

PERSISTENCE AND ACUTENESS OF RESEARCH GAPS IN ENTREPRENEURSHIP EDUCATION: A SYSTEMATIC CONTENT ANALYSIS OF PREVIOUS REVIEWS (1987-2017)

Anne van Ewijk, Abu Dhabi University

ABSTRACT

This paper provides insight into the persistence and acuteness of subject-related and methodological research gaps in the field of entrepreneurship education through a systematic content analysis of all review papers from 1987 until 2017 (N=16). The goal is to create an overview of study subjects and methods for future studies that would advance the field. Content analysis and coding are executed by a single coder in three consecutive rounds to increase reliability. The subcategories for subjects are 'objectives', 'impact measurement', 'audience', 'content (curriculum and pedagogy)', 'instructors' and 'institutional context'. The subcategories for methods are 'type of research methods', 'quality of research methods', '(inter)disciplinary approach' and 'geographical setting'. The paper outlines the value of addressing these gaps and proposes future studies that are interdisciplinary, context-sensitive and comparative with high quality, mixed method study designs. How long it will take to close these gaps depends on the combined support of researchers, grant-awarding institutions and editors.

Keywords: Entrepreneurship Education, Review, Systematic Content Analysis, Research Gaps, Future.

INTRODUCTION

Entrepreneurship may emancipate vulnerable groups (Baxter et al., 2014), help prepare students to face unstable job markets (Mwasalwiba, 2010) or stimulate job creation (Decker et al., 2014). Recognizing its value for the socio-economic infrastructure of their countries, policy-makers continue to invest in entrepreneurship education, as they consider it an important stimulant for entrepreneurial behaviour through its impact on students' entrepreneurial intentions (e.g. European Commission, 2008; OECD, 2009). This belief is supported by well-articulated and widely tested theoretical models arguing that entrepreneurial intentions are the most immediate predictor of actual behaviour, such as the Krueger-Shapero model (Krueger, 1993; Shapero, 1975) and the application of the theory of planned behaviour (Ajzen, 1991) on entrepreneurship by Krueger and Carlsrud (1993). At the same time, students expect and experience value from entrepreneurship education (Kirkwood et al., 2014), leading to an increasing number of students that enrol in entrepreneurship programs, which fuels the demand for additional, more specialized courses (Katz, 2003).

Consequently, there has been a strong growth in the supply of entrepreneurship education and, with it, in the academic study thereof (Pittaway and Cope, 2007; Mwasalwiba, 2010, Nabi et al., 2017). For example, special editions dedicated to this topic in management education and education journals are numerous and regular. In addition, many 'mainstream' entrepreneurship

journals include contributions about entrepreneurship education. Finally, searching with the terms “entrepreneurship” AND “education” in databases with scholarly publications creates vast amounts of hits such as in SCOPUS (4,055) or ProQuest (24,083).

The large number of papers on entrepreneurship education, in combination with the fragmented nature of the field (Pittaway and Cope, 2007; Nabi et al., 2017), makes it considerably challenging for new and experienced researchers alike to obtain an overview of what knowledge has been created so far and what gaps in this body of knowledge are the most pressing. Consequently, it is not easy to decide what needs to be studied and how. Thus, the main question driving this paper is: ‘What are the most prominent research gaps in the field of entrepreneurship education, in terms of subjects and methods?’

As such, this paper aims to facilitate the advancement of the relatively young research field of entrepreneurship education by inspiring future studies that have a strong positive impact on theory building. This objective consists of two parts. First, to provide researchers and those with funding with the most recent overview of subject-related and methodological research gaps in the field of entrepreneurship education. Second, to indicate how the identified research gaps hinder the advancement of the field and what type of future studies would be able to address these gaps.

Section 2 outlines the methodology, including all the steps taken in the process of data gathering that was inspired by the systematic literature review method. Focusing on review papers allows for the integrating of previous findings and generates insights into the longevity and relative importance of research gaps. It also describes the data analysis, consisting of a qualitative systematic content analysis with coding based on a mixed predetermined-emerging taxonomy of subcategories for gaps. Sections 3 and 4 contain the results of the study and provide an overview of the retrieved gaps regarding study subjects and methods. Section 5 discusses the importance of addressing these gaps as well as the main directions for future studies to follow and advance the field of entrepreneurship education. Furthermore, it outlines how obstacles may be overcome through a joint effort by future researchers, grant awarding policy-makers and journal editors. Finally, this is briefly summarized in the conclusion, which also contains elaborate critical reflection on the limitations of the chosen study design.

METHODOLOGY

The data collection for this paper is inspired by the methodology of the systematic literature review (SLR), a proven method in social science research. A SLR is a useful method for reflecting on a field of research, viewing current research holistically and enabling synthesis (Tranfield et al., 2003). Following Pittaway and Cope (2007), this paper maintains the basic principles of a SLR while introducing some narrative elements. First, as opposed to the traditional narrative literature review, the process of data collection is reported openly in the same way that empirical research would be, so that it can be subjected to methodological scrutiny, repeated and tested. Second, the quality of the evidence from the included papers is explicitly assessed; in this paper by the explicit decision to only include peer-reviewed scholarly papers, as the addition of a peer-review process is recognized as a means of quality assurance and quality enhancement mechanisms (Blenker et al., 2014; Liñán and Fayolle, 2015). Third and last, the review draws from a range of disciplines via detailed search criteria with citation indexes. Three electronic databases (EBSCO, PROQUEST and SCOPUS) were used, because together these contain most of the leading journals in the field of organizational sciences, entrepreneurship, management education in general and entrepreneurship education in particular.

Including at least three databases is recommended practice for SLR's (Pittaway and Cope, 2007). Clear narrative elements from the data collection process for this paper are the criteria for selection of abstracts and full-text papers as well as the step of cross-referencing at the end, which also served as a mechanism to offset the potential risk of not obtaining all relevant review papers by not having included more databases.

Data Collection

Creating an overview of research gaps by analysing all previous papers in the field of entrepreneurship education or even only their abstracts, would require considerably more time and researchers than was available. Limiting the search by including only those papers with the highest citations, is likely to result in an incomplete overview of research gaps as these studies generally concern very specific subjects and together they might not cover the field as a whole. Review papers, however, cover a much wider spectrum of subjects and methods than regular papers and are generally also well-cited. The field of entrepreneurship education has produced multiple review papers. While, at least at the time of this study, none of these papers had the specific objective to identify research gaps, their wide scope and reflective nature appear to make them accessible and appropriate sources of data to address the main question of this study. In sum, the methodology of this paper consists of a data collection process that is inspired by the systematic literature review and that enables a qualitative content analysis of all narrative, semi-systematic or systematic review papers and meta-analyses in the field of entrepreneurship education. By integrating their findings, this paper is able to surpass the scope of each individual review and provide an indication of the longevity and relative importance of each research gap. This approach is not without its limitations, which might affect the validity of the results, so these are explicitly discussed in the conclusion.

Data was collected in five steps and these are outlined in Figure 1. It began by a search in three databases (EBSCO, SCOPUS and PROQUEST) that used the following search terms in the titles of the documents: "Entrepreneurship education" and ("review" or "meta-analysis"). The numbers of papers per database were: EBSCO (18), SCOPUS (12) and PROQUEST (11). The number of papers after removing duplicates was 22. While reading the abstracts, the following selection criteria were applied: The paper should focus on entrepreneurship education (referring to programs or courses about entrepreneurship, for example, not the educational level of entrepreneurs) and the paper should have a global scope (for example, it should not be limited to a certain country or case or a specific selection of countries or cases). The number of papers after this selection based on the abstracts was 14. The next step was reading the full text versions of the papers and applying the following selection criteria: The paper should explain clearly how information was collected and selected and the paper should explicitly mention gaps in existing research and/or suggestions for future research. The number of papers after this selection based on the full-text versions was 9. Finally, the search was expanded again through 'cross-referencing', whereby the reference sections of already selected papers were used to help locate other (review) papers in intent to ensure that the data collection was sufficiently exhaustive. All citations to other review papers in the area of entrepreneurship education or strongly related areas (such as entrepreneurial intentions) or to any other potentially relevant paper were investigated and, where appropriate, included. This led to a final amount of 17 papers, published between 1987 and 2017.

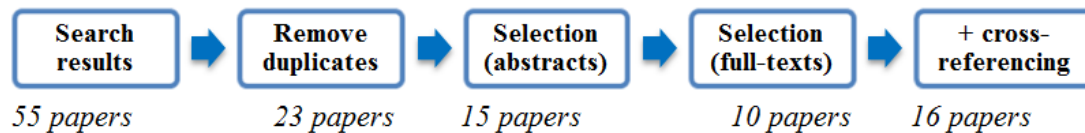


FIGURE 1
STEPS IN THE DATA COLLECTION PROCESS (INCL. NO OF PAPERS)

Table 1 presents an overview of the included review papers, including their publication data, their main objective and topic, the number of papers included in their analyses and the type of methods employed to analyse the collected papers. From this table it is clear that none of these papers shares the same explicit objective as this paper: To provide an overview of the most prominent research gaps in the field of entrepreneurship education. Most often they meta-analysed evidence for certain relations and/or assessed the quality of research methodology. From the wide variety of topics and the large number of papers they include in their analysis it is also clear that, together, they concern theory-building in the entire field. As such, their value as sources of data for this study is confirmed.

Table 1
OVERVIEW OF (SYSTEMATIC) REVIEW PAPERS AND META-ANALYSES IN THE FIELD OF ENTREPRENEURSHIP EDUCATION

Year	Author(s)	Title	Journal	Objective/topic	No. papers	Method
2017	Nabi, Liñán, Fayolle, Krueger & Walmsley	The Impact of Entrepreneurship Education in Higher Education: A Systematic Review and Research Agenda	Academy of Management Learning & Education	Assessing empirical evidence on the impact of different pedagogies in EE on a range of entrepreneurial outcomes	159	Qualitative: Content analyses, incl. coding with 5 predetermined types of outcomes and 3 predetermined types (+2 hybrids) of pedagogy
2016	Kakouris & Georgiadi	Analysing entrepreneurship education: A bibliometric survey pattern	Journal of Global Entrepreneurship Research	Testing the congruence between the field of EE and learning theories	7726	Quantitative: Linguistic descriptive statistics (bibliometrics)
2015	Baptista & Naia	Entrepreneurship Education: A Selective Examination of the Literature	Foundations and Trends in Entrepreneurship	Providing an overview of EE literature in the 2000's: Theoretical contributions + Challenges and Emerging Solutions in the Entrepreneurial Classroom	60	Qualitative: Content analyses, incl. coding with two predetermined paper taxonomies
2015	Liñán & Fayolle	A systematic literature review on entrepreneurial intentions: Citation, thematic analyses and research agenda	International Entrepreneurship Management Journal	Providing an overview of topics in research on entrepreneurial intentions	409	Qualitative: Thematic content analysis, incl. coding with predetermined categories and emerging subtopics

Table 1
OVERVIEW OF (SYSTEMATIC) REVIEW PAPERS AND META-ANALYSES IN THE FIELD OF
ENTREPRENEURSHIP EDUCATION

2015	Sirelkhatim & Gangi	Entrepreneurship education: A systematic literature review of curricula contents and teaching methods.	Cogent Business & Management.	Providing an overview of EE curricula contents and teachings methods: Entrepreneurial learning (how does it work) and best practices	129	Qualitative: Thematic content analysis, incl. emerging categories (entr.learning) and coding with predetermined (best practices) categories
2014	Bae, Qian, Miao & Fiet	The Relationship Between Entrepreneurship Education and Entrepreneurial Intentions: A Meta-Analytic Review	Entrepreneurship: Theory and Practice	Testing the relation between EE and entrepreneurial intentions	73	Quantitative: Coding and meta-analysis, incl. effect size, correlation coefficient, reliability estimate, variance and credibility intervals, harmonic mean sample size, regression
2014	Blenker, Elmholdt, Frederiksen, Korsgaard & Wagner	Methods in entrepreneurship education research: A review and integrative framework	Education and Training	Providing an overview of methods used in the field of EE and developing an integrative methodological framework for studying EE	88	Qualitative: Thematic content analysis, incl. coding with predetermined categories
2014	Schlaegel & Koenig	Determinants of Entrepreneurial Intent: A Meta-Analytic Test and Integration of Competing Models	Entrepreneurship: Theory and Practice	Testing and integrating competing theoretical models on determinants of entrepreneurial intent	98	Quantitative: Coding and bivariate meta-analysis, incl. reliability estimates, effect size, weighted least squares regression analysis, structural equation modelling
2013	Lorz, Mueller & Volery	Entrepreneurship education: A systematic review of the methods in impact studies	Journal of Enterprising Culture	Providing an overview of methods in EE impact studies	39	Qualitative: Methodological content analysis, incl. coding with predetermined categories and emerging subtopics
2013	Martin, McNally & Kay	Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes	Journal of Business Venturing	Testing whether EE results in entrepreneurship-related human capital assets (knowledge, skills and attitudes) and entrepreneurship outcomes (startup performance)	42	Quantitative: Coding and meta-analysis, incl. effect size, sample-size-weighted correlation coefficient, confidence interval, statistical analysis of difference

Table 1
OVERVIEW OF (SYSTEMATIC) REVIEW PAPERS AND META-ANALYSES IN THE FIELD OF
ENTREPRENEURSHIP EDUCATION

2013	Rideout & Gray	Does entrepreneurship education really work? A review and methodological critique of the empirical literature on the effects of university-based entrepreneurship education	Journal of Small Business Management	Assessing the methodological quality of (quantitative) empirical studies on effects of university-based EE	12	Qualitative: Methodological content analysis with predetermined categories
2010	Mwasalwiba	Entrepreneurship education: A review of its objectives, teaching methods and impact indicators	Education and Training	Providing an overview of EE literature and assessing the (non)alignment between its generic objectives, target audience, teaching methods and impact indicators	108	Qualitative: Thematic content analysis with predetermined categories
2007	Pittaway & Cope	Entrepreneurship education: A systematic review of the evidence	International Small Business Journal	Providing an overview of (proven) conclusions in the field of EE and areas where further empirical evidence is needed	185	Qualitative: Thematic content analysis, incl. coding with predetermined categories and emerging subtopics
2005	Bechard & Gregoire	Entrepreneurship Education Revisited: The Case of Higher Education	Academy of Management Learning & Education	Providing an overview of the main areas of interest and under-addressed areas of interest in EE research	103	Qualitative: Thematic content analysis, incl. coding with predetermined categories
1997	Gorman Hanlon & King	Some research perspectives on entrepreneurship education, enterprise education and education for small business management: A ten-year literature review	International Small Business Journal	Providing an overview of main types of EE studies, their subjects, audiences, approaches and instruments	92	Qualitative: Thematic content analysis, incl. coding with predetermined categories
1987	Dainow	Training and education of entrepreneurs: The current state of literature	Journal of Small Business and Entrepreneurship	Providing an overview of main types of EE studies and their subjects	58	Qualitative: Thematic content analysis, incl. coding with predetermined categories

Data analysis: (sub) Categories and coding

The full-text versions of the selected papers were screened again and their content was divided into two predetermined-emerging categories of gaps (following the mainstream distinction between subject and method) and their subcategories. The content analysis started with the most recently published papers. That way, only current gaps are included in the overview: Rarely studied subjects or under-used methods that were identified in earlier reviews but that were apparently adequately addressed in later research are not. As the goal was to be as comprehensive as possible, both explicit gaps and implicit gaps were included. Explicit gaps are identified by the author(s) and part of suggestions for future research or deducible from the suggestions for future research. Implicit gaps are deducible from the results of the review, but not identified as gaps by the author(s) and not part of the suggestions for future research.

To ensure reasonably reliable categorization despite of the fact that there was only a single coder (who was relatively new in the field, which prevented any possible knowledge-based bias), all papers were coded on three separate occasions: With a two-month gap between the first and second round and a 6-month gap between the second and third round. The first round of coding created increasing insights as to what the appropriate scope of and label for each subcategory could be, which led to minor revisions in the subcategories (as outlined below). Therefore, coding took place again twice with the final subcategories. Between round 2 and 3, 92% of the gaps were categorized in the same way. The remaining 8% was designated to a subcategory after consultation of two fellow researchers. This falls within the minimum acceptable level for intercoder reliability in the form of percent agreement (Lombard et al., 2002). As such, the coding framework provided sufficient consistency for the purposes of this study.

The first round of coding started with deductive category application (Mayring, 2000). The subcategories for ‘subject-related research gaps’ were predetermined on five main aspects posed in earlier research to analyse entrepreneurship programs (Fayolle and Gailly, 2008; Jones and Matlay, 2011), namely: Objectives, impact measurement, audience, curriculum and pedagogy and instructors. The subcategories for ‘methodological research gaps’ in the first round of coding were based on an elaborate analysis of the field of entrepreneurship education by Baptista and Naia (2015) as well as the repeated critique in multiple reviewed papers about the quality of research (Pittaway and Cope, 2007; Rideout and Gray, 2013; Lorz et al., 2013; Blenker et al., 2014), namely: Theory building paradigm, type of research methods and quality of methods.

After the first round of coding, the subcategories were somewhat modified inductively. Increasing insight into the research materials led to a slight adaptation of these subcategories to create clusters of topics that 1) cover all the areas, 2) are most similar in content and 3) maximally mutually exclusive. This emergent approach followed the logic of earlier studies (Xi et al., 2013; Kraus et al., 2014; Liñán and Fayolle, 2015), also called ‘inductive category development’ (Mayring, 2000). After round one, the final subcategories for ‘subject-related research gaps’ became:

1. Objectives (why?)
2. Impact measurement (which results?)
3. Audience (for whom?)
4. Content: Curriculum and pedagogy (what?)

5. Instructors and institutional context (how?)

Also after the first round of coding, it became clear that only one of the reviewed papers (Baptista and Naia, 2015) commented specifically on theory building paradigms in their analyses. Therefore, this subcategory was removed and merged with types of research methods. Finally, two new subcategories emerged, related to the (inter)disciplinary approach in the field of entrepreneurship education and the geographical setting of studies on entrepreneurship education. These were included in ‘methodological research gaps’ as they were related to general issues concerning theory-building and generalizability as opposed to particular subjects. The final subcategories for this category became:

1. Research methods: Type (quantitative, qualitative and mixed methods)
2. Research methods: Quality
3. (Inter)disciplinary approach
4. Geographical setting

In coding round 2 and 3, the content of the review papers was analysed according to these subcategories for research gaps related to subject and methods and all gaps were designated to one subcategory. The results of this analysis are displayed in the following sections.

FINDINGS: THEMATIC RESEARCH GAPS IN ENTREPRENEURSHIP EDUCATION

After three rounds of coding, the following frequencies were found for gaps in entrepreneurship education research related to subjects (Figure 2) and related to methodology (Figure 3). As these papers all concern elaborate (systematic) reviews of the field, the fact that all these gaps are mentioned multiple times can be considered as a strong indication of their high prevalence and importance for the field.

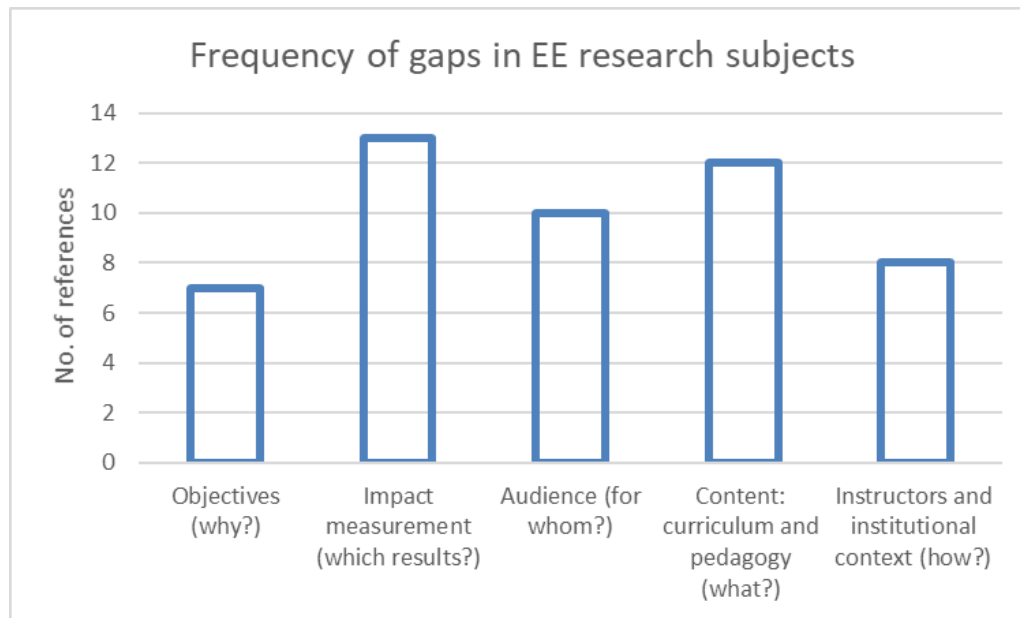


FIGURE 2
FREQUENCY OF RESEARCH GAPS IN ENTREPRENEURSHIP EDUCATION: SUBJECTS

Research gaps concerning objectives (7 references)

Several authors observe that there are no studies known to them that focus exclusively on the objectives of entrepreneurship education programs or courses (Martin et al., 2013; Baptista and Naia, 2015). The main objective of entrepreneurship education is implicitly or explicitly to increase entrepreneurial activity, i.e., the number of start-ups, while many other higher level impacts could be the goal, such as firm survival rates, business performance and societal contribution (Nabi et al., 2017). We also seem to know too little about how the developmental focus of entrepreneurship education might differ between developing and developed countries, as Dainow (1987) indicated almost three decades ago. In general, no explicit link appears to have been made between motivations of higher education institutions to promote entrepreneurship courses and societal needs, policy agenda's and limited resources (Mwasalwiba, 2010). Just as there are not enough studies on how higher education institutions set specific program or course goals, it is also unclear how they match them afterwards with contents, target audience, delivery methods and local environments. Furthermore, hardly any studies have been dedicated to the role of entrepreneurship education in community development (Mwasalwiba, 2010). On that note, authors found no research on the ethical and moral considerations regarding entrepreneurship education (Bechard and Gregoire, 2005) and objectives that are less policy-driven and instrumentalist (e.g. creating a better society) are practically absent in literature on the evidence or consequences of entrepreneurship education (Pittaway and Cope, 2007).

Research gaps concerning impact (13 references)

Koukaris and Georgiadis (2016) state that there are no studies that investigate what all the possible outcomes of entrepreneurship education are: most studies used predetermined outcomes. Of those studies, most focus on entrepreneurial intentions as the propensity to start a business (Nabi et al., 2017). However, there appears to be an absence of a common impact assessment framework in entrepreneurship education; there are no uniform criteria to measure impact (Mwasalwiba, 2010; Baptista and Naia, 2015). Furthermore, it is said that most studies focus on the effect of single entrepreneurship courses and there are no studies that focus on the overall effectiveness of institutions or entrepreneurship programs as a predictor of impact (Gorman et al., 1997).

In particular, the lack of (longitudinal) studies assessing the relation between entrepreneurship education and entrepreneurial behaviour (actual start-ups) and entrepreneurial performance (start-up success) is most often mentioned in the analysed papers (Dainow, 1987; Pittaway and Cope, 2007; Mwasalwiba, 2010; Lorz et al., 2013; Bae et al., 2014; Blenker et al., 2014; Schlaegel and Koenigs, 2014; Sirelkhatim and Gangi, 2015; Koukaris and Georgiadis, 2016). Other alternative measures of impact that have received too little attention in research according to the authors, are: Perceptions of entrepreneurship as opposed to propensity (Pittaway and Cope, 2007), growth- and independence-oriented intentions as opposed to start-up intentions (Bae et al., 2014), learning- and socio-economic effects in general (Baptista and Naia, 2015), the effects on careers of students in 'regular' workplaces, such as employability and employer demand (Pittaway and Cope, 2007; Mwasalwiba, 2010; Koukaris and Georgiadis, 2016), students asset creation, such as entrepreneurial knowledge and skill-acquisition and -application (Gorman et al., 1997; Martin et al., 2013; Bae et al., 2014), the entrepreneurial mindset and emotion-based impact factors such as affect, passion or inspiration (Nabi et al., 2017).

Finally, many authors (Mwasalwiba, 2010; Bae et al., 2014; Blenker et al., 2014; Schlaegel and Koenigs, 2014) observe an absence of research that takes into account the many potentially very influential moderating effects on the impact of entrepreneurship education, such as formal institutional context (laws, regulations, policies), informal institutional/socio-cultural context (norms and values) and social interactions (with instructors, with peers). These moderators will appear in more details in the gaps that follow, which are specifically related to audience, content and instructors/institutional context.

Research gaps concerning audience (10 references)

In general, there appear to be too few studies that focus on the characteristics of the audiences, the students of entrepreneurship education and how these characteristics influence course design and course impact, whether as a predictor or as a moderator (Martin et al., 2013; Baptista and Naia, 2015; Liñán and Fayolle, 2015; Nabi et al., 2017). For example, Sirelkhatim and Gangi (2015) indicate that there is no uniform description of the difference of entrepreneurs versus non-entrepreneurs and it is unknown whether this has an impact on their learning process. Nabi et al. (2017) clarify that entrepreneurship education is likely to lower entrepreneurial intentions for students with previous entrepreneurial exposure. Furthermore, there still seems to be room for more in-depth profiling of the owner/manager audience (Dainow, 1987). According to Martin et al. (2013), basic details on the audience are actually more often than not missing. Finally, so far no researcher has defined typologies or taxonomies to design and experiment specific teaching models in entrepreneurship education based on the needs of different audiences (Baptista and Naia, 2015), while these can be very diverse, as exemplified by a study on an ‘exotic’ audience such as military veterans (Kerrick et al., 2014).

Specifically, there is a need for more studies on certain audience characteristics. Most mentioned are: Gender, age, ethnicity/nationality/culture and previous entrepreneurial exposure (Martin et al., 2013; Baptista and Naia, 2015; Liñán and Fayolle, 2015). These studies exist, such as the study by Shinnar et al. (2014) on the gender effect regarding self-efficacy and entrepreneurial intentions as outcomes of entrepreneurship education, but they are too rare to provide conclusive evidence (Nabi et al., 2017). Finally, many authors also identify a lack of studies on other educational levels than tertiary education (Dainow, 1987; Gorman et al., 1997; Lorz et al., 2013; Rideout and Gray, 2013), whereby within the tertiary level much less studies examine postgraduate courses (Sirelkhatim and Gangi, 2015).

Other topics related to the audience of entrepreneurship education that seem to have been neglected are: The impact of students’ perceptions of the course goal on learning outcomes (Baptista and Naia, 2015), the impact of students’ willingness to follow the course, e.g. mandatory or elective, on the quality of learning and actual development of entrepreneurial competences (Liñán and Fayolle, 2015), the possible differences in impact between elective courses open to students enrolled in diverse disciplines versus courses for students enrolled in management or engineering programs (Sirelkhatim and Gangi, 2015).

Research gaps concerning content (12 references)

Many researchers confirm that there are no clear criteria for the evaluation of the content and teaching practices in a ‘good’ entrepreneurship course or program or to determine what is ‘best practice’ (Gorman et al., 1997; Baptista and Naia, 2015; Liñán and Fayolle, 2015; Sirelkhatim and Gangi, 2015). As such it is not surprising that there appear to be few rigorous

evaluations of existing programs and courses and no comparisons of programs based on a strict evaluation method (Dainow, 1987; Gorman et al., 1997; Baptista and Naia, 2015; Liñán and Fayolle, 2015). Even if these evaluation criteria would exist, there seems to be a lack of focus on course design: Very few studies discuss the content of each course curriculum in a detailed and comparable way, if at all (Dainow, 1987; Gorman et al., 1997; Lorz et al., 2013; Martin et al., 2013; Rideout and Gray, 2013; Sirelkhatim and Gangi, 2015). There are not enough comparative, longitudinal studies on entrepreneurship pedagogies to increase our understanding of what works when, where and how (Pittaway and Cope, 2007; Liñán and Fayolle, 2015; Nabi et al., 2017). Specific elements of entrepreneurship education that deserve much more attention are: The role of extracurricular activities (Pittaway and Cope, 2007), workshops and real-life venture creation (Bae et al., 2014), incubators, mentoring and internships (Sirelkhatim and Gangi, 2015) and finding out what the emotional triggers of entrepreneurial intentions and activity are (Lorz et al., 2013).

Research gaps concerning instructors and institutional context (8 references)

From a contextual point of view, there appears to be a lack of (comparative) research that evaluates how educational policies at the regional, national and supra-national level promote or influence entrepreneurship education (Pittaway and Cope, 2007). Also, there seem to be too few studies on start-up support for students (Gorman et al., 1997; Pittaway and Cope, 2007) and too little is known about how the resources available for students affect the impact of entrepreneurship education on entrepreneurial intentions and behavior (Liñán and Fayolle, 2015). The outcomes of entrepreneurship education could also be moderated by academic institution, academic program or course type (mandatory or elective) on the one hand (Martin et al., 2013; Baptista and Naia, 2015; Nabi et al., 2017) or attributes of entrepreneurship educators such as passion, enthusiasm, emotion, skills and professional background (Martin et al., 2013; Bae et al., 2014; Liñán and Fayolle, 2015), but all of that apparently remains to be proven.

FINDINGS: METHODOLOGICAL GAPS IN ENTREPRENEURSHIP EDUCATION RESEARCH

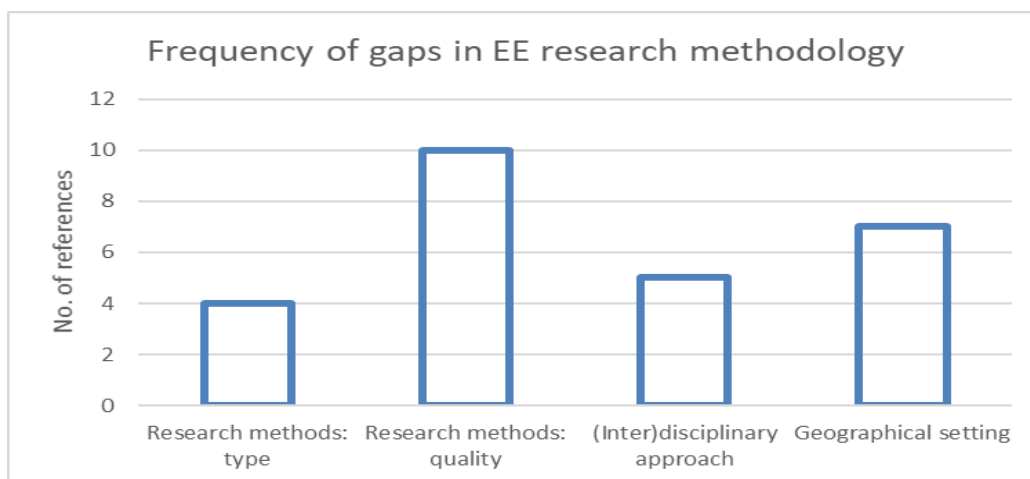


FIGURE 3
FREQUENCY OF RESEARCH GAPS IN ENTREPRENEURSHIP EDUCATION: METHODOLOGY

Research Gaps Concerning the Type of Methods (4 References)

In general, authors observe a strong tendency to divide lab or between quantitative and qualitative studies in entrepreneurship education: While qualitative studies appear to focus almost exclusively on (descriptions of) processes and teaching methods, quantitative studies are almost exclusively dedicated to impact or outcome measurement. As such, it is said that there is a lack of studies with humanistic approaches and qualitative methodologies that measure impact (Lorz et al., 2013; Baptista and Naia, 2015; Liñán and Fayolle, 2015). Furthermore, many indicate a shortage of mixed methods studies that combine depth and validity on all different aspects and phases of entrepreneurship education (Lorz et al., 2013; Blenker et al., 2014; Baptista and Naia, 2015). Also, quantitative and qualitative studies with a longitudinal design that derive causal attributions are rare and there is a lack of multiple and comparative case-studies (Blenker et al., 2014; Baptista and Naia, 2015).

Research Gaps Concerning Quality of Methods (10 References)

With respect to the design of quantitative studies in entrepreneurship education, authors highlight a series of shortcomings. In general, they observe a scarcity of studies with a high methodological rigor, including a treatment and control group, randomized assignment of participants, proven relevant variables and pre- and post-measurements (Martin et al., 2013; Lorz et al., 2013; Rideout and Gray, 2013; Bae et al., 2014; Liñán and Fayolle, 2015). Also in the specific area of impact measurement, many indicate a lack of quasi-experimental control designs (Gorman et al., 1997; Martin et al., 2013; Lorz et al., 2013; Rideout and Gray, 2013; Bae et al., 2014). Those who attempt meta-analyses of previous studies, criticize the fact that too few quantitative studies report on important information such as validity procedures, correlations, estimates of reliability and measures of internal consistency (Martin et al., 2013; Lorz et al., 2013; Schlaegel and Koenigs, 2014).

Qualitative studies seem to suffer from limitations of their own. Most qualitative studies are case-studies with a strong sample selection bias. Robust, reliable study designs are rare and the description of the case and its context is often too succinct (Rideout and Gray, 2013). Finally, the results of these case-studies from one context are hardly ever linked to literature in other contexts (Baptista and Naia, 2015).

For both quantitative and qualitative studies, few studies seem to use more advanced forms of data analysis techniques, such as multiple regressions or even structured equation modelling. Most studies limit themselves to descriptives (Lorz et al., 2013). Both types of studies also tend to ignore easily accessible alternative data sources to surveys and interviews, such as exam reports, student business plans, prototypes, group discussion, formal course evaluations, teacher/researcher reflections and student learning logs (Lorz et al., 2013; Blenker et al., 2014). Additionally, measuring tools are often not fully explained and vary in degree of sophistication: There are too few psychometrically correct measures, with multiple items on previously tested scales, to support future studies (Lorz et al., 2013; Rideout and Gray, 2013; Baptista and Naia, 2015). Finally, as the quality of research is often linked to its theoretical contributions, it is worrying that there still appears to be a lack of papers that propose or build (new) theory and simultaneously test their theoretical propositions with empirical research (Dainow, 1987; Gorman et al., 1997; Lorz et al., 2013; Baptista and Naia, 2015).

Research Gaps Concerning (Inter) Disciplinary Approach (5 References)

Although there are few papers that propose and test theory, as demonstrated in section 3.2, those that were identified in the review papers draw almost exclusively on the field of business and economics. In other words, researchers indicate a lack of connection and cross-fertilization between the field of entrepreneurship education and other fields that are likely to offer valuable insights, such as psychology and education. This seeming lack of interdisciplinary approaches was already mentioned almost three decades ago (Dainow, 1987), repeated two decades ago (Gorman et al., 1997) and, apparently, has not changed much since then (Bechard and Gregoire, 2005; Baptista and Naia, 2015; Kakouris and Georgiadis, 2016). Several possibly relevant theories or theoretical constructs from psychology are proposed; for example, humanist theories, psycho-cognitive variables related to learning such as the role of affect and emotion and insights on advanced learning processes such as reflective learning to follow up experiential learning in entrepreneurship education. Also applying sociological and economic perspectives on education in general on the field of entrepreneurship education is said to be a valuable exercise. As well as educational theories on course design, gaming theories and earlier studies on education for innovation.

Research Gaps Concerning Geographical Setting (8 References)

Finally, multiple authors included direct and indirect comments regarding the geographical location of the studies included in their reviews or meta-analyses. In general, they observe that there is a lack of studies drawing samples from multiple geographical areas and comparing those (Gorman et al., 1997; Mwasalwiba, 2010; Lorz et al., 2013). Specifically, they notice that most studies originate from the US and Europe (dominantly the UK) and far fewer are executed in Asia, Africa and Latin-America (Dainow, 1987; Pittaway and Cope, 2007; Mwasalwiba, 2010; Blenker et al., 2014; Sirelkhatim and Gangi, 2015; Nabi et al., 2017). This gap could also have been part of section 2.5 (gaps in EE research related to instructors and institutional context), but it is included here as authors related it mostly to general issues concerning generalizability as opposed to a lack of insight into particular subjects.

DISCUSSION

Why Address These Gaps?

Addressing the research gaps outlined in sections 3 and 4 is likely to improve the field of entrepreneurship education. In general, overcoming the observed limited aspiration to build and test theory, the low degree of cross-fertilization with related fields (mostly education and psychology), the lack of studies in certain geographical regions and the questionable quality of many empirical studies might stimulate the advancement of the field as a whole. After all, as Dainow (1987) observed almost three decades ago, papers that are too subjective, too descriptive and too narrow in focus can contribute little to systematic knowledge-creation or theory-building; they compromise the conceptual elevation of empirical data as well as the generalization of results to various settings or even a universal approach (Liñán and Fayolle, 2015; Baptista and Naia, 2015).

In particular, separating the research agenda between quantitative and qualitative studies can be considered as ignoring how entrepreneurship education outcomes are related to different

learning processes (influenced by the course objectives, audience characteristics, content and teaching methods, instructors and institutional context). This could prevent us from attaining a better understanding of the mechanisms leading to intention formation and consequently the turning of intentions into behavior. In turn, that would not support the development of theoretical insights that integrate output oriented validation, the extent to which entrepreneurship education works, with process-related initiatives, how it works or does not work (Blenker et al., 2014).

More specifically, the seeming lack of interest in the objectives of entrepreneurship education (ranging from institutional policies to course learning outcomes) in researchers that undertake studies with predetermined measures of impact, can be said to trivialize the value of their results (Kakouris and Georgiadis, 2016). Also, if moderating variables that are almost certain to impact the effectiveness of entrepreneurship education cannot be controlled prior to testing its effect, the findings of these studies are likely suggesting greater variance in the effectiveness of entrepreneurship education than actually exists (Bae et al., 2014). This also impedes understanding of mixed results by various impact studies, e.g. contradictory findings concerning the impact of entrepreneurship education on entrepreneurial intentions (Nabi et al., 2017).

Furthermore, the lack of information in previous studies on the context (institutional policies, socio-cultural setting) and the characteristics of their samples (course content and teaching methods, audience), limits their value in the sense that their results cannot be aggregated on a higher level by later studies, for example in a meta-analysis (Lorz et al., 2013; Bae et al., 2014; Blenker et al., 2014; Liñán and Fayolle, 2015).

Last, but not least, all authors firmly state that these shortcomings of the field affect the quality of entrepreneurship education negatively. For example, Bechard and Gregoire (2005) find that recommendations on how to improve teaching based on the research findings are rare and often unclear. As such, teaching on entrepreneurship may be ignoring important (educational) elements that could foster its effectiveness and ensure that we avoid pedagogical stagnation (Katz, 2003). Without a solid theoretical framework on best practices, it is no surprise, then, that courses vary widely and have little uniformity. Which in turn, as a reciprocal effect, limits again the ability to draw any generalization of what are common or best practices (Sirelkhatim and Gangi, 2015).

Future Research with an Impact: Promising Main Directions

While the impact of these gaps on the field of entrepreneurship education may be negative, the intention in this paper has always been to approach the topic from the positive perspective: By identifying what future contributions would be desirable to a field that is so highly valued and demanded in practice.

First of all, it appears to be of the utmost importance to adequately describe and take into account the context in all empirical studies on entrepreneurship education, regardless of whether the study is quantitative or qualitative (Nabi et al., 2017). Reporting on contextual characteristics accurately and consistently would increase the understanding of their influence as well as the comparability of the results. Perhaps it would even be possible to explicate specific dimensions for the context that can then be included in descriptions of entrepreneurship education activities (Blenker et al., 2014). The subcategories used in this paper might function as such: Objectives, audience, course content and teaching methods, instructors and institutional context. This would also include an explicit definition of 'entrepreneurship education' by the researcher (Pittaway and Cope, 2007). If this were to become common practice in the field, findings are likely to be

more useful for other researchers and facilitate the identification of patterns across types of cases for theory-building and/or aggregation of results through meta-analysis. This seems to be a very promising way to find out which contents and teaching methods should be linked to which course objectives and produce results under which circumstances.

Second, as confirmed by almost all review papers, the field of entrepreneurship education would benefit greatly with the introduction of interdisciplinary studies. One way to do this is to combine current knowledge and theories from economics and business administration with insights from psychology on personality types, learning processes and emotions as well as insights from education on socio-economic predictors or moderators of outcomes, course content design and pedagogy. For example, Robinson and Shumar (2014) explain how ethnography actually provides an appropriate tool for evaluating entrepreneurship teaching in educational institutions by studying both teaching practices by instructors as well as the corresponding discursive and cognitive shifts that students go through. This can be accomplished by interdisciplinary research teams and perhaps also by incorporating the suggestion of Blenker et al. (2014) to create teams of outsider and insider researchers, with the added advantage of combining a detached/objectivized stance with an embedded stance.

Third, it would be beneficiary if the standards of research on entrepreneurship education are raised to a higher level. Ideally, studies are based on a well-defined solid research design, preferably making use of mixed methods and contain adequate descriptions of data collection and data analysis. The complementary strengths of qualitative and quantitative methods are likely to provide superior research results in terms of validity and depth compared to single-method studies (Johnson and Onwuegbuzie, 2004). Case studies are perhaps the easiest candidates for mixed methods studies: It is less challenging to integrate exploratory and explanatory aspirations in one particular context (Flyvbjerg, 2004) with both quantitative and qualitative techniques. As such, they are an appropriate form of theory-building for any emerging field, such as entrepreneurship education (Baptista and Naia, 2015). They are an overlooked source of robustness and additional insights in entrepreneurship education research (Blenker et al., 2014); a quality that might even be more pronounced when combined into a multiple case-study design (Pittaway and Cope, 2007). Finally, it is strongly recommendable that mixed methods studies use data triangulation to the highest possible extent, as convergence of findings across different types of data significantly increases validity (Miles and Huberman, 1994; Blenker et al., 2014). There is only one caveat: These mixed-method (and preferably multiple) case-studies would have to make the particular contextual and local aspects of their samples explicit and relate their findings to the results of previous studies, both of which appears to be rare in case studies in the field of entrepreneurship education so far.

Fourth, setting high research aspirations will result in particularly valuable contributions to the field of entrepreneurship education. For example, research might aim to develop a multi-item evaluative framework that includes much more possible outcomes than entrepreneurial intentions. This framework might then be used to identify outcomes that are considered as valuable universally versus outcomes that are context-specific. Also, when the field is matured sufficiently, an attempt might be made to develop evidence-based cases for universal best practices as well as best practices in specific contextual situations.

Overcoming Obstacles

Researchers are not always in the position to study situations that allow for (quasi-) experimental design or multiple case-studies. It is very rare, for example that a researcher

stumbles on an entrepreneurship course that is over-solicited by students, which allows for random distribution of participants in control and sample group (Rideout and Gray, 2013). In general, researchers might often not have direct access to students, as traditionally there has been little interaction between those that research entrepreneurship education and those that teach it (Blenker et al., 2014). Studies that include samples from different countries and institutions, often face challenges such as different languages and cultures (influencing data collection), geographical distances between researchers or between researchers and samples (possibly hindering communication and data collection) and the multiple ethical clearance procedures (usually taking up several months and often resulting in minor adaptations of questionnaires that might affect uniformity of data collection and subsequent comparisons).

Researchers might overcome these obstacles and demonstrate commitment to the research agenda and methodological standards proposed in this paper by reaching out, being alert to detect the right opportunities when they occur or even doing all that is in their power to create the right opportunities; in other words, being entrepreneurial. Universities and other research fund granting agencies could support this type of research, setting aside any possible considerations of education-related research projects as less legitimate recipients of funding and opening up for interdisciplinary studies (Bechard and Gregoire (2005). Finally, editors of academic journals could formulate calls for papers related to this research agenda, apply or keep applying (more) rigorous methodological standards and generally provide more space for interdisciplinary and qualitative or mixed method studies.

CONCLUSION

To provide an overview of the thematic and methodological gaps in the field of entrepreneurship education that was as comprehensive as possible, extensive review papers and meta-analyses published in the field were collected in a way that was inspired by the systematic literature review. The selected papers were subjected to a content analysis with coding based on a mix of predetermined and emerging subcategories. The subcategories for subject were: Objectives, impact measurement and audience, content: Curriculum and pedagogy, instructors and institutional context. The subcategories for methods were: Type of research methods, quality of research methods, (inter)disciplinary approach and geographical setting. The fact that all research gaps were mentioned in multiple review papers gave a strong indication of the high prevalence and importance of these gaps for the field of entrepreneurship education.

However, there are several possible limitations that could affect the external reliability of these results. First, the data collection focused on review papers only, which means that it may not have been exhaustive: There might be more research gaps that would be worth dedicating more attention and these review papers might have missed publications that actually address research gaps that they identify. For example, both Jansen et al. (2015) and Warhuus and Basaiawmoit (2014) actually dive into the appropriate content and institutional context of entrepreneurship education with a multiple, multi-country case study. However, as the included review papers are all published in leading journals with high standards, it was assumed that the accumulative results of their high quality reviews would provide a sufficiently comprehensive, but not complete, overview. Second, only published scholarly papers were included which implies the possible risk of publication bias (O'Boyle Jr. et al., 2014). Also, only publications in English were included, again threatening the exhaustiveness of the data collection. Both of these can be considered as minor risks due to the specific topic (identifying clearly visible research gaps) and scope (internationally) of this study. Third, coding reliability could very well have

been stronger with multiple reviewers. Coding in two rounds is hoped to provide an appropriate solution with sufficient consistency for the purposes of this study.

Based on the findings, several main directions were sketched for future researchers that wish to make an impact in the field of entrepreneurship education by strongly contributing to new theory-building. It is recommended that future studies include elaborate contextual descriptions, an interdisciplinary theoretical base and a solid and mixed method study design. Ideally, researchers have high(er) aspirations and are more entrepreneurial: Reach out and are alert for opportunities or create opportunities to execute the type of studies suggested in this paper.

REFERENCES

- Azjen, I. (1991). The theory of planned behaviour. *Organizational behaviour and Human Decision Processes*, 50(2), 179-211.
- 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.
- Baptista, R. & Naia, A. (2015). Entrepreneurship education: A selective examination of the literature. *Foundations and Trends in Entrepreneurship*, 11(5), 337-426.
- Baxter, A., Chapman, D.W., DeJaeghere, J., Pekol, A.R. & Weiss, T. (2014). Youth entrepreneurship education and training for poverty alleviation: A review of international literature and local experience. *International Perspectives on Education and Society*, 23, 33-58.
- Bechard, J.P. & Gregoire, D. (2005). Entrepreneurship education revisited: The case of higher education. *Academy of Management Learning & Education*, 4(1), 22-43.
- Blenker, P., Elmholt, S.T., Frederiksen, S.H., Korsgaard, S. & Wagner, K. (2014). Methods in entrepreneurship education research: A review and integrative framework. *Education and Training*, 56, 697-715.
- Dainow, R. (1987) Training and education of entrepreneurs: The current state of literature. *Journal of Small Business and Entrepreneurship*, 3, 10-23.
- Decker, R., Haltiwanger, J., Jarmin, R. & Miranda, J. (2014). The role of entrepreneurship in US Job creation and economic dynamism. *The Journal of Economic Perspectives*, 28(3), 3-24.
- European Commission. (2008). *European Commission Expert Group: Entrepreneurship in Higher Education, Especially with Non-Business Studies*. Access at (Oct, 5, 2012).
- Flyvbjerg, B. (2004). Five misunderstandings about case-study research. In: Seale, C., Gobo, G., Gubrium, J.F. and Silverman, D. (Eds.), *Qualitative Research Practice*, pp.420-434, Sage: London.
- Gorman, G., Hanlon, D. & King, W. (1997). Some research perspectives on entrepreneurship education, enterprise education and education for small business management: A ten-year literature review. *International Small Business Journal*, 15(3), 56-77.
- Jansen, S., Van de Zande, T., Brinkkemper, S., Stam, E. & Varma, V. (2015). How education, stimulation and incubation encourage student entrepreneurship: Observations from MIT, IIT and Utrecht University. *The International Journal of Management Education*, 13(2), 170-181.
- Johnson, R.B. & Onwuegbuzie, A.J. (2004). Mixed methods research: A research paradigm whose time has come, *Educational Researcher*, 33(7), 14-26.
- Kakouris, A. & Georgiadis, P. (2016). Analysing entrepreneurship education: A bibliometric survey pattern. *Journal of Global Entrepreneurship Research*, 6(6), 1-18.
- Katz. (2003). The chronology and intellectual trajectory of American entrepreneurship education: 1876-1999. *Journal of Business Venturing*, 118, 283-300.
- Kerrick, S.A., Cumberland, D., Church-Nally, M. & Kemelgor, B. (2014). Military veterans marching towards entrepreneurship: An exploratory mixed methods study. *The International Journal of Management Education*, 12(3), 469-478.
- Kirkwood, J., Dwyer, K. & Gray, B. (2014). Students' reflections on the value of an entrepreneurship education. *The International Journal of Management Education*, 12(3), 307-316.
- Kraus, S., Filser, M., O'Dwyer, M. & Shaw, E. (2014). Social entrepreneurship: An exploratory citation analysis. *Review of Managerial Science*, 8(2), 275-292.
- Krueger, N.F. (1993). The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship Theory and Practice*, 18(1), 5-21.

- Krueger, N.F. & Carsrud, A.L. (1993). Entrepreneurial intentions: Applying the theory of planned behaviour. *Entrepreneurship and Regional Development*, 5(4), 315-330.
- Liñán, F. & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: Citation, thematic analyses and research agenda. *International Entrepreneurship Management Journal*, 11, 907-933.
- Lombard, M., Snyder-Duch, J. & Bracken, C.C. (2002). Content analysis in mass communication: Assessment and reporting of intercoder reliability. *Human Communication Research*, 28(4), 587-604.
- Lorz, M., Mueller, S. & Volery, T. (2013). Entrepreneurship education: A systematic review of the methods in impact studies. *Journal of Enterprising Culture*, 21(2), 123-151.
- Martin, B.C., McNally, J.J. & Kay, M.J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28(2), 211-224.
- Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Social Research*, 1(2).
- Miles, M.B. & Huberman, M.A. (1994). *Qualitative data analysis (Second Edition)*. Sage: Thousand Oaks (CA).
- Mwasalwiba, E.S. (2010). Entrepreneurship education: A review of its objectives, teaching methods and impact indicators. *Education and Training*, 52(1), 20-47.
- Nabi, G., Liñán, F., Krueger, N., Fayolle, A. & Walmsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning and Education*, 16(2), 277-299.
- O'Boyle Jr., E.H., Rutherford, M.W. & Banks, G.C. (2014). Publication bias in entrepreneurship research: An examination of dominant relations to performance. *Journal of Business Venturing*, 29, 773-784.
- OECD. (2009). *Evaluating of programmes concerning education for entrepreneurship*. OECD Working Party on SMEs and Entrepreneurship, Paris.
- Pittaway, L. & Cope, J. (2007). Entrepreneurship education: A systematic review of the evidence. *International Small Business Journal*, 25(5), 479-510.
- Rideout, E.C. & Gray, D.O. (2013). Does entrepreneurship education really work? A review and methodological critique of the empirical literature on the effects of university-based entrepreneurship education. *Journal of Small Business Management*, 51(3), 329-351.
- Robinson, S. & Shumar, W. (2014). Ethnographic evaluation of entrepreneurship education in higher education: A methodological conceptualization. *The International Journal of Management Education*, 12(3), 422-432.
- Sirelkhatim, F. & Gangi, Y. (2015). Entrepreneurship education: A systematic literature review of curricula contents and teaching methods. *Cogent Business & Management*, 2, 1-11.
- Shapiro, A. (1975). The displaced, uncomfortable entrepreneur. *Psychology Today*, 9, 83-88.
- Shinnar, R.S., Hsu, D.K. & Powell, B.C. (2014). Self-efficacy, entrepreneurial intentions and gender: Assessing the impact of entrepreneurship education longitudinally. *The International Journal of Management Education*, 12(3), 561-570.
- Tranfield, D.R., Denyer, D. & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207-222.
- Warhuus, J.P. & Basaiawmoit, R.V. (2014). Entrepreneurship education at Nordic technical higher education institutions: Comparing and contrasting program designs and content. *The International Journal of Management Education*, 12(3), 317-332.
- Xi, J.M., Kraus, S., Filser, M. & Kellermanns, F.W. (2013). Mapping the field of family business research: Past trends and future directions. *International Entrepreneurship and Management Journal*, 11(1), 113-132.