top tier journals reported negatively or did not found a positive association. Therefore, it is difficult to conclude how entrepreneurship education may impact the students. The current study addresses the above research gap in the literature pertaining to

entrepreneurship education. The study provides a quantitative evidence by assessing the literature related to entrepreneurship education and the results suggests a positive association between entrepreneurship education and entrepreneurship intentions and other related outcomes. It was found that overall entrepreneurship education though has a small correlation coefficient but was statistically significant. The results also provide support to the proposed hypothesis 1 and 2 and a partial support to the hypothesis 3. Testing the moderating impact of duration of education, it was found that in long term programs the format of the program i.e., the workshop format or the academic program has an important bearing on the outcomes of the education on intentions.

The evidence generated in the current study significantly provide support to the argument that there is a positive association between entrepreneurship education and entrepreneurial intentions. The findings of the study are in lines with the meta-analytic review conducted by Bae et al., (2014) and Martin et al., (2013). However, the study contributes to the above two studies in a way that the current study also examines the role of student engagement on entrepreneurial intentions. The results are important as it would help the policy makers and educationists to emphasize on the engagement factor of the education programs.

Though the study finds a significant relation between entrepreneurial education and entrepreneurial intentions however, there are few limitations of the study. First, we could find very few unpublished studies and therefore it is possible that we could not establish a publication bias. Secondly the lesser number of studies may also limit the generalization of the results in some areas such as impact of short-term training and workshops were not found significantly different from that of short-term academic programs. This may not be the case if comparison would have been done with a large sample.

This study raises various questions for the future research and it is suggested that future researchers may explore the relationships between sub factors of entrepreneurship education and entrepreneurial intentions. It is also suggested that research may look into the mediating role of student engagement and test the same through rigorous empirical research.

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