ENTREPRENEURIAL COGNITION: THE STATE OF THE ART USING A BIBLIOMETRIC APPROACH

Sara Sassetti, Giacomo Marzi, Vincenzo Cavaliere, Cristiano Ciappei

Abstract

The purpose of this paper is to offer a comprehensive overview about entrepreneurial cognition field of research from its born to the more recent contributions. Based on a dataset which covers eighteen years of research in this field, from 1998 to 2016, the present study analyzes all the 144 papers available in Web of Science Core Collection directly referring to entrepreneurial cognition. In particular, this study shows the evolution of the EC field using both systematic literature review and bibliometric approach. The analysis highlights several areas of interests which evolve during the years and passing through two evolutionary stages namely, the "youth" and the "growth" period.

Keywords: entrepreneurial cognition, systematic literature review, bibliometric analysis, cluster analysis, stream of research.

INTRODUCTION

For many years, the use of cognitive concepts in entrepreneurship was just implicit (Randolph-Seng et al., 2015) until Bird (1988; 1992), studying entrepreneurial intentions, made an explicit mention to entrepreneurial cognition (EC). Before Bird (1988), the focus of the larger field of entrepreneurship had been on behavior as the result of individual differences (that is, characteristics and traits) rather than the result of cognitive processes.

EC has recently emerged as a significant topic in entrepreneurship studies (Randolph-Seng et al., 2015). The literature on entrepreneurship is increasingly devoting attention to the importance of understanding how entrepreneurs think and the reasons that lead them to do the things they do (Mitchell et al., 2002). Following this, significant emphasis has been placed on EC, which represents the knowledge structures that entrepreneurs use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth (Mitchell et al., 2002). Researchers demonstrated that EC influences the opportunity identification (Renko et al., 2012; Kemmerer et al., 2012; Dew et al., 2015; Wood et al., 2014 b; Metzger and King, 2015; Kiss and Barr, 2015) and EC is particularly important when the development of innovative products is considered (Gemmell et al., 2012).

During the years, different systematic review on EC research were made, such as Forbes (1999), Mitchell et al. (2007) and Grégoire et al. (2011). Forbes (1999) divided the extant literature into two dimensions – individuals' cognitive processes and new ventures' development processes -; Grégoire et al. (2011), instead, examined articles on their cognitive elements, process, and levels of analysis. On the same way, Mitchell et al. (2007) organized schools of thought under their common roots.

Despite that, the conceptual foundation of EC research remains disorganized and undefined. For this reason, with the present research, the authors would like to offer a comprehensive and wide perspective about the past and the present of EC, for a better understanding of the possible future development of this field of research. To achieve the purpose of the present research, both systematic literature review and bibliometric analysis are used. The use of just systematic review could be

affected to bias by researchers and often lack of rigor (Zupic and Cater, 2015). Bibliometric methods, instead, employ a quantitative approach for the description, evaluation and monitoring of published research and it guarantees a reproducible review process and consequently improve the quality of review (Zupic and Cater, 2015). We move from the idea that bibliometric methods are a complement to traditional methods review, not a substitute (Zupic and Cater, 2015). Indeed, the use of the two methods have shown their usefulness in a broad range of fields such as management (Podsakoff et al., 2008; Keupp et al., 2012), entrepreneurship (Landström et. al 2012; Voley and Mazarol, 2015, Marzi et al., 2017), and innovation (Fagerberg et al, 2012; Zhu et al, 2016) helping scholars to sorting and clarify emergent streams of research from the "tangled forest" of the scientific proliferation. Thanks to the joint of bibliometric methods and systematic review we offer a clear and reliable state of the art of EC. Moreover, this study aims to orient researchers who are new in EC research helping them to identify the main stream of research of the field and their evolution.

In the present study, the collected data covers eighteen years of research in the field of EC, from 1998 to 2016, allowing having a comprehensive view of the phenomenon, from its emergence to its most recent evolutions. Moreover, we have chosen to point out our attention more on a thematic analysis instead to a chronological approach in order to have a better understanding of the different cognitive dynamics and processes that affect the entrepreneurial overall action. Thus, according to what emerges from the literature (Mitchell et al., 2007), we dived EC studies in two periods, namely the "youth" (1998-2007) and the "growth" (2008-2016), analyzing their research development and evolution.

The paper is structured as follow; in section two we present the process of data collection through Web of Science Core Collection and the methodological notes regarding the bibliometric tool used. In section three, we firstly present the field evolution, epistemological and research methods classification as results of bibliometric activity indicators. Afterward, the core of the current research is presented stressing the two aforementioned periods and showing the evolution of different streams inside the field of EC.

METHODOLOGY

In order to perform a deeper and accurate analysis of EC as a field of research, both Systematic Literature Review and Bibliometric Analysis techniques are used.

Specifically regarding to Systematic Literature Review we followed an established research procedure for systematic literature reviews (Tranfield et al., 2013; Booth et al., 2016). It concerns the mapping of the field through a scoping review and involves the definition of the research purpose and scope as well as specification of keywords, databases and criteria for inclusion and exclusion of publications. Thus, we performed a comprehensive search into the specified databases using the keywords and the inclusion/exclusion criteria. Subsequently, the full papers are read and it is decided whether or not papers should be included in the dataset. Consequently, the data emerging from the included papers are extracted and organized, analyzed and processed. Finally, the whole dataset was synthesized into a narration supplemented by tables and bibliometric analysis. In fact, following existing research (Voley and Mazarol, 2015, López-Fernández et al., 2016), we have also adopted a bibliometric graphical approach to enrich the systematic literature review (Ding et al., 2016) enhanced with an epistemological and research methods analysis (De Bakker et al, 2005; Voley and Mazarol, 2015).

Data collection and inclusion criteria

Specifically regarding data gathering, due to the aim of the paper, Thomson Reuters Web of Science database is selected. In particular, within that database the data collection has been limited to Web of Science Core Collection inasmuch it offers the most valuable and high-impact collection of papers (Falagas et al., 2008). Specifically, the indexes covered by the data gathering are the following: Science Citation Index Expanded, Social Sciences Citation Index, and Arts & Humanities Citation Index. These indexes contain only journals covering the most highly cited and highest impact journals in each field of study (Leydesdorff et al., 2013).

The research query aimed to get the preliminary set of data has been performed on September 1st, 2016 with the following research terms limited to the English language, plus "Article" as document types and 1985-2016 as time span:

TS=(entrepren AND cognition)*

where "TS" means "Topic" in Advanced Research page and includes a full search on titles, abstracts, and keywords. The preliminary dataset was composed of 252 entries. However, to pursue the scope of better data accuracy, the dataset was manually scanned. We based our inclusion on the definition of EC, namely *"the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth"* (Mitchell et al., 2002: 97). The definition highlights two key elements EC relies on (Mitchell et al., 2007): the knowledge structure and the decision-making. For this reason, only studies focused on entrepreneurs and not managers were included and articles had to consider entrepreneurs" knowledge structure and/or his/her decision-making process in order to evaluate opportunity, create new venture or growth. Thus, the refined dataset resulted in 142 documents.

Finally, in order to ensure the inclusion of all relevant data, a cross-validation was made with Scopus and Google Scholar using the same research terms applied to Thomson Reuters Web of Science™. In particular, two papers were missing (i.e. Mitchell et al., 2002 and Mitchell et al., 2007), so they were manually added. Consequently, the final dataset is composed of 144 documents.

Methodology notes about bibliometric analysis

Specifically, bibliometric activity indicators (Lopez-Fernandez et al., 2016) were used and, having the single papers as unit of analysis, bibliographic coupling analysis has been performed. In detail, activity indicators provide data about the volume and impact of research, allowing one to observe the quantitative evolution of the literature. In this particular case, we analyze the evolution of the field of study, the epistemological orientation and the research methods applied.

Regarding the bibliographic coupling analysis, in the present study we used the bibliometric tool VOSviewer 1.6.5 as the algorithm of aggregation of the papers. Bibliographic coupling occurs when two works reference a common third work in their references, thus, two documents are bibliographically coupled when they both cite one or more documents in common (Boyack and Klavans, 2010). Moreover, bibliographic coupling permit to address such a question "What is the intellectual structure of recent/emerging literature? And how does the intellectual structure of the research stream reflect the richness of the theoretical approaches?" (Zupic and Cater, 2015). Thus, in terms of bibliometric studies, it is the most used, reliable, and accurate approach to analyze scientific knowledge structure in a limited time span (Zhao and Strotmann, 2008; Boyack and Klavans, 2010; Ding et al., 2016). Moreover, the above-mentioned tool uses VOS technique, namely visualization of similarities, which displays the results arising by the co-occurrence matrix. Co-occurrences result from the presence, frequency, and proximity of similar pairs of terms in the data, in our case of cited references (Van Eck and Waltman, 2014).

The mathematical process behind the routine begins with a construction of similarity matrix obtained by normalizing a co-occurrences matrix of items (Van Eck et al., 2006; Van Eck and Waltman, 2010). Secondly, the script performs a set of routines to build a two-dimensional map in which the items 1 to *n* are positioned to such a degree that represents the distance between any pair of items x and y reflecting their similarity in term of cited references. In addition, a cluster density view is performed, with additional mathematical steps. When the items' density is calculated, each cluster is associated with a color. This is done by computing a weighted average of the colors, where the weight of a color equals the item density for the corresponding cluster (Van Eck and Waltman, 2010), subsequently every single point is mixed with the black background color; the ore a color is shaded, the lower its density.

In doing so, VOS analysis offers a large set of information in one single graphical plot. Practically, the map built by the text-mining routine is a plot in which the items' distance can be interpreted as an indication of the relatedness of the terms. In fact, the smaller the distance between the terms, the

stronger the terms are related to each other (Van Eck et al., 2010). In addition, the cluster analysis highlights the knowledge base diversity in an aggregate way. In case the papers belong to the same cluster it means they are strongly linked together as a group on the base of their shared references, thus indicates that a cluster represents a stream of research or a particular topic on a similarity base. Finally, the brightness of a point represents the number of citations, showing its relative importance in the plot and in the field under study.

Anyhow, for a detailed mathematical explanation about VOS technique and VOSviewer please see Van Eck and Waltman, 2007; 2009; 2010.

RESULTS

Once the methodology has been presented, in this section, we first present the main results of the application of the activity indicators and the reason why we divided the analysis in two different period: the "youth" comprehend the years from 1998 to 2007 and the "growth" refers to years 2008 till 2016. After that, the outcomes of bibliographic coupling analysis will be examined.

Results of bibliometric activity indicators

The main results obtained in relation to the application of activity indicators are summarized in the following explanations. Regarding the first indicator, evolution of the field of study, the analysis shows a relatively recent field, as the first documents date 1998. Its evolution has confirmed the existence of two research cycles (see Figure 1). The first period covers the years between 1998 and 2007, and in it the scientific production is both limited (at maximum five articles per year) and irregular (with several years with no or very low production). The second period, starting in 2007, shows that the trend has grown steadily, except for a sharp decline in 2010, with full recovery from 2009.

This trend was probably due to in 2002 a special issue was published in Entrepreneurship Theory and Practice Journal, entitled "Toward a Theory of Entrepreneurial Cognition: Rethinking the People Side

of Entrepreneurship Research", and a definition of EC was given. It was defining as "the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth" (Mitchell et al., 2002). This definition provides the connection between the entrepreneur and the new venture creation through focusing not on the personality traits, but on an individual's cognitive behavior (Mitchell, et al. 2002).

Five years later, an update of EC theory was published on a special issue in Entrepreneurship Theory and Practice Journal, entitled "The Central Question in Entrepreneurial Cognition Research 2007" (Mitchell et al., 2007). In this special issue, authors examined the advances in the EC research stream and underline how this field of research was increased during the years and subsequently from this publication, a mature stage of EC is begun.

Thus, the foundation of EC theory lies on articles presented above, the first contribution established EC as a field of research and the second reinforce it making an update of it giving also the direction to future researches. For this reason, in our review, we divided the analysis in two different periods. The first one that we defined as the "youth" comprehend the years from 1998 to 2007 and refers to the early stages of EC as a field of study. The second one, that we called "growth" refers to years 2008 till 2016 and represent the grow up stage of EC.

Figure 1 About Here

The second bibliometric activity indicator that we considered was the epistemological orientation. Each article was coded according to its epistemological orientation using De Bakker et al.' s (2005) classification scheme; namely, conceptual, exploratory, predictive, instrumental, normative, and descriptive. This process involved examining the keywords, the article title and a review of its abstract. As summarized in Table 1 and Figure 2, in the "youth" period there was a majority of theoretical studies, mainly conceptual papers (68%) and exploratory (25%). Just 7% of the contributions were predictive. In the "growth" period, the theoretical studies maintained the supremacy but there was a great change: most of the contributions were explorative (63%) and only

few papers were conceptual (28%) or predictive (6%). In this second period there also was a scant contribution by descriptive researches (3%) which were totally absent in the first period. In both periods, prescriptive studies are missing. This epistemological distribution reflects the idea that at the beginning, when a new research field developing, there is the necessity to establish a theoretical background. In our case, there was the need to put the roots of EC and understand how cognitive perspective should be applied at entrepreneurship research. When the field is more mature, the longing to overcome the theoretical statement emerges. It is what happen to EC starting from 2007, there was a deep need to test the conceptual frameworks studied in the period before and verify if effectively what differentiated entrepreneurs from others is cognition

---
Table 1 About Here

Figure 2 About Here

Finally, we considered the research methods as the last bibliometric activity indicator. Regarding the research methods only the subgroup of papers belonging to Theoretical Exploratory and Theoretical Predictive are taken in consideration (De Bakker et al, 2005). As shown in Table 2 and Figure 3, quantitative methods prevailed in both period, with 55% of quantitative papers in the "youth" periods and 67% in the "growth". Respectively divided in survey (44%; 57%) and experiments (11%; 10%). Mixed sequential methods were mostly used in the first period (22%) instead the second one (5%). Qualitative methods were applied on average in both periods, especially the narrative methods were used, respectively 11% in the "youth" period and 13% in the "growth". Not surprising that in the first period there was a grounded theory contribution (11%), it was useful to establish the root of EC.

Table 2 About Here

Figure 3 About Here

Results of bibliographic coupling

The bibliographic coupling analysis made possible to obtain the definition of the research stream, namely clusters, present in the field of EC and mostly understand how they evolved from the "youth" to the "growth" period

The youth period, 1998-2007

At the beginning of EC as a field of research, the need was understand how cognitive perspective should be applied at entrepreneurship research and investigate if effectively what differentiated entrepreneurs from others is cognition.

From a psychological point of view, studies adopting a cognitive approach could be divided into two main research focuses: knowledge-based focus and process-based focus (Meindl et al., 1994). The focus on knowledge structure broadly aims at understanding knowledge and how it is organized; from the EC point of view, it entails to identify the knowledge structures that entrepreneurs use to make assessments, judgments or decisions in evaluating opportunities and in the creation and growth of businesses (Boucknooghe et al., 2005; Gaglio & Katz, 2001; Mitchell, et al. 2000). On the other side, when studies are process-based focus, they are on understanding how knowledge and beliefs are combined and used to make judgements and decisions. Considering our way of enquiring, it means to understand how entrepreneurs process information and make decisions about entrepreneurial task: generating ideas, recognizing business opportunities related to these ideas, obtaining the resources needed for developing these ideas through the launch of a new venture and make strategic decisions (Baron, 2007).

Thus, in the cluster analysis presented below we classified the different contributions based on knowledge-based focus, such as script, heuristics, bias and prior knowledge (Frese and Gielnik, 2014), process-based focus - decision-making, cognitive style, learning and creativity – and on the relationship between these two cognitive aspects. For each of them we underline the contribution they bring to EC theory.

Figure 4 About Here

Purple cluster - EC as a field of research

In this cluster the importance of EC theory as a field of research is analyzed, both from a theoretical and a methodological point of view.

The study by Mitchell and colleagues (2004) is located at the center of all clusters because it defines both distinctive and inclusive elements within the domain of EC theory. Authors applied the boundaries and exchange logic "to provide a helpful lens through which to understand the progress and legitimization of the EC domain" (Mitchell et al., 2004, p. 507). Moreover, they highlight the questions at the base of EC research and that distinguish this stream of research from others, such as: *"Why do some individuals and not others choose to become entrepreneurs?"* and *"How do entrepreneurs think and make strategic decisions?"* (e.g., Baron, 2004) or, *"Do entrepreneurs think differently from other business people?"* (e.g., Mitchell et al., 2000, 2002.) (Mitchell et al., 2004, p. 509). In order to answer these questions, Baron and Ward (2004) provide some methods and measures drawn from cognitive science literature and claim that they may be useful to researchers in the field of EC. Authors proposed to use reaction time, priming, measures of working memory, and measures of creative cognition to understand new insights into the minds of entrepreneurs (Baron and Ward, 2004).

Finally, the study proposed by Ward (2004), positioned on the right and separate side of the figure, devotes attention to the relationship between cognitive constructs and entrepreneurial creativity, therefore to the generation and exploitation of novel and useful ideas. The position of this paper indicates that it has a bibliography in common whit other two studies, rather its focus is on a specific process of entrepreneurship: creativity.

Green cluster – Cognitive antecedents

This cluster included studies which analyze cognitive antecedents of entrepreneurship process (Frese, 2014), among others scripts, deep belief, expertise, and heuristic.

Scripts are processes of ordered mental steps pertinent to a particular action, activity, or field of interest (Read, 1987). These cognitive antecedents were mainly applied to study the different thinking between expert entrepreneurs and novices (Krueger, 2007). Indeed, expert entrepreneurs have scripts and knowledge structure about a particular domain that allow them to perform better in their environment than non-experts (Krueger, 2007). This debate was extended to the intercultural level and Mitchell and colleagues (2000) demonstrated that knowledge structures differentiate between entrepreneurs and non-entrepreneurs across countries. This is the consequence of entrepreneurs' shared scripts and experience about the conceptualization, development, and growth of new businesses (Mitchell et al., 2000). On the same vein, Corbett, Neck and De Tienne (2007) explored the cognitive scripts used by entrepreneurs to terminate new product development and linking it to the learning process. Their study demonstrates that some scripts appear to lead to more and better opportunities for learning (Corbett et al., 2007).

Another cognitive antecedent comes into the picture to influence learning: deep belief structures (Krueger, 2007). "Beliefs play a pivotal role in what we perceive as relevant in new knowledge, how we process stimuli and information, and finally, how we store and structure the knowledge resulting from these steps" (Krueger, 2007; p. 124). Krueger's study (2007) contributes to EC literature as it describes deep belief as the reasons behind the entire entrepreneurship process. Belief is the first step which conducts to the action (Krueger, 2007).

Moreover, one of the most important cognitive antecedents which were explored in entrepreneurship field are heuristics, defined as cognitive short-cut (Baron, 2004; Mitchell et al., 2004). In this regard, Bryant (2007), on the right side of the cluster, explored the use of heuristics by entrepreneurs during the evaluation and exploitation phase. Bryant's findings suggest that entrepreneurs use heuristics frequently in relation to the evaluation of opportunities, but rely more on rational style during the exploitation phase (Bryant, 2007). Heuristics are often associated with the intuitive cognitive process (Bazerman and Neale, 1986; Denes-Raj & Epstein, 1994; Tversky & Kahneman, 1983). For this reason, the study by Mitchell et al. (2005) is located near Bryant's (2007). Thanks to his research, a

definition of intuition as a cognitive style has been offered: it is "the dynamic process by which entrepreneurial alertness cognitions interact with domain competence e.g., culture, industry, specific circumstances, technology, etc.) to bring to consciousness an opportunity to create new value" (Mitchell e al., 2005).

Whereas most of the studies included in this cluster – and, more in general, the works analyzed in this first period - focused on the individual level, the study by Lin (2006) considers cognitive style as just one of the factors affecting entrepreneurial behaviors. This study applies the social cognition theory and shows that, in addition to the different cognitive styles, the relationship between organizations is an additional key factor that shapes entrepreneurial behavior.

Finally, the paper by Solymossy (2002), positioned on the left side and separated by the green cluster, examines the entrepreneurial ethics from a cognitive perspective. Given this, it may have been considered as a separate stream of research. However, the paper belongs to the green cluster because it considers ethics as a deep belief which guides entrepreneurs' behaviors and as a characteristic which distinguishes entrepreneurs from non-entrepreneurs.

Red Cluster - Cognitive antecedents for venture creation

Starting from the end of the nineties, many studies confirmed that what distinguishes entrepreneurs from non-entrepreneurs is not ascribable to the personal characteristic (Shaver and Scott, 1991; Hatten, 1997). For this reason, a different approach to understanding and investigating this research question was necessary. In 1998 Baron's paper entitled "Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people", started from this consideration. As shown in Figure 4, Baron's paper is the most cited work on the red cluster. This is not only due to the fact that it is the oldest paper which discuss EC thoroughly but also because it was one of the first author who introduced the human cognition concept into the entrepreneurship literature. The author concluded that what differentiates entrepreneurs from other people is the way they think and their capacity to process information (Baron, 1998). In 2004 Sarasvathy reinforced this theoretical approach, claiming that while classical theories of the firm are not able to explain entrepreneurship

phenomenon, cognitive approach does. Therefore, the author suggests that, in order to study entrepreneurship, an entrepreneur-centric vision based on a cognitive approach is needed, because it would allow to explain the differences among firms' performances.

Moving at the core position of the red cluster, there emerge contributions that focused on the relationship between knowledge structure and venture creation in a learning perspective. Nicholls-Nixon, Cooper, and Woo (2000) used the cognitive approach to explore the relationship between strategic change and new venture creation. They found that strategic changes in new ventures are consequences of a process of trial and error learning "whereby the entrepreneur seeks to develop an understanding of the competitive situation and determine how to compete within that context" (Nicholls-Nixon et al., 2000, p.494). Close to this paper, the contribution by Thorpe, Holt, Clarke and Gold (2006) used the "enacted cognition" to explain the entrepreneurial learning. The authors explained, "the entrepreneur is the agent whose knowledge, skills and learning capacity enact an activity, namely a business venture. In this "enaction", the entrepreneur articulates meaning using established language and tools, acting from their own intimate personal knowledge" (Thorpe et al., 2006, p. 246). In the same vein, Shepherd, McMullen and Jennings (2007) underline that EC and strategic action, opportunity recognition and venture creation, are the consequences not only of prior knowledge but also of gist mechanisms for the formation of opportunity belief.

The knowledge structure concept is also at the base of the contributions by Zahra, Korri and Yu (2005) and Bingham, Eisenhardt and Furr (2007) about internationalization as a strategic choice. The first contribution suggested that cognitive perspective is useful to understand the knowledge structure that guides and define the internationalization decision. Starting from this study, Bingham, Eisenhardt and Furr (2007) combine quantitative and qualitative method in order to demonstrate that heuristics are at the base of firm capabilities. In other words, entrepreneurs' experience creates heuristics, which over time become firm capabilities, permitting to discover and create new opportunities (Bingham et al., 2007).

On the top level of the cluster are situated two contributions which underline the importance to adopt cognitive jointly with the context in which entrepreneurs are called to operate. The study by De Carolis and Saparito (2006) offers an entrepreneur behavior's model in which both cognitive aspects and social capital have to be considered to study entrepreneurial venture creation. In the same way, Westhead Ucbasaran and Wright (2005) adopted the social-psychological approach to entrepreneurship (Carsrud and Johnson, 1989), taking into account the context in which the individual is operating as well as his/her personal characteristics, to explain the differences between novice, experience, and portfolio entrepreneurs.

At the bottom of the red cluster, there is the contribution by Dodd (2002) who analyzed metaphors that entrepreneurs use to give meaning to entrepreneurship experience. The study aims to create a cultural model of entrepreneurship and the cognition is just one of the aspects used to explain the entrepreneurial process.

Yellow cluster - Opportunity identification

Opportunity identification is often the start of the entrepreneurial process; it is not surprising at all that it has long been a central concept in the field of entrepreneurship. This stream of research is driven by two main questions: "*How does opportunity identification occur?*" and "*Why do some persons but not others identify specific opportunities?"* (Kirzner, 1979, 1985).

Based on this consideration, the articles included in the yellow cluster try to give an answer to the doubts expressed above. In their theoretical contribution, Gaglio and Katz (2001) provided a new translation of the concept of entrepreneurial alertness into its appropriate cognitive and psychological properties. The authors consider alertness as a distinctive set of perceptual and information-processing skills and give a detailed explanation of entrepreneurial alertness as a chronic schema (Gaglio and Katz, 2001). Similarly, Baron (2006) recognize that alertness is the core element of opportunity identification, but two further factors are important as well: knowledge searching and prior knowledge. This contribution suggests that the relationship between alertness, knowledge searching and prior knowledge may be explained by the pattern recognition concept which describes

the cognitive process through which individuals identify meaningful patterns in complex arrays of events or trends.

The pattern recognition process was also used to explain the differences between experience and greenhorn entrepreneurs (Baron and Ensley, 2006). Specifically, Baron and Ensley (2006) focused on one cognitive framework: prototypes for business opportunity. Findings demonstrated that the prototypes of "experienced entrepreneurs were more clearly defined, richer in content, and more concerned with factors and conditions related to actually starting and running a new venture than the prototypes of novice entrepreneurs" (Baron and Ensley, 2006; p. 1331).

The venture identification could be considered as one of the sub-process which compose the general process of venture creation. Indeed, as explained by Baron (2007) venture creation is the result of three processes: idea generation, opportunity recognition and acquire essential resources. For each of them, there are cognitive antecedents and processes, respectively: concept and creativity, pattern recognition and alertness, social skill and social networks. Moreover, this is one of the first paper which considered affect as an antecedent of entrepreneurial process (Baron, 2007).

Finally, the contributions by Corbett (2005; 2007) highlight that opportunity recognition is also the result of entrepreneurs' learning process. Findings of these studies suggest that knowledge asymmetries exist because of learning asymmetries. By acquiring information and transforming it in fundamentally different ways, the resulting product will be different based on the knowledge that each of us can use to uncover opportunities (Corbett, 2005, 2007).

The growth period, 2008-2016

Passing to analyze the growth period of EC (Figure 5), we can observe that "EC as a field of research" (purple), disappeared due to the natural evolution of the field. Two clusters merged: "Opportunity identification" (yellow) and "cognitive antecedents for venture creation" (red). They give life to "the influence of contextual factors in cognitive antecedents of opportunity recognition" (orange). Regarding the green cluster, we observed an evolution about the topics covered. The cognitive

antecedents (green) enhance thanks to the surfacing of cognitive style concept. Finally, two new cluster were born. The first, is called "the social cognitive categories" (blue) (Mittchell et al., 2007). The second one, "entrepreneur's affect and emotions" (pink), which includes papers focused on the role of emotions on entrepreneurial process. In the following paragraphs, each of these clusters will be analyzed in details.

Figure 5 About Here

Orange cluster - The influence of contextual factors and cognitive antecedents of opportunity recognition

EC theory declares that entrepreneurs' cognitive capacities to process information are central to opportunity identification (Mitchell et al. 2007). Indeed, articles that investigate the relationship between information processing and opportunity identification are at the center of the Figure 6. They belong to the red cluster but at the same time their topic is fundamental to the other clusters.

These studies show that active information search (Gielnik et al., 2014), need for closure (Schenkel et al., 2009) and discover mindset (Neill et al., 2015) affect the information processing and consequently the opportunity identification. Moreover, Vaghely and Julien (2010) explained that entrepreneurs' information process is a dynamic combination of algorithmic and heuristic cognitive mechanisms. Moving to analyze the content of the red cluster, it can be noted that many studies focused on how EC influences the opportunity identification, underlining the need to consider both subjective perception and objective market condition (Renko et al., 2012; Kemmerer et al., 2012; Dew et al., 2015; Wood et al., 2014 b; Metzger and King, 2015; Kiss and Barr, 2015). This is particularly important in case the development of innovative products is considered (Gemmell et al., 2012) and social dynamics are involved (Xu, 2016; Fischer and Reuber, 2011). Nevertheless, some articles pay great attention to subjective and cognitive aspects and empirically test how they influence the opportunity identification. For example Wood et al. (2014a, b) and William and Wood (2015) demonstrate that rules-based thinking influences the opportunity evaluation; moreover parallel work

experience (Hsie, 2016), entrepreneurial belief (Felin and Zenger, 2009), organizational (Drori et al., 2009) as well as personal scripts (Uygur and Kim, 2016; Pryor et al., 2016) are used for understanding entrepreneurial opportunity evaluation and interpretation (Barreto, 2012).

In the middle of the red cluster are grouped articles regarding international entrepreneurship which is the process of recognizing and exploiting business opportunities in the international context (Santos-Alvarez and Garcia-Merino, 2010). In this context, EC in general (Castagnoli, 2014) and specifically entrepreneur's cognitive variables, such as alertness, causal logic, prior experience (Santos-Alvarez and Garcia-Merino, 2010; 2012) are fundamental variables to collect relevant information for international business development. Similarly, the entrepreneurial orientation (e.g. proactiveness, risk taking and innovativeness) is an important determinant of nascent entrepreneurs' entry in foreign markets (Munoz-Bullon., 2015). Adopting cognitive approach, internationalization was investigated as an organizational dynamic capability (Alvarez et al., 2015) based on cognitive maps (Autio et al., 2011; Bingham, 2009) which permits to create form and meaning on opportunity selection and, in so doing, provides a cognitive underpinning for coordinated behavior (Bingham, 2009). In addition, Schweizer (2012) demonstrated that the internationalization process changes over time thanks to learning process. That process may benefit from governance mechanisms composed of people with heterogeneous work experience and diverse knowledge (Wirtz, 2011) and learning should be also the result of negative outcomes (Bingham and Kahl, 2014).

It follows that different logics guide different internationalization decisions at different time; consequently, different forms of distance have to be considered (Williams and Gregoire, 2015) and different motivation are at the base of this process, which influences the magnitude of the internationalization risk bias (Kiss et al., 2013).

Internationalization is a process that needs to consider the situational factors. By definition, it deals with high uncertainty and scholars have found that different propensity to undertake uncertainty depends on cognition, involvement (Kuechle, 2016) and cultural factors (Liu et al., 2016)

In the bottom side of the red cluster, there are studies that focused more on the relationship between EC and contextual factors and on their effects on entrepreneurship process. Obloj et al. (2010) demonstrated that dominant logic is an intangible resource which guides the firms in transition economies, where strong institutions are missing and resources are limited. Moreover, institutional change influenced entrepreneurial opportunities evaluation and entrepreneurs' cognitive structures (Ideran et al., 2011, 2013). Even the nature of the firm (e.g. social entrepreneurship) affect organizational cognitive structure such as identity and power (Waldron et al., 2016).

Due to the aim of the article, the detailed-study by Strong (2013) is positioned out of the red cluster; he offers a new perspective of EC based on Hayek's (1945) oft-neglected cognitive theory, utilizing a socio-political approach.

Green cluster - Cognitive antecedents and cognitive style

At the heart of the green cluster is arranged the contribution by Sanchez et al. (2011) in which authors highlight the contribution of cognitive psychology to the field of entrepreneurship to the understanding of entrepreneurial cognitive antecedents and entrepreneurial cognitive style: "the ways of processing information related to entrepreneurial behavior" (Sanchez et al., 2011, p. 434).

Above the green cluster are positioned studies that focus on cognitive antecedents in relation to opportunity identification and venture creation. Cognitive aspects, such as entrepreneurial experience (Westhead and Wright, 2011; Atherton, 2009; Smith et al., 2009) and opportunity prototypical characteristics (Costa et al., 2016), together with the environment, are determinant for nascent venture to engage in bootstrapping activity (Grichnik et al., 2014). Specifically, the recognition of failure impact the psychological commitment to engaging in a new business opportunity (Mitchell et al., 2008) as well as entrepreneurs tend to be more overconfident than others and it is positive correlated to the decision to start a new venture (Robinson and Marino, 2015). Prior business ownership experience, in terms of failure and success, influences the subsequent behavior and decisions (Ucbasaran et al., 2009) and it is true even at the team-level cognitive process (Zheng, 2012).

Moreover, metacognitive processes are useful to recognize knowledge structure and heuristics, those permit to make novel and uncertain entrepreneurial decision (Haynie et al., 2010).

Moving at the center of the green cluster, the majority of contributions investigate the entrepreneurial cognitive style underlining the differences between entrepreneurs. For example, Dew et al. (2009) demonstrated that expert entrepreneurs make decisions using effectual logic, on the contrary novice entrepreneurs use predictive frame. Malmstrom et al. (2015) showed that entrepreneurs' cognitive construction of business models distinguish high-profit and low-profit business models. On the same way, Murmann and Sardana (2013) explain that cognitive style differentiates successful from unsuccessful entrepreneurs, in that the former are able to vary their decision styles based on decision context. This confirms what Groves et al. (2011) suggest, that entrepreneurs possess a versatile style in linear and non-linear cognitive style and it is associated with educational background. Nevertheless, intuition, as a specific cognitive style, and heuristic, as cognitive structure of intuition process, received a recent and great attention in entrepreneurship field (Baldacchino et al., 2015; Osiyevskyy et al., 2015; Gregoire et al., 2015); moreover Brigham et al. (2010) demonstrated that the interaction between intuition and higher levels of formalization is significantly associated with firm growth. More in general, studies verify that cognitive style is associated with venture growth (Wright and Stigliani, 2013; Dutta and Thornhill, 2014), innovation (Lejarraga and Martinez-Ros, 2014) and ethical decisions (McVea, 2009; Fassin et al., 2011).

Blue cluster - The social cognitive categories

In this cluster are gathered contributions regarding the social cognitive categories: person, context, cognition, and motivation (Mitchell et al., 2007). At the bottom side of the cluster are positioned contributions concerning entrepreneurial motivation. Studies demonstrated that socio-psychological factors, such as locus of control, social cynicism, the traditionalism-modernity continuum and the survival-self-actualization continuum, are significant predictors of entrepreneurial motivation (Turkina and Thai, 2015) and entrepreneurial intention, as well as cognitive structures of expert entrepreneurs influence motivation and consequently venture creation (Urban, 2010). Moreover,

motivation is influenced by social value, that is perceptions regarding general-society and closer-environment values (Linan et al., 2011a), and national culture (Hayton and Caciotti, 2013; Linan et al., 2011b; Radu and Redien-Collot, 2008). Entrepreneurial motivational factors have an effect on decision-making effectiveness but this relationship is mediated by cognitive complexity (Iederan et al., 2009)

On the right side of the cluster, contributions about cognitive aspects are discussed. Cognition includes all psychological processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used (Omorede et al., 2015). Yang (2015) demonstrated that two aspects of EC – arrangement and willingness cognitions - have a strong relationship with strategic change momentum. Garcia et al. (2014 a, b) and Chen e al. (2015), explain the relationship between expert scripts (Garcia et al., 2014a), cognitive adaptability (Garcia et al., 2014b; Haynie 2009) and creative cognitive style (Chen et al., 2015) with venture success. Moreover the cognition processes are influenced by entrepreneurial expertise, which derives from formal entrepreneurship education (Zhang et al., 2014) and training (Boukamcha et al., 2015).

In order to explain entrepreneurs' differences, many studies have investigated the individual factors. For example, De Carolis et al. (2009) and Li et al. (2013) demonstrated that social capital affects the progress of new venture creation. In the same way, self-efficacy influences venture growth (Baum and Bird, 2010; Baum et al., 2011), opportunity recognition, especially in the early-stage (Tumasjan, 2012) leading to positive entrepreneurial results (Kasouf et al., 2015); similarly two distinct types of images – images of vulnerability and images of capability – affect opportunity recognition (Mitchell and Sheperd, 2010). Self-efficacy is also considered as a self-regulation mechanism on moral awareness and it influences entrepreneurs' ethical decisions (Bryant, 2009). Moreover cognitive biases, i.e. overconfidence and optimism, influence both surviving and non-surviving firms (Gudmundsson, 2013). On the top of the cluster, separated from the other papers, there are two contributions about a specific individual aspect of EC: the passions. It is discussed whether as a theoretical concept (Cardon et al., 2009) or a validate instrument to capture its intrinsic dimensions

was tested (Cardon et al., 2013). It is not surprising that they are so close to the yellow cluster, which includes contributions about entrepreneurial emotions.

Cognition may be a crucial determinant also to deal with dynamic and uncertain business environments; it affects entrepreneurial attention and evaluation (Garrett and Holland, 2015), actions and decisions during strategic change (Yang, 2015). Indeed, a strategic entrepreneurship model is suggested because it offers a more holistic view of entrepreneurial activity by virtue of the relationship between individual cognition, firm, and environment is considered (Westhead and Wright, 2011).

Two contributions are positioned outside of the cluster, they have the bibliography in line with it but the content is out of topic. Winkler (2014) from a socio-cognitive lens, talking about which types of educational methods, approaches and support system best facilitate entrepreneurial learning. On the same way, Caliedo et al.,(2012) has a position out of the cluster because although he talks about some social cognitive variables (willingness to trust) on everyday decision making decision of entrepreneurs, manager and employee, he adopts a more economic instead organizational behavior point of view.

Pink Cluster – Entrepreneurs' affect and emotions

In the yellow cluster, most of the contributions are about affect and emotions. As Baron (2008), the most cited article of the cluster, explained: affects play an important role in entrepreneurship process, from opportunity recognition to resource acquisition. In line with this, researches demonstrated that dispositional positive affect is related to many beneficial outcomes such as product innovation and sales growth (Baron and Tang, 2011), innovation and creativity in general (Baron and Tang, 2011). At the same time, an increase of dispositional positive affect is associated with damaging effects, such as reduced task performance and higher impulsivity (Baron et al., 2012).

For this reason, an increasing number of research have started focusing on understanding the role of the capacity to regulate their own emotions and optimism (Hmieleski and Baron., 2008; Hmieleski et al., 2013). Indeed, self-control (Baron and Henry, 2010) can be very beneficial to entrepreneurs'

activities and perhaps to ecosystem entrepreneurs (Nambisan and Baron, 2013). While testing the alertness scale, Tang et al. (2012) demonstrated that positive affect, differently from the negative one, is significantly and positively correlated with alertness. Moreover, the emotional side of empathy could be an important antecedent for opportunity recognition and costumer knowledge (Prandelli et al., 2016). For better understanding EC and emotions could be useful to use emerging technologies (De Holan, 2014).

CONCLUSION

This paper constitutes a first attempt to carry out a comprehensive, systematic and bibliometric review of EC as a field of study. The paper uses as a basis the literature published on this topic on Web of Science Core Collection.

We started our discussion stressing why we dived the EC field of study in two periods. In fact, scanning the literature we find out that there was a cutting-edge point in 2007 with Mitchell's paper. After that milestone research, the EC field has started to evolve rapidly (see Figure 1) and has started his voyage to maturity as the cluster aggregation has shown. Moreover, this partition permits us a better and clear presentation of the concept and evolution of EC. Secondly, in order to delve EC as a field of study, we decided to analyze the epidemiological orientation and the research methods of the 144 papers involved in the study. What we found, confirm that 2007 was a break point in EC field because after this year several empirical types of research started to tests the previous theoretical hypotheses.

Reaching the core of the present work, we started to deeply analyze the EC's youth period (1998-2007) helped by the VOS bibliometric analysis. Four clusters emerged. The first one, "EC as a field of research" (purple), contains papers which analyzed this field of research from both theoretical and methodological point of view giving the roots of EC as field of study. The second cluster, "cognitive antecedents" (green), considers the cognitive aspects which influence the entrepreneurship process. The third one, "cognitive antecedents for venture creation" (red), focus on the cognitive

characteristics which foster venture creation. Finally, the last cluster, "opportunity identification" (yellow), comprehend papers refereeing to cognitive toolbox used by entrepreneurs in the early stage of entrepreneurial process.

Later, our analysis focused on EC's growth period where we highlight several changes on the knowledge structure. In particular, we observed that "EC as a field of research" (purple), disappeared due to the natural evolution of the field. We also find out that two clusters merged. "Opportunity identification" (yellow) and "cognitive antecedents for venture creation" (red) became "the influence of contextual factors in cognitive antecedents of opportunity recognition" (orange) which includes studies focusing on how entrepreneurial cognition influence opportunity recognition, underlying the role of environmental endogenous condition and exogenous personal aspects. Regarding the green cluster, we observed an evolution regarding the topics covered. In detail, besides the cognitive antecedents, the cluster now take in consideration also the entrepreneurs' cognitive style.

Later, two new cluster were born. The first, is called "the social cognitive categories" (blue) which includes contributions about person, context, cognition, and motivation (Mittchell et al., 2007). The second one, "entrepreneur's affect and emotions" (pink), which includes papers focused on the role of emotions on entrepreneurial process.

Thus, both systematic literature review and bibliometric analysis permitted us to identify several interesting findings inside the knowledge base of EC as a field of study. In particular, with this paper we represented the state of the art of EC field giving to the researcher a guide to understand the different stream of research in order to schematize the knowledge structure of this field of study. Moreover, as Zupic and Cater (2015) pointed out, this paper address the needing to offer more bibliometric research in the field of management in order give reliability to previous EC literature reviews (e.g. Fobes, 1999; Mitchell et al., 2007; Gregoire et al., 2011).

Finally, regarding the limitation of the present study, we point out that besides the rigorous and well-accepted method used, not all the concepts present in the articles themselves could be discussed.

However, the purpose of this study was to give a big picture on the field and offer a comprehensive approach to EC also giving useful insight at a general level for the future development of this trending stream of literature inside entrepreneurial studies.

REFERENCES

Atherton, Andrew. 2009. “Rational Actors, Knowledgeable Agents”, International Small Business Journal, 27: 470-95.

Autio, Erkko, Gerard George, and Oliver Alexy. 2011. “International Entrepreneurship and Capability Development—Qualitative Evidence and Future Research Directions”, Entrepreneurship Theory and Practice, 35: 11-37.

Baldacchino, Leonie, Deniz Ucbasaran, Laure Cabantous, and Andy Lockett. 2015. “Entrepreneurship Research on Intuition: A Critical Analysis and Research Agenda”, International Journal of Management Reviews, 17: 212-31.

Baron, Robert A, and Thomas B Ward. 2004. “Expanding entrepreneurial cognition”s toolbox: Potential contributions from the field of cognitive science”, Entrepreneurship Theory and Practice, 28: 553-73.

Baron, Robert A. 1998. “Cognitive mechanisms in entrepreneurship: Why and when enterpreneurs think differently than other people”, Journal of Business Venturing, 13: 275-94.

Baron, Robert A. 2006. “Opportunity Recognition as Pattern Recognition: How Entrepreneurs "Connect the Dots" to Identify New Business Opportunities”, Academy of Management Perspectives, 20: 104-19.

Baron, Robert A. 2007. “Behavioral and cognitive factors in entrepreneurship: entrepreneurs as the active element in new venture creation”, Strategic Entrepreneurship Journal, 1: 167-82.

Baron, Robert A. 2008. “The role of affect in the entrepreneurial process”, Academy of management Review, 33: 328-40.

Baron, Robert A., and Jintong Tang. 2011. “The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism”, Journal of Business Venturing, 26: 49-60.

Baron, Robert A., and Michael D. Ensley. 2006. “Opportunity Recognition as the Detection of Meaningful Patterns: Evidence from Comparisons of Novice and Experienced Entrepreneurs”, Management Science, 52: 1331-44.

Baron, Robert A., and Rebecca A. Henry. 2010. “How entrepreneurs acquire the capacity to excel: insights from research on expert performance”, Strategic Entrepreneurship Journal, 4: 49-65.

Baron, Robert A., and Thomas B. Ward. 2004. “Expanding Entrepreneurial Cognition”s Toolbox: Potential Contributions from the Field of Cognitive Science”, Entrepreneurship Theory and Practice, 28: 553-73.

Baron, Robert A., Jintong Tang, and Keith M. Hmieleski. 2011. “The downside of being “up”: entrepreneurs” dispositional positive affect and firm performance”, Strategic Entrepreneurship Journal, 5: 101-19.

Baron, Robert A., Keith M. Hmieleski, and Rebecca A. Henry. 2012. “Entrepreneurs” dispositional positive affect: The potential benefits – and potential costs – of being “up”“, Journal of Business Venturing, 27: 310-24.

Barreto, Ilídio. 2012. “Solving the Entrepreneurial Puzzle: The Role of Entrepreneurial Interpretation in Opportunity Formation and Related Processes”, Journal of Management Studies, 49: 356-80.

Baum, J. Robert, and Barbara J. Bird. 2009. “The Successful Intelligence of High-Growth Entrepreneurs: Links to New Venture Growth”, Organization Science, 21: 397-412.

Baum, J. Robert, Barbara Jean Bird, and Sheetal Singh. 2011. The practical intelligence of entrepreneurs: antecedents and a link with new venture growth”, Personnel Psychology, 64: 397-425.

Bazerman, Max H., and Margaret A. Neale. "Heuristics in negotiation: Limitations to effective dispute resolution." In Judgment and decision making: An interdisciplinary reader, edited by H. R. Arkes K. R. Hammond, 311-21. New York, NY, US: Cambridge University Press.

Bingham, Christopher B. 2009. “Oscillating improvisation: how entrepreneurial firms create success in foreign market entries over time”, Strategic Entrepreneurship Journal, 3: 321-45.

Bingham, Christopher B., and Steven Kahl. 2014. “Anticipatory Learning”, Strategic Entrepreneurship Journal, 8: 101-27.

Bingham, Christopher B., Kathleen M. Eisenhardt, and Nathan R. Furr. 2007. “What makes a process a capability? Heuristics, strategy, and effective capture of opportunities”, Strategic Entrepreneurship Journal, 1: 27-47.

Bird, Barbara J. 1992. “The Operation of Intentions in Time: The Emergence of the New Venture”, Entrepreneurship: Theory & Practice, 17: 11-20.

Bird, Barbara. 1988. “Implementing Entrepreneurial Ideas: The Case for Intention”, The Academy of Management Review, 13: 442-53.

Booth, Andrew, Anthea Sutton and Diana Papaioannou, 2016, Systematic approaches to a successful literature review. Sage.

Borg, Ingwer and Patrick JF Groenen, 2005, Modern multidimensional scaling: Theory and applications. Springer Science & Business Media.

Bouckenooghe, Dave, Cools, Eva, Vanderheyden, Karlien and Van den Broeck, Herman. 2005. In search for the heffalump: an exploration of the cognitive style profiles among Flemish entreprenurs. Journal of Applied Management and Entrepreneurship, 10(4): 58-75.

Boukamcha, Fayçal. 2015. “Impact of training on entrepreneurial intention: an interactive cognitive perspective”, European Business Review, 27: 593-616.

Boyack, Kevin W. and Richard Klavans. 2010. "Co-citation analysis, bibliographic coupling, and direct citation: Which citation approach represents the research front most accurately?." Journal of the American Society for Information Science and Technology, 61(12): 2389-2404.

Brigham, Keith H., Ronald K. Mitchell, and Julio O. De Castro. 2010. “Cognitive misfit and firm growth in technology-oriented SMEs”, International Journal of Technology Management, 52: 4-25.

Bryant, Peter. 2007. “Self-regulation and decision heuristics in entrepreneurial opportunity evaluation and exploitation”, Management Decision, 45: 732-48.

Bryant, Peter. 2009. “Self-regulation and moral awareness among entrepreneurs”, Journal of Business Venturing, 24: 505-18.

Caliendo, Marco, Frank Fossen, and Alexander Kritikos. 2012. “Trust, positive reciprocity, and negative reciprocity: Do these traits impact entrepreneurial dynamics?”, Journal of Economic Psychology, 33: 394-409.

Cardon, Melissa S, Joakim Wincent, Jagdip Singh, and Mateja Drnovsek. 2009. “The nature and experience of entrepreneurial passion”, Academy of Management Review, 34: 511-32.

Cardon, Melissa S., Denis A. Gregoire, Christopher E. Stevens, and Pankaj C. Patel. 2013. “Measuring entrepreneurial passion: Conceptual foundations and scale validation”, Journal of Business Venturing, 28: 373-96.

Carsrud, Alan L., and Robyn W. Johnson. 1989. “Entrepreneurship: a social psychological perspective”, Entrepreneurship & Regional Development, 1: 21-31.

Castagnoli, Adriana. 2014. “Across borders and beyond boundaries: How the Olivetti Company became a multinational”, Business History, 56: 1281-311.

Cătălina Iederan, Oana, Petru Lucian Curşeu, Patrick A. M. Vermeulen, and Jac L. A. Geurts. 2011. “Cognitive representations of institutional change: Similarities and dissimilarities in the cognitive schema of entrepreneurs”, Journal of Organizational Change Management, 24: 9-28.

Chen, Ming-Huei, Yu-Yu Chang, and Ya-Hsun Lo. 2015. “Creativity cognitive style, conflict, and career success for creative entrepreneurs”, Journal of Business Research, 68: 906-10.

Corbett, Andrew C. 2005. “Experiential Learning Within the Process of Opportunity Identification and Exploitation”, Entrepreneurship Theory and Practice, 29: 473-91.

Corbett, Andrew C. 2007. “Learning asymmetries and the discovery of entrepreneurial opportunities”, Journal of Business Venturing, 22: 97-118.

Costa, Sílvia F., Michel L. Ehrenhard, António Caetano, and Susana C. Santos. 2016. “The Role of Different Opportunities in the Activation and Use of the Business Opportunity Prototype”, Creativity and Innovation Management, 25: 58-72.

De Bakker, Frank GA, Peter Groenewegen, and Frank Den Hond. 2005. "A bibliometric analysis of 30 years of research and theory on corporate social responsibility and corporate social performance." Business & Society, 44(3): 283-317.

De Carolis, Donna Marie, and Patrick Saparito. 2006. “Social Capital, Cognition, and Entrepreneurial Opportunities: A Theoretical Framework”, Entrepreneurship Theory and Practice, 30: 41-56.

De Carolis, Donna Marie, Barrie E. Litzky, and Kimberly A. Eddleston. 2009. “Why Networks Enhance the Progress of New Venture Creation: The Influence of Social Capital and Cognition”, Entrepreneurship Theory and Practice, 33: 527-45.

de Holan, Pablo Martin. 2013. “It”s All in Your Head”, Journal of Management Inquiry, 23: 93-97.

Denes-Raj, Veronika, and Seymour Epstein. 1994. “Conflict between intuitive and rational processing: When people behave against their better judgment”, Journal of Personality and Social Psychology, 66: 819-29.

Dew, Nicholas, Dietmar Grichnik, Katrin Mayer-Haug, Stuart Read, and Jan Brinckmann. 2014. “Situated Entrepreneurial Cognition”, International Journal of Management Reviews.

Dew, Nicholas, Stuart Read, Saras D. Sarasvathy, and Robert Wiltbank. 2009. “Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices”, Journal of Business Venturing, 24: 287-309.

Ding, Ying, Ronald Rousseau and Dietmar Wolfram, 2014, Measuring Scholarly Impact. Springer.

Dodd, Sarah Drakopoulou. 2002. “Metaphors and meaning: A grounded cultural model of us entrepreneurship”, Journal of Business Venturing, 17: 519-35.

Drori, Israel, Benson Honig, and Zachary Sheaffer. 2009. “The Life Cycle of an Internet Firm: Scripts, Legitimacy, and Identity”, Entrepreneurship Theory and Practice, 33: 715-38.

Dutta Dev, K., and Stewart Thornhill. 2014. "Venture Cognitive Logics, Entrepreneurial Cognitive Style, and Growth Intentions: A Conceptual Model and an Exploratory Field Study." In Entrepreneurship Research Journal, 147.

Fagerberg, Jan, Morten Fosaas and Koson Sapprasert. 2012. "Innovation: Exploring the knowledge base." Research policy, 41(7):1132-1153.

Falagas, Matthew E., et al.. 2008. "Comparison of PubMed, Scopus, web of science, and Google scholar: strengths and weaknesses." The FASEB journal, 22(2): 338-342.

Fassin, Yves, Annick Van Rossem, and Marc Buelens. 2011. “Small-Business Owner-Managers” Perceptions of Business Ethics and CSR-Related Concepts”, Journal of Business Ethics, 98: 425-53.

Felin, Teppo, and Todd R. Zenger. 2009. “Entrepreneurs as theorists: on the origins of collective beliefs and novel strategies”, Strategic Entrepreneurship Journal, 3: 127-46.

Fischer, Eileen, and A. Rebecca Reuber. 2011. “Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior?”, Journal of Business Venturing, 26: 1-18.

Forbes, Daniel P. 1999. “Cognitive approaches to new venture creation”, International Journal of Management Reviews, 1: 415-39.

Frese, Michael, and Michael M. Gielnik. 2014. “The Psychology of Entrepreneurship”, Annual Review of Organizational Psychology and Organizational Behavior, 1: 413-38.

Gaglio, Connie Marie, and Jerome A. Katz. 2001. “The Psychological Basis of Opportunity Identification: Entrepreneurial Alertness”, Small Business Economics, 16: 95-111.

Garrett, Robert P., and Daniel V. Holland. 2015. “Environmental effects on the cognitions of corporate and independent entrepreneurs”, Small Business Economics, 45: 369-81.

Gemmell, Robert M., Richard J. Boland, and David A. Kolb. 2012. “The Socio-Cognitive Dynamics of Entrepreneurial Ideation”, Entrepreneurship Theory and Practice, 36: 1053-73.

Gielnik, Michael M., Anne-Christin Krämer, Britta Kappel, and Michael Frese. 2014. “Antecedents of Business Opportunity Identification and Innovation: Investigating the Interplay of Information Processing and Information Acquisition”, Applied Psychology, 63: 344-81.

Grégoire, Denis A, Andrew C Corbett, and Jeffery S McMullen. 2011. “The cognitive perspective in entrepreneurship: an agenda for future research”, Journal of Management Studies, 48: 1443-77.

Grégoire, Denis A., Joep Cornelissen, Dimo Dimov, and Elco van Burg. 2015. “The Mind in the Middle: Taking Stock of Affect and Cognition Research in Entrepreneurship”, International Journal of Management Reviews, 17: 125-42.

Grichnik, Dietmar, Jan Brinckmann, Luv Singh, and Sophie Manigart. 2014. “Beyond environmental scarcity: Human and social capital as driving forces of bootstrapping activities”, Journal of Business Venturing, 29: 310-26.

Groves, Kevin, Charles Vance, and David Choi. 2011. “Examining Entrepreneurial Cognition: An Occupational Analysis of Balanced Linear and Nonlinear Thinking and Entrepreneurship Success”, Journal of Small Business Management, 49: 438-66.

Gudmundsson, Sveinn Vidar, and Christian Lechner. 2013. “Cognitive biases, organization, and entrepreneurial firm survival”, European Management Journal, 31: 278-94.

Hatten Timothy S., 1997, Small Business: Entrepreneurship and Beyond. Prentice-Hall, Upper Saddle River, NJ.

Hayek, F. A. 1945. “The Use of Knowledge in Society”, The American Economic Review, 35: 519-30.

Haynie, J. Michael, Dean Shepherd, Elaine Mosakowski, and P. Christopher Earley. 2010. “A situated metacognitive model of the entrepreneurial mindset”, Journal of Business Venturing, 25: 217-29.

Hayton, James C., and Gabriella Cacciotti. 2013. “Is there an entrepreneurial culture? A review of empirical research”, Entrepreneurship & Regional Development, 25: 708-31.

Hmieleski, Keith M., and Robert A. Baron. 2008. “Regulatory focus and new venture performance: A study of entrepreneurial opportunity exploitation under conditions of risk versus uncertainty”, Strategic Entrepreneurship Journal, 2: 285-99.

Hmieleski, Keith M., Andrew C. Corbett, and Robert A. Baron. 2013. “Entrepreneurs” Improvisational Behavior and Firm Performance: A Study of Dispositional and Environmental Moderators”, Strategic Entrepreneurship Journal, 7: 138-50.

Hsieh, Chihmao. 2016. “Do the Self-Employed More Likely Emerge From Sequential or Parallel Work Experience in Business-Related Functions?”, Entrepreneurship Theory and Practice, 40: 307-34.

Iederan, Oana C., x, x, lina, Cur, x15f, Petru Lucian eu, Patrick A. M. Vermeulen, and Jac L. A. Geurts. 2013. “Antecedents of Strategic Orientations in Romanian SMEs: An Institutional Framing Perspective”, Journal for East European Management Studies, 18: 386-408.

Iederan, Oana Catalina, Petru Lucian Curseu, and Patrick Vermeulen. 2009. "Effective decision-making: the role of cognitive complexity in strategic decisions." Studia Psychologica 51(4): 293.

Kasouf, Chickery J., Sussie C. Morrish, and Morgan P. Miles. 2015. “The moderating role of explanatory style between experience and entrepreneurial self-efficacy”, International Entrepreneurship and Management Journal, 11: 1-17.

Kemmerer, Benedict, Jorge Walter, Franz W. Kellermanns, and V. K. Narayanan. 2012. “A judgment-analysis perspective on entrepreneurs” resource evaluations”, Journal of Business Research, 65: 1102-08.

Keupp, Marcus Matthias, Maximilian Palmié, and Oliver Gassmann. 2012. "The strategic management of innovation: A systematic review and paths for future research." International Journal of Management Reviews, 14(4): 367-390.

Kirnzer, Israel M. 1979, Perception, opportunity and profit: studies in the theory of entrepreneurship. Chicago, IL: Chicago University.

Kirzner, Israel M. 1985, Discovery and the capitalist process. University of Chicago Press.

Kiss, Andreea N., and Pamela S. Barr. 2015. "New venture strategic adaptation: The interplay of belief structures and industry context", Strategic Management Journal, 36: 1245-63.

Kiss, Andreea N., David W. Williams, and Susan M. Houghton. 2013. "Risk bias and the link between motivation and new venture post-entry international growth", International Business Review, 22: 1068-78.

Krueger, Norris F. 2007. "What Lies Beneath? The Experiential Essence of Entrepreneurial Thinking", Entrepreneurship Theory and Practice, 31: 123-38.

Kuechle, Graciela, Beatrice Boulu-Reshef, and Sean D. Carr. 2016. "Prediction- and Control-Based Strategies in Entrepreneurship: The Role of Information", Strategic Entrepreneurship Journal, 10: 43-64.

Landström, Hans, Gouya Harirchi, and Fredrik Åström. 2012. "Entrepreneurship: Exploring the knowledge base." Research Policy, 41(7): 1154-1181.

Lejarraga, José, and Ester Martinez-Ros. 2014. "Size, R&D productivity and Decision Styles", Small Business Economics, 42: 643-62.

Leydesdorff, Loet, Stephen Carley, and Ismael Rafols. 2013. "Global maps of science based on the new Web-of-Science categories." Scientometrics, 94(2): 589-593.

Li, Yongqiang, Xuehua Wang, Lily Huang, and Xuan Bai. 2013. "How does entrepreneurs" social capital hinder new business development? A relational embeddedness perspective", Journal of Business Research, 66: 2418-24.

Lin, W. B. 2006. "A comparative study on the trends of entrepreneurial behaviors of enterprises in different strategies: Application of the social cognition theory", Expert Systems with Applications, 31: 207-20.

Liñán, Francisco, David Urbano, and Maribel Guerrero. 2011. "Regional variations in entrepreneurial cognitions: Start-up intentions of university students in Spain", Entrepreneurship & Regional Development, 23: 187-215.

Liñán, Francisco, Francisco J. Santos, and Jose Fernández. 2011. "The influence of perceptions on potential entrepreneurs", International Entrepreneurship and Management Journal, 7: 373.

Liu, Yipeng, and Tamar Almor. 2016. "How culture influences the way entrepreneurs deal with uncertainty in inter-organizational relationships: The case of returnee versus local entrepreneurs in China", International Business Review, 25: 4-14.

López-Fernández, Ma Concepción, Ana Ma Serrano-Bedia, and Marta Pérez-Pérez. 2016. "Entrepreneurship and Family Firm Research: A Bibliometric Analysis of An Emerging Field." Journal of Small Business Management, 54(2): 622-639.

Malmström, Malin, Jeaneth Johansson, and Joakim Wincent. 2015. “Cognitive Constructions of Low-Profit and High-Profit Business Models: A Repertory Grid Study of Serial Entrepreneurs”, Entrepreneurship Theory and Practice, 39: 1083-109.

Marzi, Giacomo, Riccardo, Rialti, Marina, Dabic and Andrea Caputo. 2017. A Mixed Methods Bibliometric Investigation of the World Review of Entrepreneurship, Management and Sustainable Development: from qualitative to quantitative data. World Review of Entrepreneurship, Management and Sustainable Development, Forthcoming

McVea, John F. 2009. “A field study of entrepreneurial decision-making and moral imagination”, Journal of Business Venturing, 24: 491-504.

Meindl, James R., Charles Stubbart, and Joseph F. Porac. 1994. “Cognition within and between Organizations: Five Key Questions”, Organization Science, 5: 289-93.

Metzger Matthew, L., and S. King Jesse. 2015. "Extending Constructivist Perspectives on Opportunity Production Through An Incorporation of Effectual Logics." Entrepreneurship Research Journal, 323.

Mitchell, J. Robert, and Dean A. Shepherd. 2010. “To thine own self be true: Images of self, images of opportunity, and entrepreneurial action”, Journal of Business Venturing, 25: 138-54.

Mitchell, J. Robert, Paul N. Friga, and Ronald K. Mitchell. 2005. “Untangling the Intuition Mess: Intuition as a Construct in Entrepreneurship Research”, Entrepreneurship Theory and Practice, 29: 653-79.

Mitchell, Ronald K, Brock Smith, Kristie W Seawright, and Eric A Morse. 2000. “Cross-cultural cognitions and the venture creation decision”, Academy of Management Journal, 43: 974-93.

Mitchell, Ronald K, Lowell Busenitz, Theresa Lant, Patricia P McDougall, Eric A Morse, and J Brock Smith. 2002. “Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research”, Entrepreneurship Theory and Practice, 27: 93-104.

Mitchell, Ronald K, Lowell W Busenitz, Barbara Bird, Connie Marie Gaglio, Jeffery S McMullen, Eric A Morse, and J Brock Smith. 2007. “The central question in entrepreneurial cognition research 2007”, Entrepreneurship Theory and Practice, 31: 1-27.

Mitchell, Ronald K., J. Robert Mitchell, and J. Brock Smith. 2008. “Inside opportunity formation: enterprise failure, cognition, and the creation of opportunities”, Strategic Entrepreneurship Journal, 2: 225-42.

Mitchell, Ronald K., Lowell Busenitz, Theresa Lant, Patricia P. McDougall, Eric A. Morse, and J. Brock Smith. 2004. “The Distinctive and Inclusive Domain of Entrepreneurial Cognition Research”, Entrepreneurship Theory and Practice, 28: 505-18.

Muñoz-Bullón, Fernando, Maria J. Sánchez-Bueno, and Antonio Vos-Saz. 2015. “Nascent entrepreneurs” personality attributes and the international dimension of new ventures”, International Entrepreneurship and Management Journal, 11: 473-92.

Murmann, Johann Peter, and Deepak Sardana. 2012. “Successful entrepreneurs minimize risk”, Australian Journal of Management, 38: 191-215.

Nambisan, Satish, and Robert A. Baron. 2013. “Entrepreneurship in Innovation Ecosystems: Entrepreneurs” Self-Regulatory Processes and Their Implications for New Venture Success”, Entrepreneurship Theory and Practice, 37: 1071-97.

Neill, Stern, Lynn Metcalf, and L. York Jonathan. 2015. "Seeing What Others Miss: A Study of Women Entrepreneurs in High-Growth Startups." In Entrepreneurship Research Journal, 293.

Nicholls-Nixon, Charlene L., Arnold C. Cooper, and Carolyn Y. Woo. 2000. “Strategic experimentation: Understanding change and performance in new ventures”, Journal of Business Venturing, 15: 493-521.

Obloj, Tomasz, Krzysztof Obloj, and Michael G. Pratt. 2010. “Dominant Logic and Entrepreneurial Firms” Performance in a Transition Economy”, Entrepreneurship Theory and Practice, 34: 151-70.

Omorede, Adesuwa, Sara Thorgren, and Joakim Wincent. 2015. “Entrepreneurship psychology: a review”, International Entrepreneurship and Management Journal, 11: 743-68.

Ortega Álvarez, Ana Maria, Maria Teresa García Merino, and Maria Valle Santos Álvarez. 2015. “Information: The source of entrepreneurial activity”, Social Science Information, 54: 280-98.

Osiyevskyy, Oleksiy, and Jim Dewald. 2015. “Inducements, Impediments, and Immediacy: Exploring the Cognitive Drivers of Small Business Managers” Intentions to Adopt Business Model Change”, Journal of Small Business Management, 53: 1011-32.

Podsakoff, Philip M., Scott B. MacKenzie, Nathan P. Podsakoff, and Daniel G. Bachrach. 2008. Scholarly influence in the field of management: A bibliometric analysis of the determinants of university and author impact in the management literature in the past quarter century. Journal of Management, (34): 641-720.

Prandelli, Emanuela, Martina Pasquini, and Gianmario Verona. 2016. “In user”s shoes: An experimental design on the role of perspective taking in discovering entrepreneurial opportunities”, Journal of Business Venturing, 31: 287-301.

Pryor, Christopher, Justin W. Webb, R. Duane Ireland, and Jr David J. Ketchen. 2016. “Toward An Integration of the Behavioral and Cognitive Influences on the Entrepreneurship Process”, Strategic Entrepreneurship Journal, 10: 21-42.

Radu, Miruna, and Renaud Redien-Collot. 2008. “The Social Representation of Entrepreneurs in the French Press”, International Small Business Journal, 26: 259-98.

Read, Stephen J. 1987. “Constructing causal scenarios: A knowledge structure approach to causal reasoning”, Journal of Personality and Social Psychology, 52: 288-302.

Renko, Maija, Rodney C. Shrader, and Mark Simon. 2012. “Perception of entrepreneurial opportunity: a general framework”, Management Decision, 50: 1233-51.

Robinson, Anthony T., and Louis D. Marino. 2015. “Overconfidence and risk perceptions: do they really matter for venture creation decisions?”, International Entrepreneurship and Management Journal, 11: 149-68.

Sánchez García, José Carlos, Joan Boada-Grau, Aldo Javier Prizmic-Kuzmica, and Brizeida Hernández-Sánchez. 2014. “Pyschometric Properties and the Factor Structure of the Spanish Version of the Cognitive Adaptability Scale (MAC)”, Universitas Psychologica, 13: 311-20.

Sánchez García, José Carlos. 2014. “Cognitive Scripts and Entrepreneurial Success”, Universitas Psychologica, 13: 331-32.

Sánchez, José C., Tania Carballo, and Andrea Gutiérrez. 2011. “The entrepreneur from a cognitive approach”, El emprendedor desde una orientación cognitiva., 23: 433-38.

Santos-Álvarez, Valle, and Teresa García-Merino. 2010. “The role of the entrepreneur in identifying international expansion as a strategic opportunity”, International Journal of Information Management, 30: 512-20.

Sarasvathy, Saras D. 2004. “Making It Happen: Beyond Theories of the Firm to Theories of Firm Design”, Entrepreneurship Theory and Practice, 28: 519-31.

Schenkel, Mark T., Charles H. Matthews, and Matthew W. Ford. 2009. “Making rational use of “irrationality”? Exploring the role of need for cognitive closure in nascent entrepreneurial activity”, Entrepreneurship & Regional Development, 21: 51-76.

Schweizer, Roger. 2012. “The internationalization process of SMEs: A muddling-through process”, Journal of Business Research, 65: 745-51.

Shaver, Kelly G., and Linda R. Scott. 1991. “Person, Process, Choice: The Psychology of New Venture Creation Kelly G. Shaver”, Entrepreneurship: Theory & Practice, 16: 23-45.

Shepherd, Dean A., Jeffery S. McMullen, and P. Devereaux Jennings. 2007. “The formation of opportunity beliefs: overcoming ignorance and reducing doubt”, Strategic Entrepreneurship Journal, 1: 75-95.

Smith, J. Brock, J. Robert Mitchell, and Ronald K. Mitchell. 2009. “Entrepreneurial Scripts and the New Transaction Commitment Mindset: Extending the Expert Information Processing Theory Approach to Entrepreneurial Cognition Research”, Entrepreneurship Theory and Practice, 33: 815-44.

Solymossy, Emeric, and John K. Masters. 2002. “Ethics Through an Entrepreneurial Lens: Theory and Observation”, Journal of Business Ethics, 38: 227-40.

Strong, Michael. 2013. “Some Implications of Hayek”s Cognitive Theory”, Critical Review, 25: 461-72.

Tang, Jintong, K. Michele Kacmar, and Lowell Busenitz. 2012. “Entrepreneurial alertness in the pursuit of new opportunities”, Journal of Business Venturing, 27: 77-94.

Thorpe, Richard, Jeff Gold, Robin Holt, and Jean Clarke. 2006. “Immaturity”, International Small Business Journal, 24: 232-50.

Tranfield, David, David Denyer, and Palminder Smart. 2003. "Towards a methodology for developing evidence-informed management knowledge by means of systematic review." British journal of management, 14(3):207-222.

Tumasjan, Andranik, and Reiner Braun. 2012. “In the eye of the beholder: How regulatory focus and self-efficacy interact in influencing opportunity recognition”, Journal of Business Venturing, 27: 622-36.

Turkina, Ekaterina, and Mai Thi Thanh Thai. 2015. “Socio-psychological determinants of opportunity entrepreneurship”, International Entrepreneurship and Management Journal, 11: 213-38.

Tversky, Amos, and Daniel Kahneman. 1983. “Extensional versus intuitive reasoning: The conjunction fallacy in probability judgment”, Psychological Review, 90: 293-315.

Ucbasaran, Deniz, Paul Westhead, and Mike Wright. 2009. “The extent and nature of opportunity identification by experienced entrepreneurs”, Journal of Business Venturing, 24: 99-115.

Urban, Boris. 2010. “Cognitions and motivations for new venture creation decisions: linking expert scripts to self-efficacy, a South African study”, The International Journal of Human Resource Management, 21: 1512-30.

Uygur, Ugur, and Sung Min Kim. 2016. “Evolution of Entrepreneurial Judgment With Venture-Specific Experience”, Strategic Entrepreneurship Journal, 10: 169-93.

Vaghely, Ivan P, and Pierre-André Julien. 2010. “Are opportunities recognized or constructed?: An information perspective on entrepreneurial opportunity identification”, Journal of Business Venturing, 25: 73-86.

Van Eck, Nees J., Ludo, Waltman, Jan, Van den Berg and Uzay, Kaymak. 2006. Visualizing the computational intelligence field. IEEE Computational Intelligence Magazine,1(4): 6-10.

van Eck, Nees Jan, and Ludo Waltman. "Visualizing bibliometric networks." Measuring scholarly impact. Springer International Publishing, 2014. 285-320.

Van Eck, Nees Jan, and Ludo Waltman. 2007. "VOS: a new method for visualizing similarities between objects." Advances in Data Analysis. Springer Berlin Heidelberg.

Van Eck, Nees Jan, and Ludo Waltman. 2009. "How to normalize cooccurrence data? An analysis of some well-known similarity measures." Journal of the American Society for Information Science and Technology, 60(8): 1635-1651.

Van Eck, Nees Jan, and Ludo Waltman. 2010. "Software survey: VOSviewer, a computer program for bibliometric mapping." Scientometrics, 84(2): 523-538.

Van Eck, Nees Jan, Ludo, Waltman, Rommert, Dekker and Jan Van den Berg. 2010. A comparison of two techniques for bibliometric mapping: Multidimensional scaling and VOS. Journal of the American Society for Information Science and Technology, 61(12): 2405-2416.

Volery, Thierry, and Tim Mazzarol. 2015. "The evolution of the small business and entrepreneurship field: A bibliometric investigation of articles published in the International Small Business Journal." International Small Business Journal, 33(4): 374-396.

Waldron, Theodore L., Greg Fisher, and Michael Pfarrer. 2016. “How Social Entrepreneurs Facilitate the Adoption of New Industry Practices”, Journal of Management Studies, 53: 821-45.

Waltman, Ludo, Nees Jan van Eck, and Ed CM Noyons. "A unified approach to mapping and clustering of bibliometric networks." Journal of Informetrics, 4(4): 629-635.

Waltman, Ludo. 2016. "A review of the literature on citation impact indicators." Journal of Informetrics 10(2): 365-391.

Ward, Thomas B. 2004. “Cognition, creativity, and entrepreneurship”, Journal of Business Venturing, 19: 173-88.

Westhead, Paul, and Mike Wright. 2011. “David Storey”s optimism and chance perspective: A case of the Emperor”s new clothes?”, International Small Business Journal, 29: 714-29.

Westhead, Paul, Deniz Ucbasaran, and Mike Wright. 2005. “Experience and Cognition”, International Small Business Journal, 23: 72-98.

Williams, David W., and Denis A. Grégoire. 2015. “Seeking commonalities or avoiding differences? Re-conceptualizing distance and its effects on internationalization decisions”, Journal of International Business Studies, 46: 253-84.

Williams, David W., and Matthew S. Wood. 2015. “Rule-based reasoning for understanding opportunity evaluation”, Academy of Management Perspectives, 29: 218-36.

Winkler, Christoph. 2013. "Toward a Dynamic Understanding of Entrepreneurship Education Research across the Campus – Social Cognition and Action Research." In Entrepreneurship Research Journal, 69.

Wirtz, Peter. 2011. “The cognitive dimension of corporate governance in fast growing entrepreneurial firms”, European Management Journal, 29: 431-47.

Wood, Matthew S., Alexander McKelvie, and J. Michael Haynie. 2014. “Making it personal: Opportunity individuation and the shaping of opportunity beliefs”, Journal of Business Venturing, 29: 252-72.

Wood, Matthew S., and David W. Williams. 2014. “Opportunity Evaluation as Rule-Based Decision Making”, Journal of Management Studies, 51: 573-602.

Wright, Mike, and Ileana Stigliani. 2012. “Entrepreneurship and growth”, International Small Business Journal, 31: 3-22.

Xu, Yang. 2016. “Entrepreneurial social capital, cognitive orientation and new venture innovation”, Management Research Review, 39: 498-520.

Yang, Lin. 2015. “Empirical study on the relationship between entrepreneurial cognitions and strategic change momentum: The moderating effect of organizational knowledge structures”, Management Decision, 53: 957-83.

Zahra, Shaker A., Juha Santeri Korri, and JiFeng Yu. 2005. “Cognition and international entrepreneurship: implications for research on international opportunity recognition and exploitation”, International Business Review, 14: 129-46.

Zhang, Ying, Geert Duysters, and Myriam Cloodt. 2014. “The role of entrepreneurship education as a predictor of university students” entrepreneurial intention”, International Entrepreneurship and Management Journal, 10: 623-41.

Zhao, Dangzhi, and Andreas Strotmann. 2008. "Evolution of research activities and intellectual influences in information science 1996–2005: Introducing author bibliographic-coupling analysis." Journal of the American Society for Information Science and Technology, 59(13): 2070-2086.

Zheng, Yanfeng. 2012. “Unlocking founding team prior shared experience: A transactive memory system perspective”, Journal of Business Venturing, 27: 577-91.

Zhu, Lin, Xiantao, Liu, Sha, He, Jun, Shi, and Ming, Pang. 2015. Keywords co-occurrence mapping knowledge domain research base on the theory of Big Data in oil and gas industry. Scientometrics, 105(1): 249-260

Zupic, Ivan, and Tomaž Čater. 2014. “Bibliometric Methods in Management and Organization”, Organizational Research Methods, 18: 429-72.

List of Tables and Figures

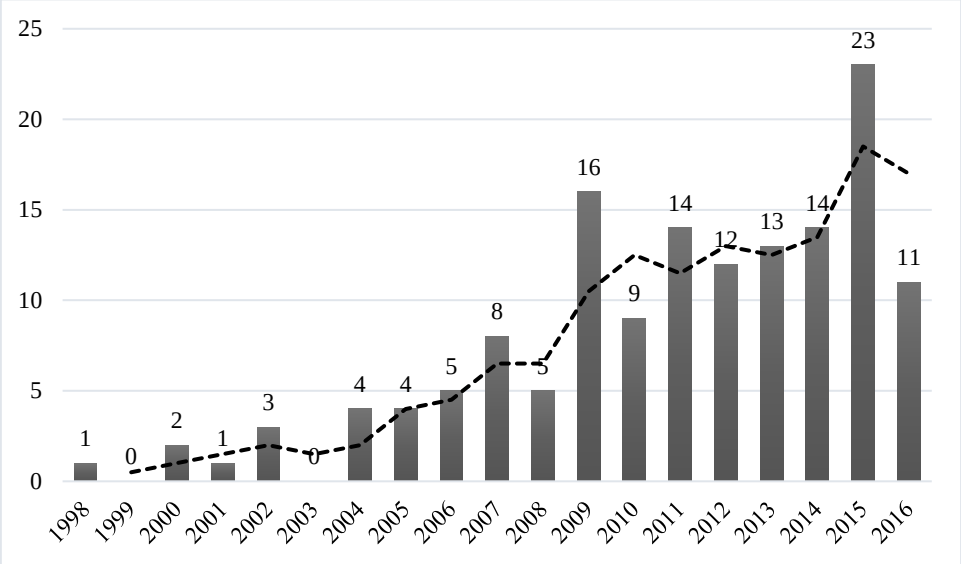

Figure 1 - Paper distribution among the years

Epistemological Orientation					
		1998-2007		**2008-2016**	
Theoretical	Conceptual	19	68%	33	28%
	Exploratory	7	25%	74	63%
	Predictive	2	7%	7	6%
Prescriptive	Instrumental	0	0%	0	0%
	Normative	0	0%	0	0%
Descriptive	Descriptive	0	0%	3	3%
Total		**28**		**117**	

Table 1 – Papers" epistemological orientation overview

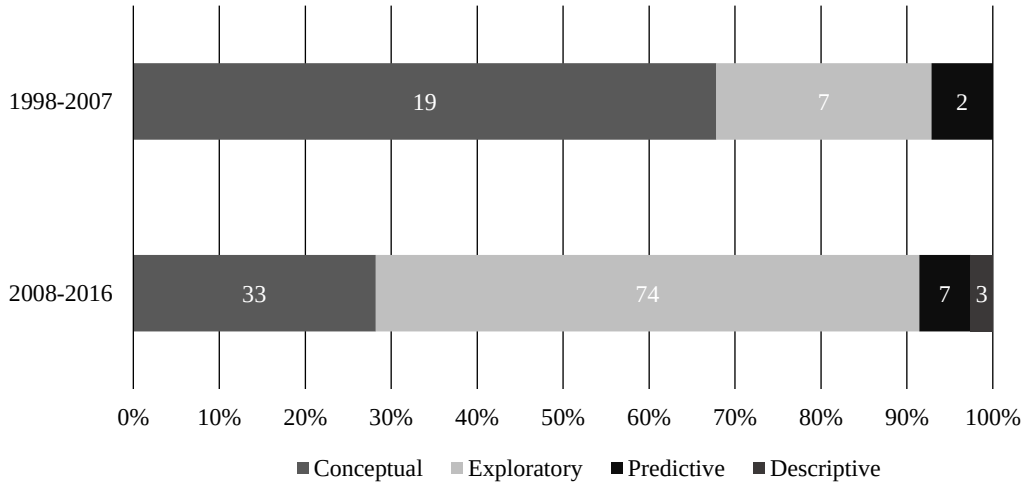

Figure 2 - Graphical representation of papers" epistemological orientation

Research Methods					
		1998-2007		2008-2016	
Mixed Methods	Sequential	2	22%	4	5%
	Concurrent	0	0%	0	0%
Qualitative	Case study	0	0%	10	12%
	Grounded Theory	1	11%	1	1%
	Action research	0	0%	1	1%
	Narrative	1	11%	11	13%
	Phenomenal	0	0%	0	0%
Quantitative	Survey	4	44%	47	57%
	Experimental	1	11%	8	10%
Total		**9**		**82**	

Table 2 – Papers" research methods overview

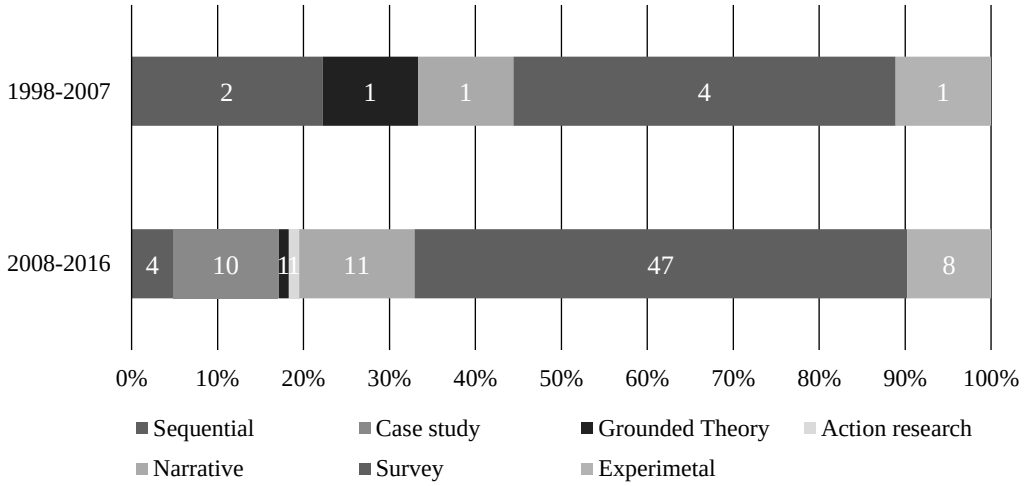

Figure 3 – Graphical representation of papers" research methods

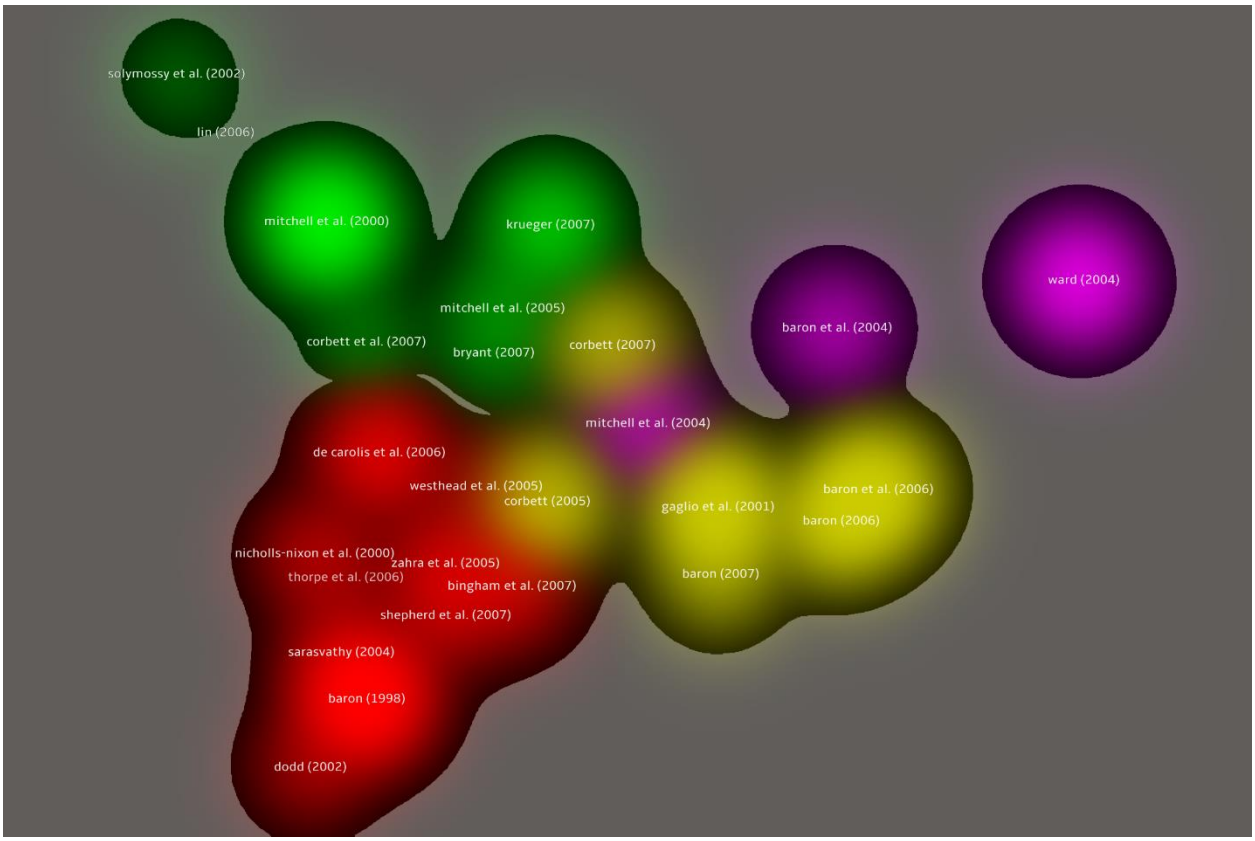

Figure 4 - Cluster analysis of the youth period (1998-2007)

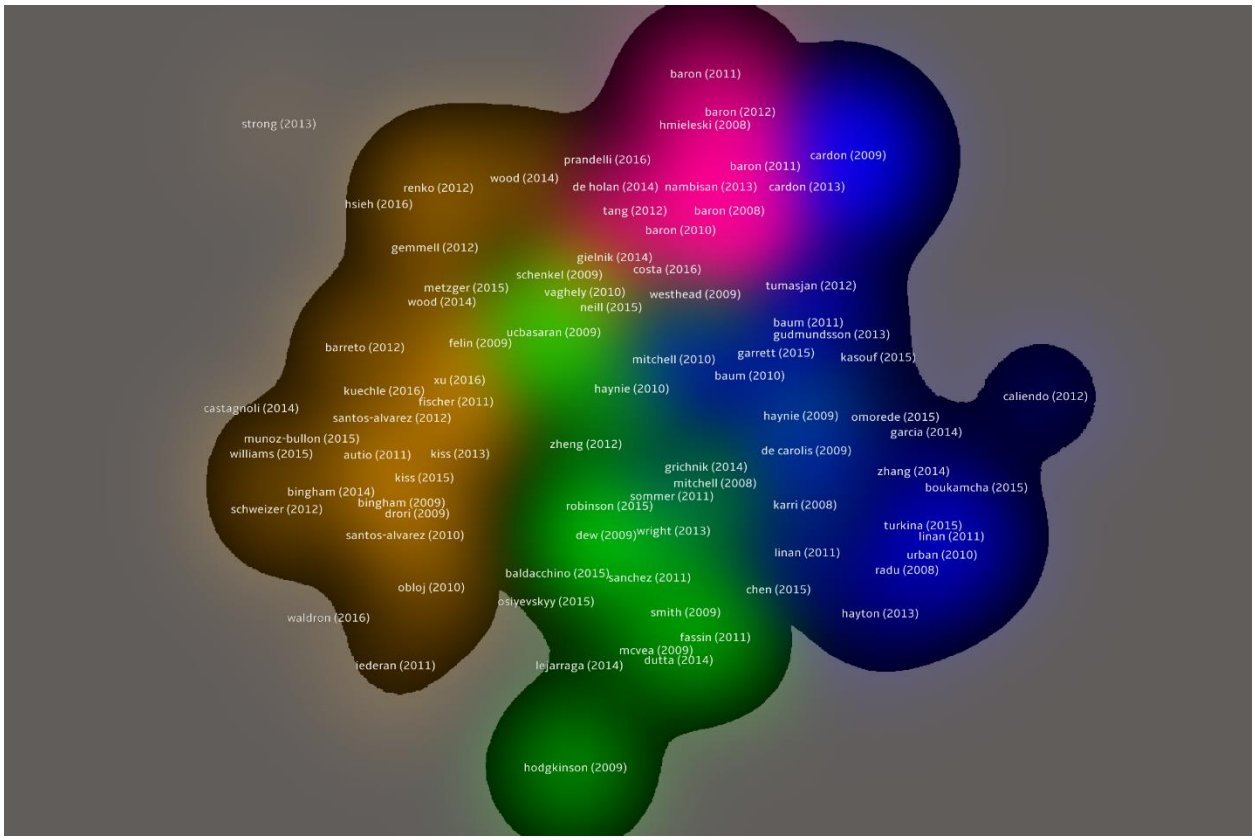

Figure 5 - Cluster analysis of the growth period (2008-2016)